

Centre for Learning and Life Chances (LLAKES)

IOE: UCL's Faculty of Education and Society

Report on the ISIKLE Project:

Increasing and Evaluating Student Impact in Knowledge and Learning Exchange (ISIKLE)



Full List of ISIKLE Contributors to ISIKLE Project

Jerry Allen. Director for Entrepreneurship, UCL Innovation and Enterprise. *Strand Three leader in ISIKLE.*

Brad Blitz. Professor of International Politics and Policy at UCL Institute of Education and Head of Department of Education, Practice and Society. *Bid team convener and strategy advisor in ISIKLE.*

John Braime. Volunteering Manager, UCL Students' Union. *Strand Two Member in ISIKLE.*

Deborah Buck. Health and Social Sciences Researcher, Department of Education, Practice & Society, UCL Institute of Education. *Systematic Review Team.*

Kiran Dhillon. Project Administrator, Department of Education Practice and Society, UCL Institute of Education. *Project Administrator in ISIKLE.*

Laura Etchells. Enterprise Business Development Manager, Masood Entrepreneurship Centre, University of Manchester. *Strand 3 Researcher/Administrator in ISIKLE.*

Alice De Gennaro, Research Assistant, Centre for Education Policy and Equalising Opportunities, UCL Institute of Education. *Researcher on Quantitative Evaluation in ISIKLE.*

David Gough. Director of the Evidence for Policy and Practice Information Co-ordinating Centre (EPPI-Centre), Social Research Institute, UCL IOE. *Co-leading Systematic Review of Literature in ISIKLE.*

Andy Green. Professor of Comparative Social Science, and director of ESRC LLAKES Centre, UCL Institute of Education. Department of Education, Practice and Society. *Director of ISIKLE.*

Fran Harkness, Co-director Engagement Lead, Kohlrabi Consulting. *Consultant contributor to Qualitative Evaluation in ISIKLE.*

Hui-Teng Hoo. Lecturer, Nanyang Business School, Nanyang Technological University (NTU) Singapore. *Systematic Review Team in ISIKLE.*

Varant Kurkjian. Research Assistant, Social Research Institute, UCL Institute of Education. *Systematic Review Team in ISIKLE.*

Anne Laybourne. Community Research Manager, Students' Union, UCL. *Strand Two leader in ISIKLE.*

Lindsey Macmillan. Director, Centre for Education Policy and Equalising Opportunities, UCL Institute of Education. *Co-leading Quantitative Evaluation in ISIKLE.*

Gemma Moore. Senior Research Fellow (Evaluation) & Lecturer (Teaching), The Bartlett, UCL Faculty of the Built Environment. *Strand One Leader in ISIKLE.*

Bernardita Munoz-Chereau. Principal Research Fellow in Education, Department of Learning & Leadership, UCL Institute of Education. *Leading Qualitative Review in ISIKLE.*

Rebecca Rees. Professor of Social Policy, Social Research Institute, UCL Institute of Education. *Systematic Review Team in ISIKLE.*

Lynn Sheppard. Director, Masood Entrepreneurship Centre, University of Manchester. *Strand Three leader in UoM.*

Joanna Socha. Student Staff support in Student Union, UCL. *Strand Two team in ISIKLE.*

Janice Tripney. Associate Professor in Social Policy, Social Research Institute, UCL Institute of Education. *Co-Lead for Systematic Review in ISIKLE.*

Ruth Unstead-Joss. Project Manager - Evaluation Exchange. *Strand One Project Manager in ISIKLE.*

Ruth Weir. Entrepreneurship Advisor, UCL Innovation & Enterprise. *Strand Three Senior Programme Officer in ISIKLE.*

Hannah Williams. Strand co-ordinator and evaluator, UCL Innovation & Enterprise & Institute of Education. *Strand co-ordinator and evaluator in ISIKLE.*

Gill Wyness. Professor in Economics of Education and Deputy Director, Centre for Education Policy and Equalising Opportunities, UCL Institute of Education. *Co-lead of Quantitative Evaluation in ISIKLE.*

Fatemeh Salehi Yazdi. Lecturer, Masood Entrepreneurship Centre, University of Manchester. *Strand Three team member in ISIKLE.*

Principal authors of report: Andy Green, Bernardita Munoz-Chereau, Jerry Allen, Alice De Gennaro, David Gough, Fran Harkness, Anne Laybourne, Gemma Moore, Rebecca Rees, Lynn Sheppard, Janice Tripney, Ruth Unstead-Joss, Hannah Williams and Gill Wyness.

Table of Contents

<i>Chapter 1: Introduction</i>	7
<i>Chapter 2 Systematic Review of the Literature on Student Knowledge Exchange</i>	16
<i>Chapter 3: Narrative Case Studies of Student KE Programmes (by Strand)</i>	24
Narrative Case Study Strand 1: The Evaluation Exchange.....	24
Narrative Case Study: Strand 2	46
Narrative Case Study – Strand 3: Developing PhD Entrepreneurs.....	59
<i>Chapter 4 Methodology of Evaluation</i>	78
Introduction	78
The Quantitative Evaluation.....	78
Quantitative Data Collection and Methods	79
Quantitative Analysis	80
Qualitative Evaluation.....	81
Data analysis	83
.....	85
<i>Chapter 5 Evaluation Findings</i>	85
Cross-Strand Quantitative Evaluation.....	85
Qualitative Findings Strand 1: Evaluation Exchange	108
<i>Chapter 6 Conclusions and Policy Implications</i>	154
Benefits to Students from KE activities	154
Barriers	160
The Processes and Mechanisms which Promote KE Benefits	161
The Strengths and Limitations of our Evaluation	162
Policy Implications and Recommendations	163
Appendix 1: Student interview guideline.....	166
Appendix 2: Facilitator interview guideline.....	169
Appendix 3: Skills Groupings	171

List of Tables

Table 1. The Logic Model for the Evaluation Exchange	27
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Table 2. Description of evaluation challenges of each participating organisation in the London Borough of Camden.....	36
Table 3. Description of evaluation challenges of each participating organisation in the London Borough of Newham.....	37
Table 4. Logic model for the Community Research Initiative	48
Table 5. Logic Model: Developing PhD Entrepreneurs – ICR and SPERO programmes	61
Table 6. ICR and SPERO programme characteristics	63
Table 7. ICR and SPERO in- and out-of-class hours	64
Table 8. Courses / workshops delivered & student completions during ISIKLE.....	65
Table 9. ICR ten-week course outline	67
Table 10. Order of SPERO 1 workshop activities during ISKLE	73
Table 11. Survey respondents by strand	79
Table 12. qualitative data collection by strand Y1 and Y2	82
Table 13. Change in skills by Strand.....	89
Table 14. Full results of all changes in skills by Strand.....	91
Table 15. Thinking about all the groups, clubs or organisations you have helped since beginning the programme, did you start helping them for any of the following reasons: Most common reasons given.....	95
Table 16. Thinking about any voluntary work that you've been involved since beginning the programme, have you been involved in any of the following? Most common reasons given.....	96
Table 17. Have you been involved with any of the following groups, clubs, or organisations, again since beginning the programme? Most common responses given.....	96
Table 18. Have you been involved with any of the following types of public participation (related to democratic process) since beginning the programme? Most common responses.....	97
Table 19. wellbeing regressions	98
Table 20. <i>Thinking about your future career or your future, what's important to you?</i>	101
Table 21. <i>How do you expect that participation in your student knowledge exchange programme will help you reach your goals?</i>	102
Table 22. Characteristics of programme participants.....	104

List of Figures

Figure 1. Summary of key stages of the Evaluation Exchange and scheduling over 2021/22	32
Figure 2. Illustration by Jenny Leonard	58
Figure 3. SPERO 1 iterations during ISIKLE	69
Figure 4. Leadership/Independence skills	87
Figure 5. People/communication skills	87
Figure 6. Self-determination/Creativity skills	88
Figure 7. Technical skills	88
Figure 8. ICR business skills	89
Figure 9. Wellbeing	98
Figure 10. UCLA loneliness scale – EV EXC	99
Figure 11. UCLA loneliness scale - CRIS	100
Figure 12. UCLA loneliness scale - SPERO	100
Figure 13. UCLA loneliness scale - ICR	101
Figure 14. Business ownership status	103
Figure 15. Business ownership - alone or with partners	103
Figure 16. Career aspirations	104
Figure 17. Ethnicity by strand	105
Figure 18. Gender by strand	106
Figure 19. Percentage with a disability by strand	106



Chapter 1: Introduction

The aim of this report is to describe the progress of the ISIKLE project drawing on the findings from the evaluation. The ISIKLE project was launched in June 2020 following a successful bid to Research England (RE) and the Office for Students (OfS). The proposal was led from UCL Institute of Education’s Department of Education Policy and Practice (DEPS), in partnership with the Masood Enterprise Centre, University of Manchester (UoM). The threefold objectives of the project were to scale up four existing student knowledge exchange (KE) programmes in the two universities, making them accessible to a wider range of students; to implement innovations in the delivery of these programmes to enhance the benefits they would bring both to students and our external partners in the local communities; and to improve our understanding of the effectiveness different types on student KE activity by conducting a comprehensive, mixed-method evaluation of our different programmes, and the effects of the changes implemented.

Student Knowledge Exchange in Context

It has long been held that higher education in the UK has a public purpose: that it should bring benefits not only to its graduates and to the academic community but also to the wider economy and society. The current focus on the importance of student knowledge exchange could be said to derive from the confluence of two streams of policy development in the UK. The first relates to growing recognition of the need for higher education providers to ‘engage with local businesses and communities, serving the economy and society for the benefit of the public, business and communities.’¹ It was in this spirit that the then minister for higher education² in 2017 commissioned HEFCE to report on the available evidence on how effectively higher education was performing this function. Under the funding remit of Research England (RE) from 2018, this led to development of the *Knowledge Exchange Framework* (KEF), first issued in March 2021, ‘whose aim is to increase efficiency and effectiveness in the use of public

1 <https://www.ukri.org/what-we-offer/supporting-collaboration/supporting-collaboration-research-england/knowledge-exchange-framework/>

2 Jo Johnson, Minister of State for Universities, Science, Research and Innovation

funding for knowledge exchange and to further a culture of continuous improvement in universities.’³ The second, more long-standing, current of policy stressed the importance of cultivating employability skills amongst higher education graduates who face growing competition for securing graduate jobs. Arguably, this latter policy preoccupation has been highlighted as a result of the COVID 19 pandemic and attendant lockdowns, which raised student concerns about losing opportunities for enhancing their employability skills.⁴ These two broad objectives come together in the proliferation of initiatives in higher education to promote student engagement in KE activities which are widely believed to enhance employability skills at the same time as having the potential to benefit local businesses and communities.

The ISIKLE project developed in response to a major initiative of this kind on the part of RE and the Office for Students (OfS). In September 2019 a call was launched for a ‘joint funding competition’ for project proposals to ‘demonstrate the benefits to higher education students and graduates through their involvement in knowledge exchange activities.’ Applicants were encouraged to consider a diverse range of student KE activities, including in schemes focusing on entrepreneurial activities or where the objective was to contribute to local economic development or to enhancing the civic and social role of higher education providers. The call required projects to provide ‘evidence of the effectiveness and impact of KE programmes both to the student as well as the external partner’. However, the primary emphasis in this case was on the benefit students since policy makers had not ‘focused to date on explicitly understanding, measuring and articulating’ these benefits and how they could translate into benefits to external partners. The aim of the initiative was thus to identify the most effective practices in student knowledge exchange and how these might be scaled up across the higher education sector. ‘Better evidence on student benefits and the student experience’, according to the call document, could be used to demonstrate ‘return on investment and optimise the future use of Higher Education Innovation Fund (HEIF) funding, thereby improving value for money for public funds.’⁵ The ISIKLE project was one of twenty plus project proposals funded through the competition.

The ISIKLE Project Proposal

The ISIKLE project proposal was developed to address all three objectives of the RE/OfS initiative on ‘Student Engagement in Knowledge Exchange’ (later known as SEKE): to scale up existing KE projects, making them accessible to a wider range of students; to undertake innovations in the delivery of these student KE activities, to enhance the benefits they brought

3 <https://www.ukri.org/what-we-offer/supporting-collaboration/supporting-collaboration-research-england/knowledge-exchange-framework/>

4 See Research from YEAH project. 50% of respondents felt that they had lost opportunities for honing their employment skills during the pandemic.

5 Research England and Office for Students, Funding competition for projects on student engagement in knowledge exchange: Demonstrating what works for students, 26 September 2019 (P. 2).

to students and external partners; and to undertake a comprehensive evaluation to identify best practice in different types of student KE activities.

To design and develop the ISIKLE project a team was convened by Brad Blitz, Head of UCL IOE's department of *Education Policy and Practice (DEPS)*, from across six departments in UCL and with partners in the University of Manchester's *Masood Enterprise Centre*. The core development team brought together representatives from four departments in the two universities which had substantial experience in delivering existing student knowledge schemes, including Jerry Allen from *UCL Innovation and Enterprise*, John Braime and Anne Laybourne from *UCL Students Union*, Laura Cream and Gemma Moore from *UCL Culture* and Lynn Sheppard from UoM's *Masood Enterprise Centre*. Representatives from two additional UCL research centres joined the development team to advise on different aspects of the evaluation. David Gough from the *EPPI Centre* developed the design for the Systematic Review of the Literature on Student Knowledge Exchange. Lynsey Macmillan and Gill Wyness, both from the *Centre for Education Policy and Equalising Opportunities (CEPEO)*, co-led on the development of the quantitative evaluation. Bernardita Munoz-Chereau, from the *UCL's Department of Learning and Leadership*, later joined the project to lead on the qualitative evaluation. Project development was led from DEPS by Andy Green, as Principal Investigator, and Brad Blitz, as convenor and cross-university strategy advisor. As the project took shape we created a central evaluation team, comprising: the leaders of the Systematic Review (David Gough and Rebecca Rees); the leaders and the Quantitative Evaluation (Lynsey Macmillan and Gill Wyness) and the leader of the Qualitative Evaluation (Bernardita Munoz-Chereau). This team, in conjunction with Andy Green, as PI, were responsible for the overall design of the evaluation of the project, working with the leaders of the different student KE sub-projects in developing the elements of the evaluation which were specific to these.

The Student Knowledge Exchange Delivery Strands

The ISIKLE project was built up from four existing student KE programmes which were deemed to have potential for innovation and scaling up, and which represented contrasting types of student KE activity thus allowing the potential for evaluating the benefits of different approaches. Two of these programmes were focused on entrepreneurship training with doctoral students, but with differing modes of delivery. One was essentially extra-curricular, delivered through an extended series of workshops; the other was an accredited course and more integrated with the students' doctoral training programmes. The other two programmes focused on student KE activities with VSOs and charities in the local community, with one targeted at doctoral students and the other at Masters students. These four existing student KE programmes were organised into three delivery strands for the purposes of the ISIKLE Project:

- **Strand 1: Developing Knowledge Exchange & VSO capacity – The Evaluation Exchange** (led by Gemma Moore, Senior Research Fellow in Evaluation, UCL Bartlett School);

- **Strand 2: Developing Community Research Engagement – Community Research Initiative for Students (CRIS)** (led from the UCL Student Union by John Braime, Manager of Volunteering, and Anne Laybourne, CRIS Manager);
- **Strand 3: Developing PhD Student Entrepreneurs** (led in UCL by Jerry Allen, Director for Entrepreneurship, UCL Innovation and Enterprise; led in UoM by Lynn Sheppard, Director of the Masood Enterprise Centre).

Each strand was responsible for the delivery and scaling up of their particular KE project and for undertaking innovations designed to enhance the benefits of the programmes to students. With the onset of the COVID 19 pandemic shortly after the start of the project, the strands had to modify the delivery of the programmes in line with university policies during and between lockdowns. In practise, this meant adopting some form of on-line delivery for many of their activities. The objectives of the strands at the start ISIKLE are described in brief below (see the ‘Strand Narratives’ in Chapter 3 for a detailed account of the development of programmes during ISIKLE and the logic models on which the innovations in each strand were based).

Strand One: Developing Knowledge Exchange & VSO capacity – The Evaluation Exchange.

The Evaluation Exchange (EX EV) brings UCL postgraduate students together with VSOs to form partnerships to tackle an evaluation challenge (such as designing an evaluation plan, developing surveys, or analysing existing data). The programme provides an opportunity for students to apply their research and knowledge to the VSO. The project builds upon the 2017 UCL Evaluation Exchange in Newham, East London, which demonstrated positive results through improved evaluation capacity, changed service delivery, and boosted service user and VSO confidence in their activities. UCL students gained experience of the practical application of their research and evaluation skills, and a deeper understanding of their social environment. During 2017/2018, 24 UCL postgraduate students from a range of disciplines collaborated over six months with six local charities working with society’s most vulnerable members in Newham. The evaluation frameworks co-developed by VSO/UCL teams during the pilot are now permanently embedded in organisations, promoting the streamlining of processes, and resulting in service improvements.

The primary objective of the Strand One team during the two years of the ISIKLE project was to build on the achievements of the pilot by scaling up the programme to include 48 PG students working with twelve VSOs in the two London boroughs of Newham and Camden. The intention was to lay the foundations for expanding to new areas beyond Newham and Camden, including a) the development of a templated approach adaptable to other cities and designed to inform KE best practice across the university sector; and b) creating the basis for a future network of evaluation exchanges to share best practice with the Voluntary and Community Sector.

Strand 2: Developing Community Research Engagement – Community Research Initiative for Students (CRIS)

CRIS was set up by UCL Student Union Volunteering Service in December 2018 to address low satisfaction scores amongst postgraduate taught (PGT) students. Focusing on the dissertation component of a taught master's course, CRIS connects PGT students, their university supervisor, and a VSO to collaborate on a co-designed piece of research. The KE activities ensure that a) a student receives practical research experience outside the university setting to improve their employability; and b) a VSO influences research relevant to their work, benefitting from its findings.

There was considerable interest in CRIS from the outset, both amongst students and VSOs. During 2018/19 50 students had meetings with VSOs and 30 of these wrote dissertations based on their collaboration with the VSO. However, the CRIS team identified two factors that limited expansion of student KE through CRIS. Firstly, while the opportunity to exchange knowledge and skills with academics was appealing to the voluntary sector, some organisations - particularly the smaller ones - lacked capacity to engage since they often lacked staff with the knowledge or confidence to frame a research question or to supervise a research student. Secondly, despite CRIS being open to all UCL PGT students, take up was uneven across the University.

The objective of the CRIS team during ISIKLE was to address these problems so that student participation in CRIS activities could be increased to a target of over 200 students by Year Two of the project. This would involve developing the capacity of small- to medium-sized organisations in the voluntary sector by undertaking evaluation meetings with VSOs to identify the barriers they faced in engaging with CRIS and the steps required to overcome those barriers. These would be followed by a series of workshops bringing partners together to co-design and implement relevant solutions. At the same time, a series of initiatives would be undertaken to a) raise the visibility of CRIS amongst the study body; and b) diversify the range of activities offered by CRIS to accommodate the different amounts of time students were able to devote to the programme and the different ways in which they wished to engage with voluntary sector organisations.

Strand 3: Developing PhD Student Entrepreneurs

The ISIKLE project focused on two Entrepreneurship Education (EE) programmes targeted at research students (primarily at doctoral level), namely Innovation and Commercialisation of Research (ICR) at UoM's Masood Enterprise Centre and SPERO at UCL Innovation and Enterprise. Both programmes share similar aims: to raise awareness of entrepreneurship as a career option, and to develop in students the knowledge, skills, and attitudes that make up an entrepreneurial mind-set. Following the European Entrepreneurship Competence Framework

(EntreComp), we defined this mind-set as ‘the capacity to act on opportunities and ideas and transform them into value for others.’⁶

The ICR and SPERO programmes differ significantly in their format and duration. ICR is a ten-week accredited course with a mixture of lectures, group work, and individual tutorials. The SPERO programme comprised three one- and two-day workshops focused on small group activities with topic introductions and reflection/feedback sessions led by course facilitators. The aim within ISIKLE was to assess the value to students of these different models of EE.

Through a range of innovations in the delivery of the two programmes (described in chapter 3) Strand 3 aimed to increase participation in the two programmes to 150 students in Year One of ISIKLE (50 on ICR and 100 on SPERO) and to 300 in Year Two (100 in UoM and 200 in SPERO). The target was to reach a total 450 students over the course of ISIKLE.

The ISIKLE project was thus designed as a multi-pronged intervention which would allow assessment of the effectiveness of a various types of student KE activity. As such it is both complex in organisation and multi-disciplinary in approach. The project brings together 23 individuals and three research centres from seven departments across two universities. The ISIKLE members involved in student KE delivery are also collaborating with numerous local community organisations offering different services. ISIKLE academic and research staff come from a wide variety of disciplines, including anthropology, business studies, economics, evaluation studies, psychology and sociology. Our evaluation draws on the diverse disciplines of the academics and researchers, and equally of the student participants, who are drawn from different fields of study across the two universities and who contributed their varied expertise through collaborating in both quantitative and qualitative parts of the evaluation. Taken as a whole, ISIKLE can be seen as what our Systematic Review describes as a ‘multi-faceted intervention.’ It combines interventions characterised in the Review’s typology of student KE activities as involving: a) ‘Service Learning’ (CRIS); b) Project-based Learning’ (EE); c) ‘Community Service and Volunteering’ (EE and CRIS); d) ‘Research Partnership’ (EE and CRIS) and e) Enterprise and Entrepreneurship (ICR and SPERO) (see chapter 2).

The Structure of the Report

Chapter Two provides an executive summary of the findings of our *Systematic Review of the Literature on Student Knowledge Exchange*. We place this at the front of our report since it informed the conceptualisation of student KE within the ISIKLE project generally. It also fed into the development of the Logic Models used in each sub-project to inform the design of the activities in ways that would maximise their benefits to students and external partners. The chapter provides a discussion of the definitions of Student KE in the literature; a typology of the different types of student KE initiatives represented by the selected studies;

⁶ Video, “What is EntreComp?”, The European Entrepreneurship Competence Framework (EntreComp) <https://ec.europa.eu/social/main.jsp?catId=1317&langId=en#:~:text=EntreComp%20is%20a%20free%2C%20flexible,practice%20to%20develop%20entrepreneurial%20skills> (Accessed: 26/07/22)

and an analysis of the robustness of the evidence on benefits of student KE from the twelve studies which provided usable data on effect sizes. The Review defines Student KE as activities ‘involving a two-way exchange of knowledge (i.e., ideas, research, evidence, technology, skills, experience, or expertise) between higher education students and one or more non-academic partner with there being a potential for mutual benefit.’ This definition was used in the selection of studies for detailed analysis. Despite an overview of reviews of enterprise and entrepreneurship initiatives (with or without partnerships outside of higher education) was included on the basis that entrepreneurship initiatives have the potential to yield future external benefits through the business start-ups they generate, the robustness of the evidence was judged to be lower than the evidence on the other types of student KE initiatives. The methods of review follow the approaches advocated by the EPPI-Centre, of systematic mapping of research followed by multi component synthesis to examine each of the review questions. In this review 19,805 articles were screened, with around 85% of these published since 2010. A total of 202 studies were identified as fitting the inclusion criteria for the Review and were coded by the systematic map. A total of 33 studies used a quasi-experimental design to evaluate impacts but most relied exclusively on self-reported data. Around half of these studies used a concurrent comparison group, but this did not always equate to better quality. Twelve studies provided enough information to calculate effect sizes and these were subjected to detailed analysis, the result of which are summarized here.

Chapter Three provides three narrative case studies, drawn up by the managers of the different sub-projects, of the development of the student KE activities in their strands during the course of ISIKLE. These include accounts of the pilot projects on which the ISIKLE projects built; how these were re-fashioned within the ISIKLE project; the main aims and objectives of these within ISIKLE; and the logic models on which these were based. Each of these narratives provide a rich set of reflections from the delivery teams on what they were seeking to achieve with the development of student KE activities, the assumptions on which these were based, and the modifications which were made following feedback from students and external partners. The COVID 19 pandemic, with its associated national lockdowns, was already well underway in the UK by the start of the ISIKLE project in June 2020 and universities swiftly adopted new procedures for the safe delivery of student courses. Student KE activities therefore had to be adapted to these new conditions and much of the time of the teams was necessarily taken up in devising new on-line and hybrid forms of delivery for the student KE activities and for staff and student interactions with external partners. The narrative case studies reflect in detail the serial changes made in the delivery of programmes, as team leaders sought to find the best possible solutions under the prevailing restrictions. Other pedagogic and administrative innovations, prompted by the experience of the pilots and the assumptions of the Logic Models, proceeded as originally planned, although sometimes in modified forms. These were variously designed to: widen recruitment to programmes; broaden the networks of external partners; enhance student interactions with external partners, and to increase the benefits to both students and the local communities. Our narrative case studies also provide detailed reflection on the experience of staff and students of these, although without at this point drawing on the evidence

from the formal evaluation which is considered in the following chapter. In each case the narratives end with some key learning points drawn from the experience.

Chapters Four and Five describe the methodology of our mixed-method evaluation and the findings from the quantitative and qualitative components of this.

The quantitative evaluation was based on ‘before and after’ questionnaire surveys administered to students participating in each of the four sub-projects prior to, and soon after completing, their KE programmes. Respondents were asked to rate themselves on different skills, and also asked questions about their attitudes towards civic engagement, their well-being and career aspirations. The analysis is based on data from respondents completing both questionnaires. Like most of the evaluations considered in the Systematic Review, we were not able to use a control group, as originally planned, since in this case it would have necessitated using HEFCE student destinations data which would not have become available until well after the reporting date for our project. So the analysis is not strictly able to draw causal inferences from the changes in students’ skills and attitudes during the course of the KE interventions. The sample sizes for two of the projects were also relatively small, which no doubt contributes to the fact that the effects observed were often not found to be statistically significant. Nevertheless, on many of the outcomes measures there was evidence of substantial positive effects from the intervention. We collected data on 28 different skills, on which we report both individually, and as grouped into five skill categories labelled: 1) leadership/independence, 2) people skills/communication, 3) reflection/self-determination, 4) technical (and an additional 5th group for the four further skills asked in the ICR survey). For most of the 5 categories we found substantial positive effects associated with the intervention, with some interesting variations across the different programmes. The quantitative analysis also reports on the results for Civic Engagement, Well-Being and Career Aspirations. We also report on the results of an analysis of the demographic characteristics of participants on the pilot programmes (using administrative data from the university registries) and on the ISIKLE programmes using self-reported data from the surveys. The results from the different data sources and time periods show a reassuring degree of consistency and also again highlight the substantial variation across sub-projects.

The qualitative evaluation sort to probe more deeply into experiences of students and external partners on the different programmes, how they responded to the different types of KE activities, what they learned from them, and what they thought might be changed to enhance the benefits from these activities. A total of 117 interviews and 11 focus groups were conducted with students, partners and facilitators, mostly after the end of the programmes. These were subsequently transcribed, coded and analysed thematically. Our guides for the interviews and focus groups contained questions addressed to participants across all strands, in order to aid comparison, and some questions specific to particular strands, to do justice to the different designs and objectives of the different sub-projects. Overall, participants of the three strands of ISIKLE highlighted a) reasons for taking part; b) characteristics of strands that positively influenced the KE experience; c) outcomes; d) opportunities and barriers to participation; and e) suggestions for improvement. Regarding reasons to take part, students from the four

programmes were keen to make a social impact, had a desire to increase their network, learn new skills, and expand their CV and mind-set. Non-HEI partners expected their participation to support their services, expand their own learning, and help young people grow through learning experiences. Despite the differences between strands, the seven characteristics that positively influenced the KE experience were opportunities to: a) master experiences from navigating challenges and testing their skills in unfamiliar and complex environments; b) engage in authentic and meaningful experiences that address real-world problems and needs with a potential for a positive solution for the external non-HEI partners; c) personal contact with facilitators; d) social persuasion and communication; e) work together in multidisciplinary groups; f) facilitation and network building; and g) manage expectations and boundaries. These broadly align with the characteristics of effective student KE interventions identified by the Systematic Review. Regarding outcomes, participants described gaining skills, knowledge, a change of mind-set and tangible outputs. Participants identified career opportunities that opened up following their participation in the programmes, but also barriers, such as the challenges of delivery during Covid-19 restrictions. Finally, participants provided suggestions for improving the programmes in the future, such as managing expectations, more facilitator support and more time with others across strands.

Chapter Six synthesises the results from the quantitative and qualitative evaluations and presents some policies implications from our findings.



Chapter 2 Systematic Review of the Literature on Student Knowledge Exchange

Background and methods

There has been a shift in recent years to higher education as a provider of public goods beyond formal education. Policymakers in many countries are looking to higher education institutions (HEIs), not only as sources of scientific knowledge but as major contributors to the transfer of this knowledge into regional and national economic growth. Universities are also under increasing pressure to enhance graduate employability, while for business and industry drivers include intense global competition and rapid technological advances. There has been increasing awareness also of the knowledge that individuals and bodies outside universities can contribute, acknowledging that there is a value in a two-way exchange of information and ideas. Over the last two decades, UK governments have shown strong interest in promoting and supporting the development of long-term institutional strategies for knowledge exchange, including student engagement in these activities.

Our main aim with the systematic review described in this summary is to map and review the current state of knowledge on student-focused knowledge exchange to inform a framework for undertaking primary research evaluating the four case studies in UCL and the University of Manchester within the ISIKLE project. Knowledge exchange initiatives vary in their aims and methods, and it was important to contribute to an analytic framework for the ISIKLE project that appropriately describes and illuminates these differences. It was also important to assess initiatives detailed in the published literature for evidence of their effectiveness.

We anticipated at the start of this review that the studies of student knowledge exchange activities or interventions would rarely label themselves as such, and so we would need to identify key components. The following definition was used to help the research team identify whether an initiative was relevant for the review: *Student engagement in knowledge exchange involves a two-way exchange of ideas, research evidence, technology, experiences and skills between higher education students and one or more non-academic partner in ways intended to be mutually beneficial.* It implies an understanding of knowledge exchange that values non-

academic ways of knowing and seeks to bring external perspectives and experiences into dialogue with academic ideas and insights. Thus, it can be distinguished from the concept of knowledge transfer, understood as a one-way or unidirectional exchange process, typically associated with commercial application of academic research, technology or inventions.

The methods of review follow the approaches, advocated by the EPPI-Centre, of systematic mapping of research followed by evidence synthesis to investigate specific research questions. Comprehensive and sensitive searches and explicit inclusion criteria were used to identify relevant studies and then a coding tool was applied to each included study to describe the knowledge exchange initiative involved and the study methods, and to extract findings.

Descriptive Summary of Included Studies

A total of 19,805 articles were identified and then screened. Of these, 199 fit the inclusion criteria for the review's systematic map. Publication dates of the 199 included studies ranged between 1994 and 2021, with around 85% published since 2010. Most were published in peer-reviewed academic journals. The studies were conducted in over 30 different countries, with over half from the US.

Generally, outcome evaluations were of poor overall methodological quality because of their design (e.g., non-random allocation of participants to comparison groups, or not using a comparison group). Although many studies were informed by theory, reports rarely mentioned that theory was used to develop the intervention or detailed a logic model outlining causal assumptions. Discussions of process tended to be simplistic rather than rigorous evaluation of the different components that make up the intervention or how an intervention outcome was achieved. Most outcome evaluations detailed in this review measured one or more potential benefit to students but there was a very large variability, both in choice of benefit type and then how this was formulated into a measure. A significant proportion assessed outcomes for non-academic partners, but existing studies rarely focus on benefits for HEIs and wider society and the economy.

Of the 199 studies, a total of 35 used a quasi-experimental study design to evaluate the effects of an intervention (i.e., data from a comparison group were reported). The content of these 35 studies was used to further explore the evaluation of knowledge exchange. Thirteen of these studies provided enough information to calculate effect sizes, or themselves presented effect sizes.

Results from the Systematic Map and Narrative Synthesis

What kinds of student-focused knowledge exchange initiative have been evaluated?

There is no one model of student-focused knowledge exchange. Higher education institutions are experimenting with different approaches to match their needs and those of industry and

other non-academic communities. In the 199 studies included in the systematic map, we found eight main clusters of initiatives:

- *Service learning (105 studies)* – A method of teaching and learning that integrates community service activities into academic curricula. Enhancing student learning is the major purpose over and above career development and community service purposes.
- *Project-based learning (31 studies)* – Students gain knowledge and skills by working for an extended period to investigate and respond to an authentic problem, or challenge. In comparison to service learning, these initiatives are not designed with the prime purpose to help or serve community needs.
- *Community service and volunteering (10 studies)* – Co-curricular (or extra-curricular) initiatives designed to address community needs, where the service offered is the major focus, over and above any student learning or career development experiences that may accompany it.
- *Internship/consultancy (10 studies)* – Work-integrated learning experiences that offer students opportunities to intern with external partners. Career development in a specific occupation or profession tends to be emphasised as a reason for a student taking part.
- *Course design and delivery (10 studies)* – Interventions that integrate KE into the curriculum/a degree programme by engaging external partners in the design, development and/or delivery of courses.
- *Research partnership (14 studies)* – Emphasis is on the research process and the collaborative co-production of knowledge.
- *Enterprise and entrepreneurship (7 studies)* – Initiatives that aim to engender and support enterprise and entrepreneurial activity among students from all disciplines.
- *Multifaceted interventions (12 studies)* – Initiatives that combine two or more of the above approaches.

Most of the interventions described in this review were limited to students within a specific university department or faculty. Over half were targeted at undergraduate students, with only a handful available to former students. Around a quarter were open to students in any/multiple degree fields, with nearly half concentrated in science, technology, engineering and mathematics (STEM) fields or the social sciences.

What variation in student-focused knowledge exchange is seen within included studies?

Across the 199 studies, student KE initiatives were expressed and operationalised very differently. We uncovered two areas that related to intent (the underpinning logic of the intervention); and to structure and process (the organisation of activities within the initiative).

The intent of student KE initiatives

One way of delineating student KE activities is to focus on the objective for the exchange of knowledge. We can distinguish between two broad objectives for student KE, the first of which is nested within the second. In general, it can be expected that one will be considered primary.

- *Engagement to shape individual knowledge and understanding.* Here the focus is on KE between higher education students and external partners with the aim of shaping learning for individuals.
- *Engagement to shape communities.* The aim with these knowledge exchanges is a shaping of the wider society and economy beyond the university, of which students are a part.

We found that knowledge exchanges between students and external partners were mainly set within initiatives that aimed primarily for the development of individual knowledge and understanding over the initiative's timespan. The primary object of relatively few initiatives was to deliver benefits to wider society and the economy.

The initiatives also differed in their aim for different levels of partnership. We were able to distinguish between three levels of student and partner engagement in knowledge exchange, of which we see co-production, with its underlying intent to address power dynamics, as the highest level.

- *Communication.* This level is about finding out about each people's opinions and needs and so on. Academic and non-academic partners give and receive something from others that they would not otherwise have. There are expectations of mutual benefit.
- *Collaboration.* This level is about collaborative modes of interaction but not necessarily equal sharing of power. In these examples, partners are working together to achieve a shared goal, but do not have equal status and do not share the same level of power in their roles.
- *Co-production.* This level is a higher form of engagement and collaboration, involving the co-creation of knowledge (such as processes, products or services) constructed in social interaction with others. Here there is no hierarchy of knowledge forms. Different skill sets, knowledge, and levels of expertise are valued equally. All stakeholders are positioned as experts rather than as learners (although all can also be learning).

Our work identified that student KE initiatives are mainly designed to function at a communication level; that is, through knowledge exchanges of relatively short-duration, or over short time periods, with no explicit commitment to change in initiative processes or outcomes. With the notable exception of most research partnerships, and a small number of other initiatives, there was only limited occurrence of designs that harness more longer-term and mutually influencing collaborative or co-productive interactions of students and external partners.

The structure and process of student knowledge exchange initiatives

We were able to draw out six themes which represent the various structural and process features of student knowledge exchange initiatives: scale (which had further sub themes of longevity, intensity and availability); proximity; curriculum; timing for knowledge exchange; tangible output production; and adaptability.

What can be said about impacts of student-focused KE from quasi-experimental studies?

The 35 studies that used a quasi-experimental design varied considerably in their approach for gathering data, the outcomes that they measured, and the length of follow-up. Many relied exclusively on self-reported data. Heterogeneity meant that a numerical meta-analysis was not a suitable method to combine the findings of the studies. A narrative synthesis of authors own reports of study findings is presented instead.

Of the thirteen studies where it was possible to explore effect sizes, 11 measured outcomes for higher education students, with effect sizes available for three different types of KE initiative: service learning (n=9), research collaboration (n=1), and project-based learning (n=1). Three studies measured outcomes for non-academic partners, evaluating the benefits for young people with disabilities, older adults, and school students. These evaluations focused on service-learning initiatives (n=3).

Higher education student outcomes (11 studies)

- *KE through service learning (9 studies)*. Most of these nine studies report positive results for higher education students.
- *KE through research collaboration (1 study)*. One evaluation reported positive results for higher education students.
- *KE through project-based learning (1 study)*. One evaluation reported positive results for higher education students.

Non-academic partner outcomes (3 studies)

- *KE through service learning (3 studies)*. Two of these evaluations report positive results for external partners.

Which characteristics of KE initiatives seem to be important influences on impact?

The authors of the 35 quasi-experimental studies suggested a complexity of factors that may influence whether interventions are effective. Some might be seen as having a relatively direct influence on student-focused knowledge exchange activities while others influence these activities less directly. The following potentially influential factors were mentioned by authors in more than one study:

- *Group-oriented activities* – Use of a group model (over one-on-one activities) to encourage and support meaningful interactions.
- *Joint enterprise* – Process in which people are engaged and working together to achieve common objectives.
- *Managing expectations and boundaries* – Agreements and contracts that formalise the expected behaviours, rights and responsibilities of all stakeholders, including expectations of mutual benefit.
- *Communication methods and frequency* – How and how often participants were able to communicate with each other.

- *Mastery experiences* – When we take on a new challenge, such as mastering a skill or controlling an environment, and succeed, helping foster self-efficacy.
- *Authenticity* – Meaningful experiences that address real-world problems and needs and with a realistic potential for a positive impact on the non-academic partner, thereby helping develop a sense of mastery and self-efficacy.
- *Facilitation* – Roles that facilitate interaction and exchange of knowledge by building networks and relationships of trust, sharing the knowledge and expertise that they bring with them, and establishing and supporting communication channels.
- *Critical reflection* – Participants being encouraged to draw from existing knowledge, question knowledge and/or construct new knowledge. Studies often said reflection was decisive for learning.
- *Social persuasion* – Thoughts and actions are influenced by other people participating in the exchange (partner and/or academic tutor, as well as other students).
- *Personal contact* – Plays a role in the extent to which knowledge is shared.
- *Logistics and operational planning* – Training, funding, managing expectations, and being realistic about the resources required.
- *Long term relationships* – The value of building relationships over time, ideally with formal agreements between organisations.

Discussion

The review presented in this report is novel in its systematic approach to scrutinising research evidence on student-focused knowledge exchange activities. It finds and describes 199 evaluations of these initiatives, with over half featuring civil society partnerships, and far fewer having industry or government partnerships, as well as a predominance of undergraduate-focused activity. It finds that the biggest category of evaluations to date is service learning, with most of these studies having been conducted in the US. The review also identifies a limited body of evidence about initiatives' impacts on outcomes, with the focus primarily being on benefits for students and/or non-academic partners, with little exploration of wider benefits for society or higher education Institutions. The strongest evidence identified, which again is almost all evaluating service-learning initiatives, contains claims for positive impacts. A range of factors are identified by study authors as important processes underpinning the initiatives' effects.

A major finding from this systematic review is the lack of methodological rigour in the design of many of the included studies. Studies employed different methodologies for constructing the counterfactual and evaluating the impacts of the interventions. Few of the 35 studies that used a quasi-experimental design accounted for confounding variables, making them susceptible to threats to internal validity that may promote inaccurate conclusions regarding the effectiveness of an intervention. In sum, the studies had some strength in considering causal processes but were not designed in a way that allowed a rigorous evaluation of the effectiveness of the interventions, despite this being their stated aim. The evaluations reviewed in this report

also often contain simplistic discussions of process. Generalised conclusions cannot confidently be made.

Strengths and limitations of this study

This is the first systematic review which has mapped in considerable depth a large number of evaluations of student-focused knowledge exchange initiatives and identified and synthesised findings from higher quality outcome and process evaluations of these initiatives. The review has produced a conceptual framework for categorising student focused knowledge exchange that could be of use to others in a diverse and rapidly growing field.

While reviewers took a systematic and comprehensive approach to searching, non-English electronic databases were not searched. This limitation may mean studies published in countries where English is not a common publishing language may have been overlooked. A large proportion of studies were conducted in the US and research findings may therefore not always be applicable to the UK. Inconsistency in the quality of the reporting of studies, as well as in study authors' choice of evaluation design, also hindered the potential for meaningful synthesis and comparisons across studies. We were unable to invest a significant amount of time and resources in following up details with authors.

Future research

Our findings have provided many insights in the current practices of knowledge exchange researchers conducting outcome or process evaluations. However, there is much still to understand. Studies that have evaluated student-focused knowledge exchange are highly diverse in terms of methods, activities, participants, and context, all of which may serve as potential moderators for the relationship between intervention and outcomes. These variables can be tested in further empirical studies. One framework for considering the processes and mechanisms through which an intervention might produce effects, and help us identify the most effective intervention components, could build on three questions: (1) what is brought to the knowledge exchange activity; (2) what is needed to nurture relationships between those participating; and (3) what is needed to support the tasks of the exchange?

There is a larger problem. The reporting of what exactly is done during knowledge exchange and how it is supported is often extremely slim. Few primary studies appear to have deliberately set out to examine the exchange of knowledge through their observations of the programme. The included evaluations rarely described their focus as 'knowledge exchange' activities or interventions. The necessity of such exchange as part of an intervention needed to be deduced by reviewers through scrutiny of each intervention's aims and components, as described by authors, on a study-by-study basis. Once identified as involving knowledge exchange, these empirical studies of interventions were then also often missing further valuable information, including the types of knowledge being exchanged (e.g., whether students and others exchanged relatively loosely formulated ideas, or whether the findings from research were under discussion), nor did they specify the nature and extent of exchanges (e.g., the forum for exchanges, media, supporting materials, how long students and partners spent on exchange

activities). Future studies would do well to provide this detail to readers to enable them to envisage what has been implemented and how.

Only a small proportion of the 35 quasi-experimental studies explained the specifics of the programme theory behind the expected change process. In most cases, the change theory could only be discerned indirectly using the description of the intervention strategy as a source of information. Many theories were based on assumptions about change processes at the level of individual learning, the most common being theories of experiential learning. Notably, very few studies referred to mid-range theories applied to knowledge sharing or knowledge exchange behaviour, such as the diffusion of innovation theory.

Those planning evaluations of student focused knowledge exchange can improve on all the above by referring to guidance that already exists for knowledge exchange evaluation.



Chapter 3: Narrative Case Studies of Student KE Programmes (by Strand)

Narrative Case Study Strand 1: The Evaluation Exchange

Introduction

What is the Evaluation Exchange?

The Evaluation Exchange brings together small teams of UCL postgraduate students and researchers with voluntary and community sector organisations to tackle an evaluation challenge facing the organisation. The student, researcher and an organisation team work together over a period of six months. The capacity-building programme aims to connect the ‘know-how’ to the ‘how-to’, giving organisations an opportunity to strengthen how they evaluate their work and students and researchers a valuable opportunity to apply and develop research skills in a real-world situation while gaining ‘hands-on’ experience of the voluntary sector. To date, the Evaluation Exchange has been run in the London Boroughs where UCL campuses are situated, namely Newham and Camden.

Background

The Evaluation Exchange builds on UCL’s strong relationship with voluntary and community sector organisations in east London drawing on the work started in 2017 by Dr Gemma Moore, UCL Community Engagement Manager. UCL is keen to undertake projects that reflect its ethos of working in partnership with the local community and developing opportunities which have mutual benefit. An initial exploration of the needs and priorities of local potential partners identified a question amongst local organisations about whether UCL could assist them in evaluating their work and providing evidence of their impact to funders and stakeholders.

In 2017, UCL formed a strategic partnership with a key local umbrella charity called Aston Mansfield which had been working in Newham for 130 years. The Community Involvement Unit at Aston Mansfield supported the local voluntary and community sector, helping groups to establish themselves and become sustainable. In response to local organisations' expressed need for evaluation support, UCL developed a pilot of the Evaluation Exchange with the Community Involvement Unit. The pilot supported six teams of 22 UCL students and researchers from across disciplines and staff from six voluntary sector organisations, providing training and guidance to tackle evaluation challenges facing each organisation.

The Office for Students (OfS) / Research England (RE) funding for the ISIKLE programme enabled the Evaluation Exchange to build on learning from the pilot and run the programme between 2021 and 2022 again in Newham and for the first time in Camden. The Community Involvement Unit at Aston Mansfield, which delivered the programme, disbanded in 2020 and their members formed a social interest company called Compost London, which now delivers the Evaluation Exchange with UCL. Additionally, a new partnership formed between UCL and Voluntary Action Camden (VAC) to ensure effective delivery of the programme in Camden.

Aims of the Evaluation Exchange

The aims of the Evaluation Exchange were to:

- increase the capability and confidence of voluntary and community sector organisations to use evaluation processes and tools, which translate into lasting change
- enhance the student and researcher experience, providing an opportunity for postgraduate students and researchers to build and develop their research skills and put their ideas, skills and expertise into practice
- increase understanding of good practice in knowledge exchange and collaboration, whilst sharing our learning

Types of knowledge exchange

As a student Knowledge Exchange intervention, the Evaluation Exchange pertains to three of the types identified in the Systematic Review, including 'project-based learning'; 'community service' and volunteering; and 'research partnership'.

Project-based learning – Through the Evaluation Exchange, students and researchers gain knowledge and skills by working for an extended period tackling an authentic problem identified by a voluntary and community sector organisation. The organisation and the team of students and researchers work together to find an appropriate solution.

Community service and volunteering – The Evaluation Exchange is designed to address local organisations' needs and is not tied to a course. Any postgraduate student or researcher can participate if they have the time and motivation to be involved. Unlike the definition of

community service or volunteering in the Systematic Review, there *are* formal reflection points integrated into the structured training programme.

Research partnership – There is an emphasis in the Evaluation Exchange on the value of collaborative co-production of knowledge to solve challenges facing an organisation. The Evaluation Exchange recognises the reciprocal value of knowledge in different people and different places across academia and within local communities and the value of bringing the different perspectives together to develop locally appropriate solutions.

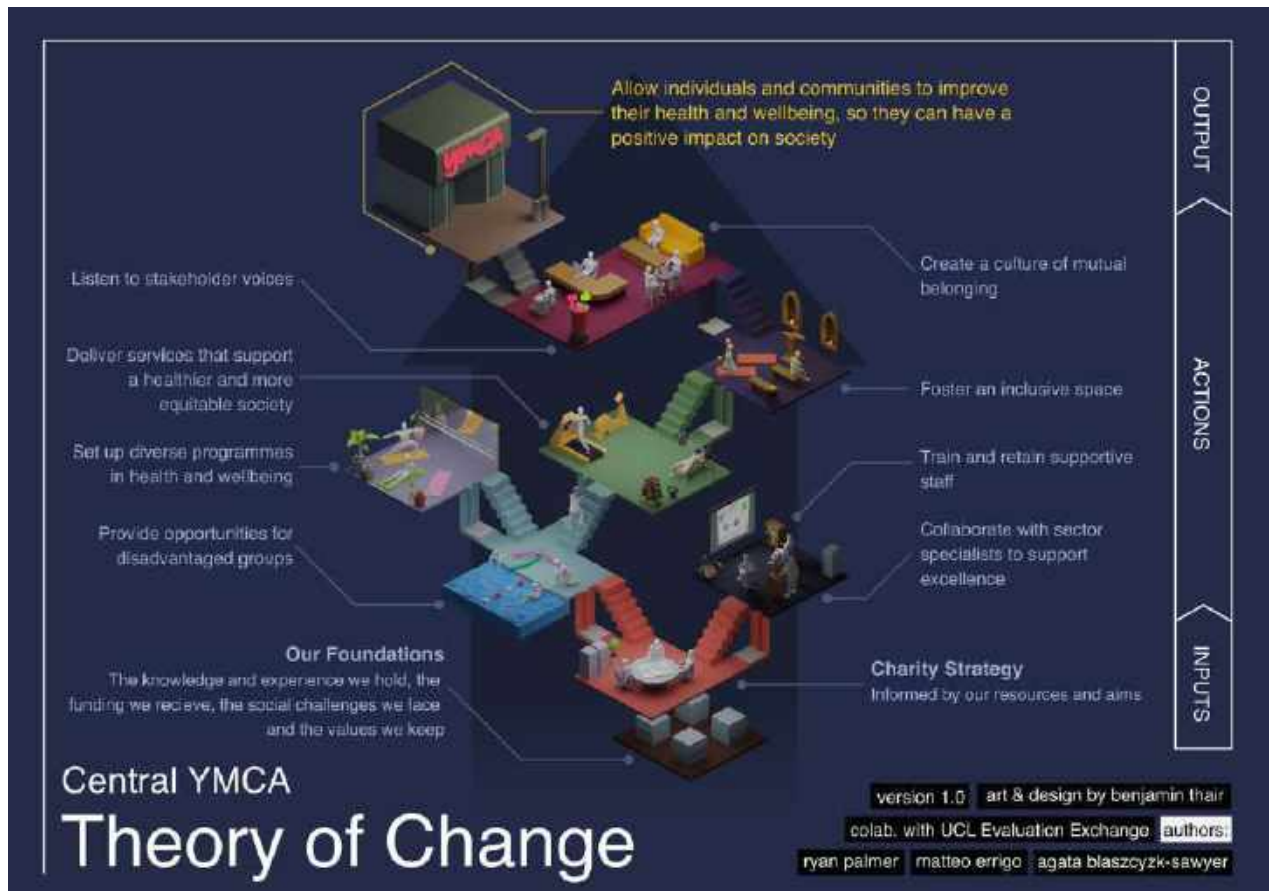


Table 1. The Logic Model for the Evaluation Exchange

Context	Activities	Mechanisms	Outputs	Outcomes	Impact
Inputs or starting points of the programme	What students and voluntary and community sector organisations engage on and do as part of knowledge exchange (KE)	Theory of Change: How the psychological learning process occurs; what are the pedagogical processes	Outputs and tangible products	Short-term benefits for students and partners	Long-term benefits that are expected to occur after the programme
<p>An extra-curricular knowledge exchange programme matching teams of postgraduate students and researchers with voluntary and community sector organisations in London Boroughs of Newham and Camden to collaboratively tackle an evaluation challenge identified by the organisation.</p> <p>Duration: 6 months.</p> <p>On completion, postgraduate students are entitled to 6 points from UCL’s Doctoral Skills Development Programme.</p> <p>Delivery team: - UCL team - Voluntary Action Camden (VAC) - Compost London</p> <p>Other stakeholders - Postgraduate students and researchers - Participating organisations from voluntary and community sector in Newham and Camden - Other stakeholders (e.g., within UCL supporting recruitment and</p>	<p>Participate in taster sessions about evaluation and the Evaluation Exchange approach to establish interest and readiness to participate</p> <p>During application process, access ad-hoc support from delivery team to address any queries and questions.</p> <p>Training and support: Once recruited to participate, attend 3 x 1 day training sessions over course of 6-month programme.</p> <p>Site visits from delivery team members to organisations</p> <p>Participate in optional additional training from external provider.</p> <p>Collaboration: Activities undertaken through the collaboration between students, researchers and organisations to tackle organisation’s evaluation challenge.</p>	<p>Experiential and collaborative learning: Working together for a period of 6 months students and organisations exchange knowledge and build skills in effective evaluation practice.</p> <p>Takes a relational approach to knowledge exchange and the co-production of knowledge (i.e., recognises the role of relationships for sharing and building knowledge).</p> <p>Transdisciplinary approach: Brings together knowledge from a range of actors and disciplines to understand a problem and generate a solution.</p> <p>For students, the three principles above:</p> <p>Foster an understanding of local contexts external to university</p> <p>Challenge their existing perspectives and develop their skills to find solutions to problems in a real-world context</p>	<p>Number of information sessions for organisations / participants</p> <p>Number of information sessions for students and researchers / sign-ups via Eventbrite</p> <p>Number of 1:1 advice sessions for organisations</p> <p>Number of applications received</p> <p>Application and support process protocol and application form template.</p> <p>Selection criteria and decision-making protocol</p> <p>Outline of process</p> <p>Number of organisations accepted / teams formed</p> <p>Number of students/researchers accepted</p> <p>Number of training sessions</p> <p>Knowledge products from delivery team support sessions and site visits.</p>	<p>For students and partner organisations:</p> <p>Increased knowledge & understanding of:</p> <ul style="list-style-type: none"> Local voluntary and community sector Evaluation practice Resources available for information and support to practitioners of evaluation Working with people from different disciplines and sectors to develop solutions Challenges and opportunities facing people they are collaborating with New networks within and outside the university for future collaboration, research or employment Opportunities for future careers <p>Increase in capacity for evaluation:</p> <ul style="list-style-type: none"> Defining an evaluation challenge to determine a potential solution Researching, analysing, assessing suitability of 	<p>Increase in capacity and confidence on evaluation practice, for researchers and orgs</p> <p>Build and apply research skills and other expertise, for researchers</p> <p>Increase in understanding of the processes of KE for/within HEIs</p>

<p>internal and external to UCL contributing to training)</p> <p>Skills and knowledge:</p> <ul style="list-style-type: none"> - Recruitment, selection and support of all individuals taking part (students, researchers and participating organisations) - An understanding of local voluntary and community sector organisations, their needs and appropriate capacity building approaches. - Training design and delivery <p>Drawing upon the Evaluation Capacity Building (ECB) approach, the Evaluation Exchange provides structured support to students, researchers and organisations via training and advice.</p> <p>Resources:</p> <ul style="list-style-type: none"> - Time (i.e., length of programme) - Money (i.e., funding from OfS, small grants for each team, accessibility grants and travel costs for individuals participating) - Spaces - Capacity of organisations, students & researchers to commit to collaborative work and training sessions 	<ul style="list-style-type: none"> - Complete a Project Agreement to establish ways of working and agree focus of evaluation challenge - Students and researchers conduct research on existing relevant evaluation practice and propose potential solutions to the organisation. - Together the organisation, students and researchers develop ideas through workshops and test ideas through pilot application and review. - Over the 6 months the student, researcher and organisation team meet when needed (on-line or face-to-face), learn about each other through site visits and communicate regularly (e.g. via WhatsApp or email) to discuss ideas and solutions. - Where appropriate, student and researcher team produce final reports summarizing activities and main findings and/or handover piloted tools (e.g. draft or final theories of change, surveys, or creative evaluation tools (e.g. interactive maps)) and any data collected (e.g. from surveys or films made). 	<p>Generate confidence in ability to apply skills in real-world contexts</p> <p>Build confidence and capacity to collaborate with others from within the university and outside of the university</p> <p>Through the programme, students feel:</p> <ul style="list-style-type: none"> • Supported before and during the programme • Valued • Their skills and ideas can make a difference in the world • Challenged by others and informed by new perspectives to look at problems • They are engaging positively and gaining a valuable experience • The frustrations and excitement of working in collaboration in a 'real-world' setting, particularly in the voluntary and community sector in a London Borough. • A sense of attainability around evaluation, • They have a tangible outcome from the programme. 	<p>Number of Project Agreements</p> <p>Number of funding accesses</p> <p>Number of collaborative activities between students, researchers and organisation</p> <p>Knowledge products from each participating team</p> <p>Formal and informal networks established</p> <p>Number of publications, reports presentations and blogs</p> <p>Number of attendees at celebration event</p> <p>Social media posts and newsletter articles</p>	<p>potential evaluation solutions</p> <ul style="list-style-type: none"> • Piloting potential solutions to develop appropriate evaluation practice relevant to individual organisational context • Solutions identified to existing evaluation challenges <p>Increased transferrable skills:</p> <ul style="list-style-type: none"> • Problem identification • Determining appropriate solutions • Evaluation • Project management, monitoring progress and revising objectives in-line with changing context • Communication • Teamwork <p>Change in attitude:</p> <ul style="list-style-type: none"> • Improved understanding of local community • Increased positivity about future career options / evaluation strategy for the organisation • Greater sense of well-being <p>Relevant to knowledge exchange for university, students and organisations:</p> <p>Innovation</p> <ul style="list-style-type: none"> - New forms of collaboration between university, orgs and students opening access for future collaboration 	
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	<ul style="list-style-type: none"> - Manage knowledge they are producing (e.g., saving documents on UCL Evaluation Exchange Microsoft Teams site or in other knowledge management systems (e.g. organisation's document management systems)) - Access dedicated support, advice, signposting, facilitation and brokerage from delivery team. - Apply for funding. Teams can apply for up to £500 seed grant to cover activity costs and organisations can apply for up to £300 accessibility grant. <p>Celebration</p> <p>Participation in final celebration event</p> <p>Each student/researcher team produces one blog about the evaluation challenge and the knowledge exchange experience.</p>			<ul style="list-style-type: none"> - Awareness of knowledge, resources and skills between local voluntary and community sector and individuals across university <p>Ownership</p> <ul style="list-style-type: none"> -Building trust and networks between those involved -Co-learning between orgs and students - Local ownership of solutions developed and in turn services and outputs <p>Participation</p> <ul style="list-style-type: none"> -Opportunity for new roles and responsibility of both students and staff in orgs -Practice of active citizenship and social action - Encourages others to be involved – collective action <p>Inspiration</p> <ul style="list-style-type: none"> -Exposure to different ideas, knowledges, disciplines and opportunities for all -Reflection on own ideas -Reflection on personal development and next steps <p>Inclusion</p> <ul style="list-style-type: none"> -Extended the reach and diversity of those involved in KE -Reduced barriers to collaboration/ participation - Enabled a diversity of voices to be included in knowledge exchange and evaluation practice 	
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We discuss each element of the Logic Model (the columns in Fig 1) below.

Contexts

The Evaluation Exchange is an extra-curricular knowledge exchange programme matching teams of postgraduate students and researchers with voluntary and community sector organisations in the London Boroughs of Newham and Camden. Together each team of students and researchers works collaboratively with an organisation to tackle an evaluation challenge identified by the organisation. Postgraduate students who complete the six-month programme are entitled to six points from UCL's Doctoral Skills Development Programme.

The programme is managed by a delivery team of three staff from UCL and staff from the local infrastructure organisations Compost London and VAC (see Table 1). Compost London and VAC provide vital local knowledge of the voluntary and community sectors and their needs in Newham and Camden respectively.

Delivery of the programme is also supported by staff across UCL who help raise awareness of the programme to potential students and researchers. Additionally, specialists in evaluation and participatory approaches within UCL and external to UCL contribute their expertise to the programme through training workshops. Drawing upon recognised approaches for building capacity in evaluation, the Evaluation Exchange provides structured support to students, researchers and organisations via training and advice. The programme is informed by delivery team members' expertise in evaluation within the local voluntary sector and its experience in delivering capacity building and training in support of this.

The development of the Evaluation Exchange through the OfS/RE ISIKLE funding in 2021/22 built on learning from the pilot programme in 2017. The pilot identified the value of key features of such a knowledge exchange programme including the support structure provided by the delivery team and selecting teams of students/researchers from different disciplines. Discussions within the ISIKLE team in preparation of the bid, and at the onset of the ISIKLE project, helped to clarify the aims and objectives of Evaluation Exchange and to reflect on the means by which these might be realized (The Logic Model).

The ISIKLE funding ensured each of the student, researcher and organisation teams had access to up-to £500 seed funding to cover activities associated with tackling their evaluation challenge. There was also a £300 accessibility fund available to each organisation to help break down any potential barriers to their engagement in the programme (e.g. to cover carer costs, travel costs or staff-related costs relevant to participating in the programme). In terms of time commitment, it was estimated that organisations would need to commit up to 1 day / month to the collaboration; and students and researchers up to 2 days a month.

Planning for the ISIKLE-funded Evaluation Exchange programme began in 2020 and final activities were completed in the Summer of 2022. The execution of the programme took place during the COVID-19 pandemic. The majority of activities and collaboration took place online.

This was a new way of delivering the programme compared to the pilot which had been implemented through face-to-face training and collaboration.

Evaluation practice within the voluntary and community sector needs to address the specific needs, demands and complex issues organisations face. There is an increasing emphasis on participatory, collaborative and transformative processes involved in evaluation and knowledge production. In response, different models of evaluation have gained ground, notably evaluation capacity building (ECB).

Preskill and Boyle (2008)⁷ state that ECB:

“... involves the design and implementation of teaching and learning strategies, to help individuals, groups, and organisations learn about what constitutes effective, useful and professional evaluation practice. The ultimate goal of ECB is sustainable evaluation practice – where members continuously ask questions that matter, collect, analyse and interpret data, and use evaluation findings for decision-making and action.’

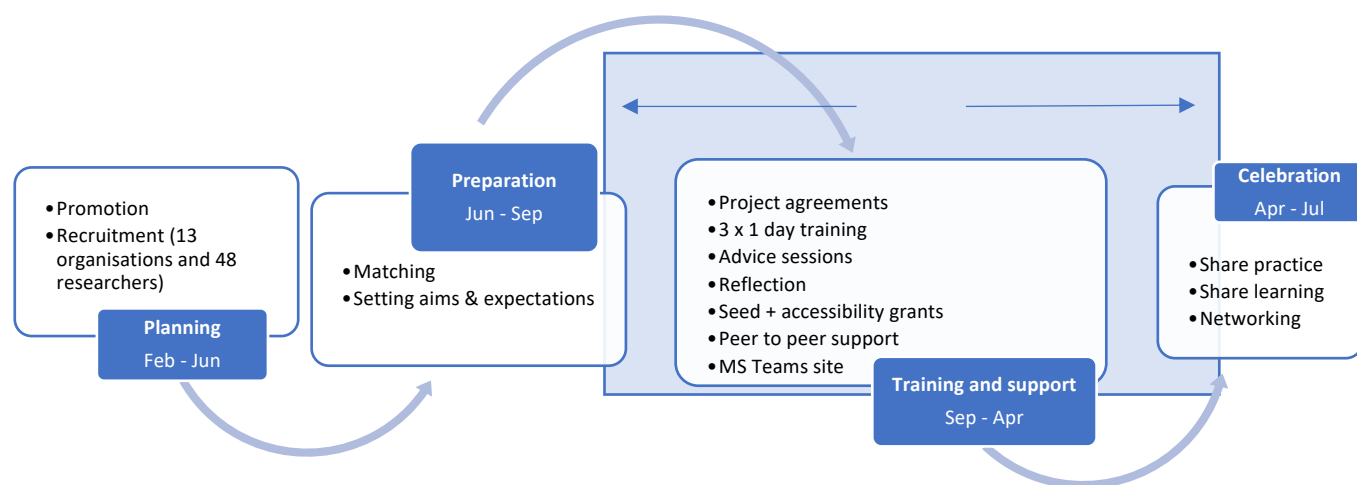
ECB is a key concept underlying the design of the Evaluation Exchange. The programme embraces the concept that the knowledge exchange *process* itself should build knowledge, skills and attitudes within organisations and therefore embed evaluative systems and practices to ensure that a culture of evaluation is sustained. This is evident in the longer-term nature of the programme (i.e. six months) allowing time to test potential solutions in practice, as opposed to a one-off teaching session. It is also embodied in the structured training and support over the six months.

Activities: Management of the Evaluation Exchange and key stages

The Evaluation Exchange delivery team oversaw the execution of key programme activities. It acted as a programme manager, facilitator, broker and trainer. Planning from the delivery team developed a programme structure identifying core activities to be completed at key points (e.g. recruitment, matching, training, and a celebration workshop). The structure also allowed for flexibility to respond to learning as the programme progressed (e.g. in response to ideas and identified needs from students or organisations). Feedback from the original pilot described the structure of the programme and the support from the delivery team as a ‘scaffolding’. The structured series of activities support individuals to gain a stronger understanding of evaluation and, ultimately, greater independence in the learning process, while also allowing each team’s learning to be shaped by their own experience.

7 A Multidisciplinary Model of Evaluation Capacity Building, American Journal of Evaluation, 29 (4), 443-459

Figure 1. Summary of key stages of the Evaluation Exchange and scheduling over 2021/22



Through the ISIKLE programme, Evaluation Exchange activities related to promotion and recruitment began in early 2021. All recruitment, matching and formation of teams was completed in the Summer of 2021. Students, researchers and organisations started the programme in the Autumn of 2021 and completed their collaboration in March / April 2022. Sharing of learning continued throughout the programme, with the completion of a film about the value of the Evaluation Exchange completed in the Summer of 2022.

A Microsoft (MS) Teams site was established and maintained for all teams to have access to relevant documents, communicate and save materials relevant to their collaboration.

Planning. To inform our approach to running and promoting the Evaluation Exchange, one of the delivery team’s first activities was to pull together a context report. The report drew on existing data and evidence about the voluntary sector, and current needs of PhD researchers within the university. This was a useful exercise to understand the challenges of these two sectors during the pandemic and individuals’ potential motivations to participate.

The delivery team then focused on promotion and the recruitment of students/researchers and organisations to the Evaluation Exchange. To raise awareness of the Evaluation Exchange we ran ‘taster sessions’ for potential organisations and students/researchers. We also shared blogs summarising key learning points from the sessions and discussions. Through the sessions we built a network of UCL contacts (e.g. UCL Careers, UCL Community Engaged Learning Service, UCL Grand Challenges and UCL Organisational Development (OD)); and made key contacts in the voluntary and community sector in Camden and Newham. Due to the pandemic, all events were held online.

Our first taster session, ‘Making time for evaluation and learning: top tips when resources are tight’ in March 2021 was attended by 49 people from community organisations. The session

was designed and delivered by the delivery team and featured guest speaker Elizabeth Parker, an evaluation and learning specialist, from NPC (New Philanthropy Capital). The session created a space for organisations to share experience of evaluation, and work together to generate top tips. The top tips were written up and shared via our website⁸.

Our second taster session focused on the benefit to students of collaborating with voluntary and community organisations. We had guest speakers who had participated as students, researchers and organisations in the pilot. They reflected upon their journeys since their participation. The event was attended by 13 people. In association with the event, the student and researcher guest speakers wrote a blog discussing the lasting impact the pilot programme had on them⁹. Additionally, we ran two lunch-time drop-in information sessions (online) for students and researchers interested in applying. The sessions gave an overview of the programme, included excerpts of videos from the taster session and time for questions about the programme and application process.

On 29th April we ran a final taster session with voluntary and community organisations around the challenges and barriers to evaluation practice, which also scoped out if the Evaluation Exchange could be a 'right fit' for them. The taster session was attended by 24 participants. Compost London and an organisation from Newham that attended the session, published a blog sharing their experience of the event and their reflections¹⁰.

In addition to the taster sessions, we also met with organisations interested in taking part in the programme through one-to-one advice surgeries, to discuss the potential evaluation challenge that could form the focus of the knowledge exchange. We conducted 7 surgeries.

Preparation. In preparation for the execution of the programme, the Evaluation Exchange delivery team finalised processes for the selection of participants to take part in the programme. This involved the development of selection criteria to provide clarity on eligibility for the programme, and matching criteria to match students/researchers with organisations. The delivery team spent a day together online matching organisations to small teams of students/researchers. The matching related to skills, expertise and interests. However, we were keen to ensure that the teams were made up of researchers/students from different disciplines. Matching teams of people from different disciplines built on the positive feedback from both organisations and students in the pilot about the value of people viewing a problem from different expertise and perspectives. Each of the 13 organisations were matched with approximately 3-4 students/researchers.

A key learning point from the pilot was that suitability of an organisation's involvement in the Evaluation Exchange is not just about having an appropriate task, but the organisation also

⁸ <https://www.ucl.ac.uk/bartlett/environmental-design/news/2021/mar/making-time-evaluation-and-learning-top-tips-when-resources-are-tight> (accessed 08-Sep-22)

⁹ <https://www.ucl.ac.uk/bartlett/environmental-design/news/2021/apr/long-lasting-impact-community-engaged-research> (accessed 08-Sep-22)

¹⁰ <https://www.ucl.ac.uk/bartlett/environmental-design/news/2021/jun/evaluation-exchange-taster-sessions-voluntary-and-community-sector-organisations> (accessed 08-Sep-22)

needs the capacity to take part, including a staff member or volunteer who has the time and interest to commit to the collaboration. The organisational context is important, including their history of evaluation, their readiness to participate and their ownership of their evaluation processes. To help organisations prepare for participation, we met with each selected organisation to understand their needs, and to help shape what the evaluation challenge was that the teams would work on (fitting with the evaluation capacity building model).

We met with each selected student individually (online) to discuss the programme and understand their motivations for taking part. This stage was key to building connections with them, and especially important within the context of the COVID-19 pandemic and not being able to meet with the students/researchers face-to-face.

Training and support. One compulsory element of the Evaluation Exchange is attendance at three full days of training over the course of the six-month programme. The training sessions were designed over the course of the programme by the delivery team. We were conscious of the limitations of running the training online, so opted for a blended approach providing some pre-prepared materials in advance. The pre-prepared materials included sign-posting to evaluation resources and videos prepared by delivery team members on background information to UCL and the voluntary sector. This allowed more time for interactive activities during the training session. Content was guided by what we felt was important to cover based on our experience of the pilot and also informed by participants' responses to pre- and post-training questionnaires. Training was co-delivered by the delivery team and invited speakers on particular topics. The training workshops for the Camden and Newham programmes were delivered separately. The training workshops for Newham teams took place approximately one month before the workshops for the Camden teams. The staggered approach allowed us to evaluate how the sessions for the Newham programme went and adapt sessions for the Camden programme in response to feedback.

The objectives of the training sessions were to:

- Build connections and form working partnerships and networks between students, researchers, voluntary and community sector organisations and the Evaluation Exchange delivery team (UCL, Compost London and Voluntary Action Camden)
- Develop understanding and awareness of relevant tools and resources for evaluation and learning
- Increase confidence to apply skills, experience and knowledge.

An outline of the training sessions, including the topics covered is available¹¹.

In addition to the training, we offered drop-in surgeries and provided one-to-one support and ad-hoc advice when teams and individuals needed it. In response to an expressed need from

11 https://www.ucl.ac.uk/bartlett/environmental-design/sites/bartlett_environmental_design/files/overview_of_training_-_evaluation_exchange_2021_22.pdf

organisations, a one-off optional training on film-making and sharing an organisation's story was also arranged through an external provider.

Compost London and VAC kept in touch with the organisations in their local boroughs. We also visited some organisations to learn find out more about their collaboration's progress and trouble shoot any issues that might have arisen.

Collaboration between student, researcher and organisation team. At the start of the collaboration, each team completed a Project Agreement to establish ways of working and agree the focus of the evaluation challenge. Typical activities undertaken through the collaboration between students, researchers and organisations to tackle an organisation's evaluation challenge included:

- Students and researchers conducting research on existing relevant evaluation practice and proposing potential solutions to the organisation. Research was guided by their own existing knowledge of resources as well as sign-posting from training or advice from the delivery team.
- Together the organisation, students and researchers developed ideas through their own workshops with staff, volunteers or people accessing the organisation's services and tested ideas through pilot application and review.
- Over the six months the student, researcher and organisation team met when needed (online or face-to-face), learnt about each other through site visits and communicated regularly (e.g. via WhatsApp, email or MS Teams) to discuss ideas and solutions.
- Where appropriate, student and researcher teams produced final reports summarising activities and main findings and/or to handover piloted tools (e.g. draft or final theories of change, surveys, or creative evaluation tools (e.g. interactive maps)) and any data collected (e.g. from surveys or films made).
- Managing knowledge they were producing (i.e. saving documents on UCL Evaluation Exchange Microsoft Teams site or in other knowledge management systems (e.g. organisation's document management systems))
- Accessing dedicated support, advice, sign-posting, facilitation and brokerage from delivery team.
- Applying for funding to support activities and involvement: Up to £500 seed grant to cover activity costs and up to £300 accessibility grant per organisation.

The following two tables list each organisation that participated in the programme including a brief description of their work. The tables also summarise the focus of the evaluation challenge tackled through the student, researcher and organisation collaboration.

Table 2. Description of evaluation challenges of each participating organisation in the London Borough of Camden

Organisation	Nature of the organisation's work	Focus of evaluation challenge tackled through the collaboration
Calthorpe Community Garden	Inner-city community garden	Developing a way to determine how varied elements of the garden make a difference to people using the garden. Activities included developing and testing online questionnaires and producing a video of 'why people love Calthorpe'.
Central YMCA	National charity with roles in education, health and wellbeing	Development of an organisational Theory of Change.
Kentish Town City Farm	Inner-city farm	Developing interactive signs for visitors including children to feed back in an easy and fun way on their experience of visiting the farm.
Lifeafterhummus Community Benefit Society	Food provision and referrals for advice and support from local services (e.g. debt advice, care navigation, and employability)	Exploring Social Return on Investment as an evaluation methodology including, collection and analysis of data, and development of case studies as examples of the organisation's work.
Street Storage	Accessible and free storage for people experiencing homelessness	Accessible ways to capture feedback from people who are particularly vulnerable and ways to collect statistical data using Salesforce and report the data.
Wac Arts	Arts training for young people and people with learning disabilities	Easy-to-use evaluation approaches to use with young people and people with learning disabilities in-line with the organisation's existing Theory of Change. Including production of a guidebook supporting staff and volunteers in their use of the tools.
Women + Health	Complementary and alternative medicine therapies and counselling to support to survivors of domestic abuse and sexual violence.	Development of an organisational Theory of Change. Activities included mapping the organisation's services, running a workshop with staff and proposing recommended next steps for finalizing the Theory of Change.

Table 3. Description of evaluation challenges of each participating organisation in the London Borough of Newham

Organisation	Nature of the organisation's work	Focus of evaluation challenge tackled through the collaboration
Deafroots	Promotes deaf awareness and provides employment preparedness training and support to people who are deaf and hard of hearing	Review the motivation of people accessing the organisation's service to better align the organisational objectives and activities with its clients' expectations and motivation. The team designed and ran feedback sessions with users of Deafroots' services to understand their motivation and the value of the organisation to the community they serve.
Forest Gate Community Garden	Inner-city community garden	A greater understanding of who is underrepresented from the community in the visitors to the garden and an identification of potential strategies for increasing the diversity of users.
Money A+E	Money advice and education	A revised organisational Theory of Change, and the identification of a new data collection system for the organisation's educational data.
Institute of Imagination	Children and young people's creativity	Contribute to organisation's Theory of Change. Activities included conducting a 'situation analysis' running a Theory of Change development workshop and proposed a series of further exercises to complete the development of the Theory of Change.
Skills Enterprise	Supports vulnerable local residents to develop skills and secure suitable employment.	Develop an outcome measurement tool in-line with the organisation's existing Theory of Change.
Subco Trust	Culturally and linguistically appropriate services for vulnerable Asian elders and carers.	Evaluation tools for a mental well-being project appropriate for people whose first language is not English and with results that are easily translatable.

More information is available in the [posters](#)¹² each team developed and the blogs each team wrote, all available via our website¹³.

Celebration and sharing learning. Activities identified in a communications plan helped meet our aim to share our learning from our increased understanding of good practice

12 https://www.ucl.ac.uk/bartlett/environmental-design/sites/bartlett_environmental_design/files/evaluationexchange-posters-all_teams-web-final.pdf

13 <https://www.ucl.ac.uk/bartlett/environmental-design/research-projects/2022/may/evaluation-exchange>

in knowledge exchange and collaboration. For example, we regularly published blogs from the teams and delivery team members. Blogs and programme progress were documented on the [ISIKLE](#) and [Evaluation Exchange](#) websites and shared via UCL newsletters and via our Twitter account (@EvaluationExch). We made presentations at conferences (national and international). Teams also informed poster content for the celebration event and website content detailing their work and the legacy of their experience. A final celebration event brought together all those involved in the programme in-person for the first time. The event aimed to showcase the teams' work, share experiences and celebrate achievements.

Mechanisms

For the purpose of this report, 'mechanisms' are understood as key concepts underlying the Evaluation Exchange's knowledge exchange approach and intend to help explain how the programme's activities contribute to the students', researchers' and organisations' learning.

Key concepts include:

- **Experiential and collaborative learning** – Knowledge is created through the transformative experience of working in a small group to tackle a problem and create a solution
- **Transdisciplinary** – Innovative solutions are found by bringing together different, varied forms of knowledge
- **Relational volunteering** – Interpersonal relationships between those involved are recognised as crucial in capacity building and personal development.

Experiential and collaborative working. By working together for six months the students, researchers and the organisation have time to explore and test potential solutions to an identified problem. For students and researchers, by working in a real-world setting with others who have a different perspective, this can challenge existing assumptions and increase awareness that there are different ways to approach a problem. By learning about evaluation approaches and testing them in practice, this builds experience of real-world problem solving and the process of formulating solutions that are appropriate to the context.

Transdisciplinarity. Stokols et al. (2013)¹⁴ define transdisciplinarity as:

‘scholars and practitioners from both academic disciplines and non-academic fields working jointly to develop and use novel conceptual and methodological approaches that synthesize and extend discipline-specific perspectives, theories, methods, and

¹⁴ Stokols D, Hall KL, Vogel AL (2013) ‘Transdisciplinary public health: definitions, core characteristics, and strategies for success’. *Transdisciplinary public health: research, methods, and practice*. San Francisco: Jossey-Bass, 3–30

translational strategies to yield innovative solutions to particular scientific and societal problems.’

The Evaluation Exchange embraces transdisciplinarity as it brings together students and researchers from a range of disciplines, but also connects them with the knowledge from the people in the organisations. By bringing together different knowledge, participants in the Evaluation Exchange gain experience of working with people who look at problems and solutions in different ways. Together they experience the benefits of different viewpoints and approaches and the pleasure of finding a solution to a problem that could make a significant difference to an organisation. They gain experience of finding a solution that is new and appropriate to the organisation’s unique context – a solution that is potentially greater than the sum of its contributing parts.

Relational volunteering. The Evaluation Exchange recognises the students’ and researchers’ roles as a type of volunteering. Research exploring the role of volunteering in capacity development (Burns et al, 2015¹⁵), highlights how a volunteer and those they work with, develop a shared understanding of each other and create strong personal bonds that lead to effective collaboration, social innovation and long-lasting change. Through the Evaluation Exchange relationships between individuals in the student/researcher and organisation team build trust and contribute to the generation of soft outcomes such as increased confidence. Based on our understanding of the contribution of relational volunteering in capacity building, learning and change is possible through the Evaluation Exchange because individuals build a mutual appreciation of each other’s knowledge, networks and skills. Additionally, the relationship between team members, their different knowledge and connections allows individuals to act as brokers opening networks of new knowledge and opportunities to other team members. Burns et al describe how relational volunteering leads to people being inspired and creates innovative practice, as well as greater local ownership, participation and can break down potential barriers to inclusion.

Students and researchers are motivated by a desire for their work with their organisation to be of value. Burns et al highlight that volunteer interventions that are of value are based in long-term community relationships and programmes that ensure relationship building is integral to their design and delivery. The delivery team’s partnership with local infrastructure organisations and the delivery team’s approach of working closely with partner organisations responds to this recommendation.

For students, the key concepts above help to:

- Foster an understanding of local contexts external to university
- Challenge their existing perspectives and develop their skills to find solutions to problems in a real-world context
- Generate confidence in their ability to apply skills in real-world contexts

¹⁵<https://www.participatorymethods.org/resource/role-volunteering-sustainable-development>

- Build confidence and capacity to collaborate with others from within the university and outside of the university

Through the programme, our aim has been to help students to enjoy, engage positively and gain a valuable experience from their collaboration with a voluntary or community sector organisation. Students should feel supported before and during the programme. The intention is that they feel they have value and that their skills and ideas can make a difference, but also that their ideas could be challenged by others and new perspectives found to look at problems. They will likely feel the frustrations and excitement of working in collaboration in a ‘real-world’ setting, particularly in the voluntary and community sector in a London Borough. We envisage that they would complete the programme with a sense of attainability around evaluation and have experienced a tangible outcome from the programme.

Outputs and tangible products

The following section lists key outputs and tangible products produced at the key stages of the programme.

Promotion and recruitment

Output	Number
Information sessions for organisations (participants)	3 (73)
Information sessions for organisations (sign-ups via Eventbrite)	3 (95)
1:1 advice sessions for organisations	7
Applications received from organisations	18
Applications received from students and researchers	69

Tangible products

Application and support process protocol

Application forms for students/researchers and application forms for organisations. All application forms were accessible via an online form or downloadable as a PDF or Word document.

Selection criteria and decision-making protocol

Matching

Output	Number
Organisations accepted / teams formed	13

Students and researchers accepted	48 ¹⁶
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Tangible products
Outline of matching process

Training and support

Output	Number
Training sessions	3 (Newham) 3 (Camden)

Tangible products
Knowledge products from delivery team (e.g. preparation information for all participants, training materials (e.g. Powerpoint presentations, collaborative Miro boards, recordings of sessions (all available via UCL Media) and summaries of resources shared post-training
Support sessions for individuals and teams
Site visits from delivery team to organisations

Student, researcher and organisation collaboration

Output	Number
Project agreements	13
Funding accesses	10 x seed grants 4 x accessibility grants
Blogs from student/researcher team	13 ¹⁷
Posters from student/researcher team about their work and learning	13 ¹⁸

Tangible products
Collaborative activities between students, researchers and organisation

16 69 postgraduate students and researchers applied. 61 were eligible for the programme and offered a place. 6 didn't want to proceed with their application once they were offered a place. 7 withdrew once accepting their place (citing that their circumstances had changed and could no-longer commit to the programme).

17 Available via: www.ucl.ac.uk/evaluationexchange

18 Available via: https://www.ucl.ac.uk/bartlett/environmental-design/sites/bartlett_environmental_design/files/evaluationexchange-posters-all_teams-web-final.pdf

Knowledge products from each participating team

Formal and informal networks established

Celebration and sharing learning

Output	Number
Publications and reports from delivery team	Blogs x 8 ¹⁹ Animation x 1 ²⁰ Film x 1 ²¹ Presentations at conferences / workshops x 6 SQW reports x 5 Final ISIKLE narrative x 1
Attendees at celebration event	70

Expected outcomes for students and partners

The anticipated outcomes from the Evaluation Exchange would be expected at an individual level (i.e. student / researcher and organisation staff) and at an organisational level (both within the university and the partner and participating organisations).

Increased knowledge and understanding. By participating in the programme, it is expected that students, partner organisations and the university would gain an increased knowledge and understanding of the local voluntary and community sector. Students, researchers and organisations will have a greater understanding of evaluation practice and the resources and networks available to support evaluation practitioners. The experience will have given them insight into the benefits of, and ways of working with, people from different disciplines and sectors to develop solutions. It will have given them insight into the challenges facing people they are collaborating with and the opportunities they have in their work. Through the collaboration new networks are formed within and outside the university benefiting research

19 Available via: www.ucl.ac.uk/evaluationexchange

20 Available via: <https://youtu.be/3nhBzBpeXXA>

21 Available via: <https://www.youtube.com/watch?v=hkfCHqPEQms&feature=youtu.be>

and employment for everyone involved. For some it may reveal new opportunities for future careers.

Increased capacity for evaluation. Over the six-month programme, we would expect students and researchers to have gained experience of defining an evaluation challenge as well as researching, analysing and assessing the suitability of potential evaluation solutions. Together with the organisation, students and researchers will gain experience of piloting potential solutions to develop appropriate evaluation practice relevant to the organisational context. Over their six-month collaboration they may test things out that work, but similarly, they may not work and need to be adapted so that they could be used effectively in the context of a small voluntary or community organisation with relatively little capacity. At the end of the programme, we would expect the organisation to have a solution, or be closer to the solution to their identified evaluation challenge.

Increased transferable skills. We would expect participants in the programme to have gained skills valuable to their future study, research or work. For example, the evaluation skills as well as skills gained from identifying problems and determining appropriate solutions. They may have gained experience of managing a small project, monitoring progress and potentially revising objectives in-line with a changing context. We would also expect the skills gained in communication and team work to be transferrable in the future roles of those who participate.

Changes in attitude. Through the programme we would hope to find an improved understanding of the local community both from the experience of collaboration, but also potentially from the findings from any evaluation activities. Additionally, we would hope some students and researchers may have an increased positivity about their future career options. We would hope the organisation would feel positive about their future evaluation strategy. Overall, there may be a greater sense of well-being amongst those who participate. We would hope outcomes for students and researchers might be similar to findings from the pilot which included the formation of new friendships and professional working relationships (e.g. applying for grants together specifically intended for cross-disciplinary collaborations).

Relevant to Burns et al's findings re relational volunteering in capacity building, outcomes could be grouped around key themes including Innovation (e.g. new evaluation approaches appropriate to the unique context of the organisation), Ownership (e.g. improved local ownership by the organisation of their own evaluation methods), Participation (e.g. new roles and responsibilities of those involved in a team), Inspiration (e.g. through reflection on individuals' exposure to different ideas and approaches), and Inclusion (e.g. by having developed evaluation approaches relevant to people accessing the organisation's services who may otherwise have been excluded otherwise).

Scaling. The notion of 'scaling' for the Evaluation Exchange includes ways to embed the programme, share learning and replicate models in other places. The OfS/RE funding enabled us to take a pilot programme and repeat its delivery (at a similar scale in terms of numbers of students/researchers and organisations) in Newham, but also to double the size of the programme by applying it in a new different geographical context in Camden at the same time.

The Evaluation Exchange delivery team is now exploring the best route to secure longer-term funding to respond to requests from local authorities and others to continue the programme.

Key lessons during ISIKLE

We learnt that it is possible to deliver knowledge exchange programmes founded in relational approaches in line with legislation restricting face-to-face interaction during the COVID-19 pandemic. Creative approaches to building relationships at a distance such as scheduling one-to-one conversations either in-person or online helped enable commitment and motivation. Overall though, based on the experience of the pilot, we feel that the programme would remain stronger through face-to-face training and interaction between different stakeholders.

The implementation of the Evaluation Exchange 2021/22 has confirmed the importance of local infrastructure organisations in recruiting and supporting participating organisations and their role in designing appropriate programme activities. By working for the first time with an infrastructure organisation in a new location, we learnt the importance of their commitment and availability to support the project and the need for on-going communication to establish agreed objectives and project activities and trouble shoot when issues arose.

Delivery of the ‘scaled-up’ version of the Evaluation Exchange (i.e. working with an additional seven organisations in a new London Borough and doubling the number of participating students and researchers to 48) confirmed that execution of programmes requires associated investment in terms of staff time from universities and the partner organisations involved if they are to have a real benefit to students, researchers and organisations. Implementation of iterations of the Evaluation Exchange should not be viewed in isolation. The time it takes to build trust and relationships between universities and local partners is important as well as the time needed to build trust across the university to encourage student engagement and on-going investment.

University systems are not always set up to work with small voluntary sector organisations. For example, procurement processes require administrative procedures that are time consuming for small organisations with limited finances and staff capacity. However, working creatively with people within the university who know the systems well can help identify issues in advance and ensure processes are more appropriate.

Participating organisations worked with people facing multiple and complex challenges such as lack of skills, homelessness, poor housing, social exclusion, deprivation, unemployment, or poor health. The focus of their work varies including aspects of health and well-being, financial security, the environment, gender and the arts. All 13 organisations that participated in the programme did so on a voluntary basis and remained involved throughout the six-month programme, suggesting that they found the programme of value.

Student and researcher engagement in the programme was harder to track when working at a distance from them and not having the opportunity to meet face-to-face at training sessions. Sending personalised messages aimed to encourage students to get in touch if they were struggling to commit to the programme or having any difficulties.

We have been conscious of the short-term nature of the OfS/RE funding. To respond to demand from our community partners to run the Evaluation Exchange beyond 2022, we have had to invest time in raising awareness of the Evaluation Exchange and its value and securing future funding. This has involved making sure successes are celebrated and promoted (e.g. through blogs, our animation, film and celebration event) and also investing time in building relationships across UCL with the intention of mobilising long-term commitment to the programme from within the university. Relationship building and applying for funding for the long-term continuity of knowledge exchange activities are not always included in original job descriptions when implementing knowledge exchange programmes, but do take a significant amount of staff time.



Narrative Case Study: Strand 2

Background and Aims of the Community Research Initiative for Students

The Community Research Initiative for Students (CRIS) is a knowledge exchange ecosystem designed to enable and empower postgraduate taught students to approach their dissertation research differently. It is optional and co-curricular. The aim is to provide a student service to improve the postgraduate taught dissertation experience.

This is a complex intervention, sharing aspects of the ‘research partnership’, ‘service learning’, and possibly ‘community service and volunteering’ intervention types identified in the typology of student KE activities in the Systematic Review. The aspects CRIS shares with the *research partnership* model are the emphasis that this model places on the research process and co-production of knowledge. However, because CRIS is focused on student research, it also shares commonality with the *service-learning* model; here, CRIS could be considered a method of teaching and learning that integrates community service activities into academic curricula – in the case of CRIS, the dissertation. Enhanced student learning is the major purpose, which is certainly the case with CRIS. Finally, there are aspects of the *community service and volunteering* interventions that CRIS identifies with; specifically, the desire to create research products that addresses a community need. Moreover, CRIS is situated within a volunteering service. However, it cannot be said that CRIS puts community service before student learning experience.

The starting point for CRIS was the finding from the Postgraduate Taught Experience Survey²²²³ that student experience around the dissertation was highly variable across the university and needed to be improved. Overall student satisfaction, during 2016-17, was at 81% while within that score, satisfaction with the dissertation experience was slightly lower at 77% satisfaction. The range in dissertation satisfaction across the 11 Faculties and the Institute for Education was from 67 to 81%. Put another way, in some areas of UCL, one third of students were dissatisfied with their dissertation experience during 2016-17.

There are four questions comprising the dissertation scale²⁴ within the Postgraduate Taught Experience Survey and the lowest satisfaction level (68%) was in response to the question on developing the dissertation idea and planning. That is, almost 40% of students were dissatisfied with the support they received during the planning and developing stages of their dissertation.

22 The dissertation is the only curricular element surveyed by the Postgraduate-taught Student Survey.

23 UCL is currently piloting the new Office for Students’ national Postgraduate Taught Survey (PGS), managed by Ipsos MORI, open from 19 April to 31 May 2022. UCL is not participating in the 2022 Postgraduate-taught Student Experience Survey. There are only 2 questions about the dissertation within the PGS.

24 I understand the required standards for the dissertation / major project; I am happy with the support I received for planning my dissertation / major project; my supervisor has the skills and subject knowledge to adequately support my dissertation / major project; and my supervisor provides helpful feedback on my progress.

The Community Research Initiative for Students represented one example of student KE activity within the ISKLE project. The aim of ISKLE was to increase the volume and inclusiveness of student participation in knowledge exchange activities, and to enhance their effectiveness. During the two years of ISKLE (2020-21 and 2021-22), the CRIS manager, supported by a part-time student administrative staff member and the Head of Volunteering, scaled up existing activities and piloted new activities as well as new modes of delivery to enable more inclusive participation of diverse groups of students. Pedagogic innovations were also introduced to widen the range of skills developed by students and improve learning outcomes. Our aim was to ensure more students than ever could enjoy an enhanced dissertation experience through knowledge exchange and partnership working. It is hoped that this means dissertations are more impactful and lead to social change and students go on with an appreciation for participatory methods.



Table 4. Logic model for the Community Research Initiative

Context	Activities*	Mechanisms	Outputs	Outcomes	Impact
Students accepted from any UCL postgraduate-taught programme	1:1 Coaching	Feel motivated	Co-designed dissertation driven by knowledge exchange	Knowledge and understanding gain of: <ul style="list-style-type: none"> • Participatory methods • Subject matter • UK Voluntary & Community Sector • Ethical issues 	Increased likelihood of student research making social change happen
Co-curricular (dissertation project)	1:1 Advice	Feel confident to try something new	Research Partnership Agreement		Improved student experience
Supportive advice external to programme of study	3 skills development sessions	Feel excited to work in a different way	Community Product	Increased competence in participatory methods	Improved career prospects
Advocacy of knowledge exchange	2 Work-in-Progress sessions	Feel they are gaining an advantage	Showcase presentation	Increased transferable skills	Students will continue to value the principles of participatory methods in future research and evaluation
Spaces for students and community organisations to identify potential matches, to meet, to share ideas	Networking (staff-community and student-community)	Development of research ideas with others with new perspectives	Student reflective story	Greater sense of student wellbeing	Increased reputation of UCL students and research at UCL within the local Voluntary & Community Sector
Experienced researcher-turned-community engagement practitioner	Knowledge Exchange conversations	Feel they can make a difference in the world with their dissertation		Increased sense of civic responsibility of research	
Master's student part-time staff admin	Partnership-working	Feel a sense of accountability		Respecting difference in knowledge systems and/or experts	
Volunteering Service	1 reflection & your future development session	Feel supported and cared about		Increased research self-efficacy	
Students' Union UCL					
Local SME Voluntary & Community Sector					

* Not all students will take part in all activities. These are the available activities and students build their own journey

Contexts

CRIS is funded centrally at UCL, through the Office of the Vice-Provost Education & Student Experience. It is delivered by the UCL Volunteering Service in the Students' Union UCL. It was an in-person student service until the UK national lockdown in March 2020 and subsequent lockdown variations, when CRIS was delivered entirely online with a mixture of synchronous and asynchronous formats. We used MS Teams, Zoom, and REMO as well as digital education tools such as Padlet, Miro, and Jam Board. Since the start of the academic year 2021-22, CRIS has retained a hybrid delivery format, and this is anticipated to continue into 2022-23 and beyond.

It was staffed by a 0.5 FTE permanent post. The CRIS manager is a former researcher, with a decade of postdoctoral research experience as well as community engagement after participation in the Evaluation Exchange pilot (2017-18). The ISIKLE project allowed the manager post to be increased to 1.0 FTE and a part-time administrative post was added for the duration of the project.

The knowledge exchange that CRIS supports is between postgraduate taught students and the Voluntary & Community Sector and focuses on introducing a co-designed approach to the student dissertation. It is optional and co-curricular. Students must be enrolled on a UCL postgraduate taught course, on a part- or full-time basis. CRIS is accessible from any UCL course. The academic supervisor must agree to any student working in partnership with a community organisation and a Research Partnership Agreement must be signed-off by the Community Partner, Student, and Academic Supervisor.

Voluntary & Community Sector organisations must be non-profit, and we prioritise London's small-to-medium sized organisations (as defined by the National Community & Volunteering Organisation (NCVO) based on income), existing Partners with UCL's Volunteering Service, or a statutory body such as local authorities or non-fee-paying schools. Organisations do not need to be registered charities which enables us to connect with more grassroots community and citizen groups and organisations. They must agree to the UCL Volunteering Service's service standards.

At the start of ISIKLE, CRIS comprised one piloted skills training session, two events (a summer staff-community matching event and a student-community networking event in term 2), a template Research Partnership Agreement document, and the service was managed through email and MS Office programmes like Excel.

Activities

In terms of duration, CRIS effectively runs throughout any given academic year. For full-time students, it is a 12-month intervention; for part-time students, it is 24 months. However, no two students (or organisations) will have the same length of CRIS journey – CRIS begins when they first sign up which can happen at any time during UCL’s Terms 1 & 2 (October to April). Students can engage with any component(s) within the ecosystem at any time, in their own time. It is a user-led initiative.

During ISIKLE Year 1, two student skills development sessions were delivered during Term 1 and two were delivered in Term 2. A student-community networking event was delivered online (using REMO) as well as an online (using Gather Town) staff-community networking event. The brokerage and knowledge exchange service was available from the start of the academic year and managed via email by the CRIS manager, with introductory meetings carried out on MS Teams or Zoom (community organisation preference-led).

During ISIKLE Year 2, CRIS evolved further, including the development of an online system and workflow, and delivered (for more detail, see Table 4):

1. **1:1 coaching & advice sessions** (students & organisations: 100 available bookable online slots/week)
2. **Collaborative skills development workshops** (in-person & online formats, narrated slides available for asynchronous learning)
3. **Community Networking & Co-design:** Brokerage service; events; online opportunities finder (Community Noticeboard)
4. **Facilitated knowledge exchange** (face-to-face, in person and online introduction meeting formats, storytelling through reflective student stories)
5. **Supported partnership and collaborative practice** (advice, problem-solving, paperwork)

During 2021-22, CRIS was delivered as follows:

- **‘Sign up & skill up’ (Terms 1 & 2)**

First, students are invited to sign up to CRIS at any point between October and April via a Students’ Union UCL webform. This automatically adds students to a database with an associated workflow for monitoring and communications management by the CRIS manager and administrative assistant. An appointment booking link is provided at the point of sign up for students to make 1:1 bespoke coaching and advice appointments with the CRIS manager. The CRIS administrative assistant creates a mailing list in Mail Chimp and students receive all future CRIS communications as a result.

Second, CRIS activities during Term 1 focus on increasing student knowledge exchange skills - three skills development workshop sessions can be accessed by any signed-up student, each with two different delivery times and two modalities (in person or online). The workshops encourage peer-to-peer learning, practical teaching elements, and offers a key opportunity for

students to meet and network. Workshops focus on project management skills (stakeholder analysis and management, risk analysis and solutions, Gantt charts); communication skills (active listening & creative storytelling); and an introduction to participatory methods (concepts of power & power sharing, knowledge democracy, and ways to build an inclusive research practice). While skills session 1-3 are available to any signed-up student, a fourth skills workshop is delivered by the CRIS Manager during the summer for all collaborating students, turn your CRIS experience into presentation (or interview!) gold.

To offer an asynchronous opportunity for students to increase their skills for those unable to make the live sessions, a narrated slide deck is produced after each live session delivery, including digital outputs from workshops participants. These are uploaded onto the CRIS webpages and signed up students are notified. The 1:1 coaching & advice sessions are further promoted as a bespoke opportunity to follow up on anything from these recordings.

- **‘Knowledge exchange activities’ (Term 2)**

Moving into Term 2, the emphasis shifts to creating opportunities for and supporting knowledge exchange activities between students and community organisations. This happens in several ways: brokering introductory meetings between students and Community Partners; a networking event; and the Community Noticeboard resource. Students can use all three methods or simply the one that suits them, for example the Community Noticeboard.

Brokering introductory meetings between students and Community Partners. There is a brokering process, where students may submit a webform outlining the organisation(s) they would like to approach, the key contact details, and a non-academic summary of why they are interested in the work of this organisation or group. Using this information, the CRIS manager will make three attempts to connect with an organisation about the student. If an organisation has no previous connection with CRIS, initial contact focuses on an introduction to CRIS in the first instance. Each stage of the relationship building is documented using the associated workflow. In total, students can make up to six suggestions for brokering organisations or groups not known to the Volunteering Service already.

Networking event. A networking event is held early in term 2 with existing Partners with the Volunteering Service. Organisations can host a ‘stall’ and students browse the stalls. The tone of the event is to spark up new conversations and to have an open mind to yet undiscovered possibilities. Pre-Covid, this was an in-person event, during 2020-21 it was online, and during 2021-22 it returned to in-person.

Community Noticeboard resource. The Community Noticeboard is launched end of term 1/start of term 2, populated with posts from Community Partners, organisations, or groups outlining an idea for research that would further their work or contribute significantly in a way that they themselves identify. Ideas can be very initial or specific project outlines. Students can make an expression of interest through the Noticeboard system and community organisations are

regularly updated on these applications. They are then able to meet with all interested students or a select student.

CRIS provides written supportive materials for knowledge exchange meetings between students and community organisations as well as a continuation of the 1:1 coaching & advice appointments.

- **‘Building partnerships’ (Term 3)**

By Term 3, students begin submitting dissertation proposals to their course and get a supervisor assigned. The CRIS manager supports the process of building on the early conversations between students and community organisations by bringing the supervisor into the conversation. CRIS collaborations for a dissertation project cannot continue without explicit agreement from the UCL supervisor. The CRIS manager meets with supervisors or exchanges emails to explain the purpose of CRIS and role going forward. This is done so that the student is not left in the middle, wishing to do something but feeling unable to broach this with a senior researcher.

CRIS provides a template Research Partnership Agreement which functions as a Memorandum of Understanding, outlining the shared goals of the project, specific actions and miles tones, responsibilities, and roles. A timeline e.g. a Gantt chart, is also encouraged. The Agreement outlines the process of collaboration or the relationship as well as the agreed ‘community product’. The community product is the repackaging of knowledge arising from a project into a format more useful and useable to the Partner than a dissertation document. It is intended to be delivered post-September or dissertation submission and is determined by the Partner. Examples of products students can deliver include delivering a training session to people at the organisation, a written non-academic executive summary, contributions to a Trustee report.

Students who successfully complete a Research Partnership Agreement or are close to completion of one are brought together in person in June for a student-led Work in Progression (WiP) session. This is a knowledge exchange community- or peer-support opportunity between students, sharing experiences, concerns, triumphs, or problems. This event is delivered by the CRIS administrative assistant, generally a student studying a master’s level themselves.

- **‘Collaborative project delivery’ (summer)**

As with a standard dissertation project, project delivery runs from June to August, with submission generally expected early- to mid-September. The CRIS manager and administrative assistant regularly check in on students and partners to review progress, identify problems early, and help the relationship grow. Students continue to share experiences with each other during a second WiP session (delivered by the CRIS admin support) as well as the reflection skills session (delivered by the CRIS manager).

Mechanisms

Our aim throughout CRIS is to improve the postgraduate-taught student experience, specifically around the dissertation element. We want students to feel inspired to try something different, motivated to do something for somebody else, and excited about their research. It is important that it is student-led and not a prescribed set of activities because students have different levels of experience and knowledge to begin with and the master's year is an intense one – students must be able to 'drop in' when they feel they can, without an added pressure to their year. We want students to feel like someone cares about them – the student body is increasing at UCL and there is growing staff unrest related to working conditions because of this. Programme intakes can be large, and staff are busy. It is easy for a student to feel lost and anonymous – this is especially true for international students, who, in addition, are learning to live in the UK without any of the cultural capital or physical networks of home students. We want people to feel at home at UCL and in London and we want to connect people and be a friend. We want to enable students to do some good with their dissertation research – to think more broadly than academia and to feel a respect for other types of knowledges and ways of working.

Outputs

During ISIKLE, 185 CRIS students signing up consented to ISIKLE. This represents one third of CRIS students. Year 1 consent rate was considerably lower than the rate for Year 2. This is because ISIKLE consent processes were not ready at the start of 2020-21 Term 1 and therefore not automated or present at the time when the bulk of CRIS sign-ups happen through promotion during UCL Welcome activities. All students who had signed up before the ISIKLE consent process was in place were asked to retrospectively consider consenting to the project. In addition, Year 1 was also the first year where Term 1 was fully impacted by the Covid-19 pandemic. Although it is perhaps too early to say, we propose that a perceived need for more support and increased and earlier anxiety related dissertations, given the uncertainty of the academic year 2020-21, contributed to a higher-than-expected number of sign-ups.

Year 1

319 students signed up to CRIS overall. 114 (36%) actively engaged with CRIS activities: 32 stopped at the coaching & advice stage; no one stopped at the knowledge exchange stage; 14 got to collaborative dissertation stage; 7 students did an event only; and 61 did skills training only.

Year 2

236 students signed up to CRIS overall. 107 (45%) actively engaged. Of these engaged students: 43 stopped at coaching & advice stage; 9 at the knowledge exchange stage; 23 at the collaborative dissertation stage; 2 did an event only; 30 did skills training only.

Student outputs included a co-designed dissertation driven by knowledge exchange; a Research Partnership Agreement signed by the student, their Community Partner, and academic supervisor; a Community Product as defined by the partnership and driven by Community Partner need; Showcase presentation (platform or poster) and/or a student reflective story for the website.

Outcomes and impact

We wanted to develop in students an increased knowledge and understanding of participatory research methods, the student's subject matter, the UK Voluntary & Community Sector including challenges and strengths, and broader ethical issues of participatory research than national research ethics guidance.

Key competencies we wanted to develop in students were an increased competence in participatory methods and transferable skills. We expected students to develop their transferable skills in project management, communication, and participatory research as well as negotiation and influencing skills.

We wanted to instil in students an appreciation for research for social change and for their dissertation, or development of their dissertation ideas, to be a time of experimentation. We expected an increased feeling of the civic responsibility of research and a respect for difference in knowledge systems and/or experts.

It was assumed that students would feel a greater sense of wellbeing, feeling supported with an independent source of advice or pastoral care. It was also assumed that through increased skills development and knowledge, students would have increased research self-efficacy and enhanced student experience.

Longer term, we expected students to have improved their career prospects, for student research to bring about direct social change through being actioned or implemented by their Community Partner, and for students to continue to value the principles of participatory methods in future research. At a higher level than the student beneficiary, we expected an increased reputation of UCL students and research at UCL within the local Voluntary & Community Sector.

Innovations and Rationale

In summary, key innovations and changes made, and their anticipated effects, are in Table 4. These can be categorised as systems innovation, scaling activities, and pedagogic changes.

System innovation:

This included designing workflow systems around student registration and student brokering, an online appointment booking system synced to the CRIS manager's Outlook, utilising Mail Chimp, and enhanced webpages. Taken together, these are not scaling activities in and of

themselves. However, they were key enablers to our scaling activities and pedagogic innovation. Streamlining and automating certain parts of the service released the CRIS manager's time which could then be focused on creating and implementing the scaling and pedagogic changes.

Previously, students emailed the CRIS manager if they were interested, meetings were made via email, as well as suggestions for potential community partners. This was not scalable. The rationale for investing in the development of student registration and brokering workflows was that increased numbers would require careful information management as students moved through the stages of CRIS. A dashboard can be created to see at-a-glance where a student is in their CRIS journey. Including Calendly as a digital appointment booking system was done to reduce email communications and avoid errors in making meetings. Students do not feel confident to make Outlook calendar appointments.

Time was invested in building a Mail Chimp audience with communication campaigns made via this platform. The rationale for this was to stand out from standard emailing – feedback from students tell us the number of emails upon starting at UCL as a master's student is overwhelming. It is also possible to monitor what messages are making an impression with the audience, for example opening rates, time spent reading metrics. Finally, we wanted to promote CRIS events to our audience and manage a communication campaign around these, for example not filling up the inboxes of people who had previously responded.

Finally, an overhaul of the webpages was made to communicate the service as a set of options for students as well as carrying out an inclusivity and accessibility audit.

System innovations were designed and implemented during 2020-21, Year 1 of ISIKLE. Immediate and significant benefits were felt in email volume (Calendly booking appointment innovation) and systematic brokering processes (brokering workflow innovation). Finally, 1:1 coaching & advice sessions initially started as Q&A sessions. With the improved webpages and clearly messaging, these 1:1 appointment could now be utilised for something other than information giving. Thus, they transformed into 1:1 coaching & advice sessions for 2021-22. The improved webpages included an inclusivity audit of our information (language, pronouns, and imagery) as well as accessibility.

Scaling activities and innovation:

To scale the number of students taking part in CRIS, there must be a commensurate scaling of community partners, with projects, available to participate in knowledge exchange activities. Therefore, a key scaling innovation was to identify of a way for a greater number of community-driven projects to be created and disseminated to students independent of the CRIS manager. The rationale behind this was, at the end of the ISIKLE funding period, the CRIS manager post would return to 0.5 FTE and other ways were needed to meet anticipated increased student demand. Two related innovations were developed during 2020-21 and implemented in 2021-22, the Community Noticeboard and a research consultancy clinic:

- The Community Noticeboard. This is a digital innovation built by the Students' Union UCL Systems department. Following the model of the Volunteering Service "opportunities finder", the Noticeboard is a self-service online space for registered voluntary & community sector organisations to upload ideas for research co-design with students. The submission form allows ideas at different stages of maturity. The Noticeboard is live to students over the Winter Break and throughout term 2 and they can make an expression-of-interest on any of the ideas they like. This triggers a notification and knowledge exchange meeting.
- Free research consultancy clinic. An innovation was needed for organisations not at a stage of research-readiness to be able to post ideas. Therefore, we piloted in 2021-22 a free research consultancy clinic for community organisation to work with PhD students trained in research consultancy skills. The clinic focused on the brief setting stage of consultancy. The PhD student training was provided by CRIS in the morning and the clinic was their practical session in the afternoon. A 90-minute clinic significantly scales the numbers of project available to students.

Pedagogic innovation:

The pedagogic changes made were centred mainly on increasing tacit learning between students. We wanted to introduce more of a reflective element, to increase the learning opportunities for students. This was the rationale behind the student-led Work-in-Progress workshops, reflective Progress Logs, and Student Showcase event. These were all piloted during 2021-22.

In addition to these innovations, there was the move to online delivery, realignment of the skills, and restructuring of the year. The online delivery was at first a requirement because UCL moved to online teaching following national Covid-19 guideline. However, during 21-22 we retained some of the online delivery. The rationale for this was that UCL teaching remained hybrid, so students were not routinely on campus or indeed many had not moved to the UK.

The skills development sessions were changed to be better mapped to what students said they needed to confidently carry out knowledge exchange. Related to this, we restructured the year so that the skills sessions were delivered during Term 1 only. The rationale for this was to build the students' confidence to collaborate during Term 2, provide more of a framework to navigate the CRIS ecosystem, and as a quality control measure before accessing brokering and knowledge exchange with potential community partners in Terms 2 and 3.

Key lessons during ISIKLE

At the end of year 1, the CRIS manager and CRIS administrative assistant carried out a reflective workshop, captured visually by live illustrator Jenny Leonard

(<https://jennyleonardart.com/>) (fig 2). This reflective workshop drove the changes described in Table 4 for Year 2 CRIS.

One of the key lessons was the importance of shifting our framing of CRIS as solely a research partnership intervention to include a service-learning framing. This shift was ignited by conversations with the ISIKLE systematic review team, specifically David Gough. With CRIS being led by a former researcher with little early personal experience of service-learning, it was not surprising that it was being developed through a research lens. During early ISIKLE team meetings, the framing of CRIS as a service-learning model began to take shape. This has helped engage with the UCL team providing the funding and culminated in the CRIS manager presenting CRIS at two education conferences during 2021-22.

Learning from others in the ISIKLE team was also very helpful around event planning and ideation stages. Strand 1, the Evaluation Exchange, provided key learning moments around their end-of-project event in April 2022. We are benefitting not only from replicating some of their key successes but also through being able to utilise materials used at their event and invite the same speakers. This is not just borrowing equipment or contacts; we are starting to develop a 'look' or voice for student-community knowledge exchange on campus. For example, the eye-catching poster boards featuring the collaborations from the Community Partner perspectives.

Finally, it was from ISIKLE strand 3 leaders that the commonalities between CRIS students and the entrepreneurial mind-set were learned. This perspective, rather like David Gough's shining of a Teaching & Learning lens on CRIS, was something completely new. UCL, like any other university, can be rather siloed and certainly entrepreneurial activities are the preserve of Innovation & Enterprise within the university. Including this entrepreneurial facet of CRIS activities will lead to us having a wider appeal and become more inclusive.

A second key lesson was around the benefits of online delivery for some aspects of CRIS. The 2019-20 students are not included in ISIKLE but were the cohort where CRIS online delivery was first started. Lessons brought forward into ISIKLE were that delivering an online version of the skills development sessions was a benefit to some students – either because they had not travelled to the UK for the year or because much of their course was online and travelling to campus was unfeasible. It was much more equitable in some ways for students to be able to join an online session. We worked hard to include digital tools like Padlet, Miro, Padlet and online quizzes to ensure these were engaging sessions with a workshop feel. On reflection, online delivery needs less content in some ways because it can be a more intense experience than the same content in person. Also, it's harder to leave silences for thinking on an online environment. On balance, we are moving into 2022-23 with an in-person and online delivery option for each of the skills development sessions.

It was certainly a big lesson to invest in systems. It meant identifying what was essential to the CRIS manager role and what could be automated, thus saving time that could be better used developing and delivering CRIS to more students. During 2020-21, the CRIS manager and

Narrative Case Study – Strand 3: Developing PhD Entrepreneurs

Background and Aims

Entrepreneurship education (EE) stands at the cusp of the formal educational space and the world beyond academia. It opens up new career possibilities and reveals new paths for real-world impact; students learn to identify the financial, cultural, and social value of their ideas and how to turn these ideas into sustainable enterprises.

At The University of Manchester and UCL, EE programmes are offered to students at all levels. The focal point for programmes at Manchester is the Masood Entrepreneurship Centre (MEC), which sits within the Alliance Manchester Business School in the Faculty of Humanities. At UCL, degree programmes in entrepreneurship are delivered through the School of Management, while extra-curricular training is offered by UCL Innovation & Enterprise (I&E) as part of the Office of Vice-Provost, Research, Innovation & Global Engagement.

The ISIKLE project focused on two EE programmes targeted specifically at research students and primarily at doctoral researchers, namely Innovation and Commercialisation of Research (ICR) at MEC and SPERO at UCL I&E. Both programmes share similar aims: to raise awareness of entrepreneurship as a career option, and to develop in students the knowledge, skills, and attitudes that make up an entrepreneurial mind-set. Following the European Entrepreneurship Competence Framework (EntreComp), we defined this mind-set as “The capacity to act on opportunities and ideas and transform them into value for others.”²⁵

The starting point for these interventions is the mismatch in the career aspirations of doctoral students and the reality of their employment outcomes. At the start of their research programme, two-thirds of PhD students expect to move into a research career in academia after graduation.²⁶ In reality, three and a half years after finishing their doctoral studies, 70% of PhD students have left academia.²⁷ The higher education sector therefore needs to equip doctoral students with the confidence to recognise their transferable skills and break the dichotomy of choice between a future in “academia or industry”.

The ICR and SPERO programmes differ significantly in their format and duration. ICR is a ten-week accredited course with a mixture of lectures, group work, and individual tutorials. The SPERO programme comprised three one- and two-day workshops focused on small group activities with topic introductions and reflection/feedback sessions lead by course facilitators.

The aim within ISIKLE was to assess the value to students of these different models of EE. What are the mechanisms that best aid the development of an entrepreneurial mind-set? And which activities deliver these mechanisms most effectively? The teams at Manchester and UCL

25 Video, “What is EntreComp?”, The European Entrepreneurship Competence Framework (EntreComp) <https://ec.europa.eu/social/main.jsp?catId=1317&langId=en#:~:text=EntreComp%20is%20a%20free%2C%20flexible,practice%20to%20develop%20entrepreneurial%20skills> (Accessed: 26/07/22)

26 B. Cornell, 2020. Higher Education Policy Institute.

27 HESA Destination of Leavers from Higher Education.

shared their ideas and their learning as each institution piloted new versions of the programmes and evaluated these at each stage.

Logic Model

Across the two years of ISIKLE, the Manchester and UCL teams scaled up existing activities and piloted new modes of delivery to enable more inclusive participation of diverse groups of students. Pedagogic innovations were also introduced to widen the range of skills developed by students and improve learning outcomes. Our aim was to increase a sense of ownership and attainability around the programme activities, leading to greater enjoyment of the programmes. Our assumption was that students who connected more directly with the activities and could engage positively with the programmes would in turn cement their knowledge and skills acquisition more fully. It was hoped that this would further raise their entrepreneurial aspirations and intentions.

Table 5. Logic Model: Developing PhD Entrepreneurs – ICR and SPERO programmes

Context	Activities	Mechanisms	Outputs	Outcomes	Impact
Students come from almost all faculties at UCL and UoM	Group work – students complete a Business Model / Proposal Canvas for business case study	Students: Enjoy and engage positively	Programmes: ICR 10 weeks x 4 = 1 x 4-week pilot	Increased knowledge / understanding of: • Entrepreneurship as a career option • Support available through the university • How to develop ideas that create value and make a difference to others • How to identify the relationships needed with relevant stakeholders to move an idea forward smoothly	Increased likelihood that: • Students will use their entrepreneurial mindset for roles in research / industry
Supportive "safe space" for students to develop ideas in groups – tutor guidance at start of session (ICR), instructor "drop ins" (SPERO)	Group presentation ICR	Feel their ideas are listened to / respected	SPERO SPERO 1 x 41	• What makes a viable commercial research opportunity/idea • Market opportunities and barriers to product / service development • Role of IP in the commercialisation process • Researching, analysing, evaluating, utilising information	• Students will start their own business / social enterprise
Students choose from three case-studies for their group work	– 10-week course – In-class hours x 13.5 – 1 week pre-reading – Lectures x 3 o Innovation and Entrepreneurship o Commercialisation o Next steps – Group tutorial x 1 o Case study product – Group presentation / pitch – One-to-one x 3 – Individual pitches delivered to tutors and peer group – Students work on own idea as primary focus – Independent study 130 hrs	Feel a sense of choice / ownership over what they do on the programme Feel a sense of attainability around entrepreneurship Feel they have a tangible outcome from the programme Feel supported during and after the programme Feel that their careers and lives "matter"	Students: ICR – Completed Business Proposal Canvas for case study / group pitch – Slide-deck for group pitch – Completed Business Proposal Canvas for own idea / pitch (compulsory track) – Slide-deck for individual pitch SPERO – (Partially) completed Business Model Canvas – Speaker notes / video for group presentation delivering difficult message about case-study business	• How to be enterprising with own research Increased entrepreneurial competencies / mind-set: ICR and SPERO • Learning through experience • Coping with ambiguity, uncertainty, and risk • Spotting opportunities • Valuing ideas • Self-awareness and self-efficacy • Motivation and perseverance Increased transferable skills: • Communication • Presentation • Teamwork • Commercial awareness Change in attitude: • Increased positivity about future career options • Greater sense of well-being	
ICR Delivered by academics with business background / experience					
Personal tutor as a "critical friend" when discussing students' own ideas					
Course is compulsory for some CDTs					
Course can be an elective unit for any PhD student					
Course is aimed at students in their third / final year of doctoral studies	SPERO 1 – One-day workshop – In-class hours x 5.5 – Pre-viewing of business model canvas videos x 25 mins – Pre-reflection on impact of own research x 15 mins – Students work on case studies				
Course is formally assessed for those taking it as a compulsory unit					
SPERO Delivered by freelance, external facilitators with experience running own businesses					
Supported by university professional services staff	– Topic / activity introductions – Group work – stakeholder management – Case study product / service / community engagement – Group presentation – communicating a difficult message (delivered to facilitators and peers)				
Course is open to any research student / ECR in any year of their programme					
Course is not formally assessed					

Contexts

ICR is an accredited course with formal assessment, characteristics that are assumed to make it more attractive to students who must devote a considerable amount of time to the programme. Prior to the project, it ran once a year and was offered as a compulsory unit for students only within specific Centres for Doctoral Training (CDTs). The course is delivered by a programme team consisting of the Director of the Masood Entrepreneurship Centre, a Lecturer of Enterprise and a member of professional services staff and has been centrally funded by The University of Manchester since its inception in 2008-09. As well as twenty in-class hours, students are expected to undertake 130 hours of independent study. (See Tables 6 and 7, below).

SPERO was piloted in 2018-19 initially with funding from Santander. The workshops form part of a larger programme of extra-curricular training courses from which UCL doctoral students must choose to earn ‘DocSkills’ points as a compulsory requirement of their degree. Since its inception, SPERO has been open as a free choice programme to all doctoral students at UCL in any year of their studies. Requests from MRes students to attend were considered on a case-by-case basis up to and including Year 1 of the ISIKLE project. In Year 2, enrolment in SPERO was extended formally to include MRes students as well as Early Career Researchers (ECRs). SPERO workshops are informally assessed through group presentations and formative feedback from facilitators.

At the start of ISIKLE, the SPERO programme comprised three workshops: SPERO 1: *Develop your entrepreneurial knowledge, skills and mind-set* (one day); SPERO 2: *Learn how to turn an idea into an enterprise*; and SPERO 3: *Build your enterprise – management and negotiation skills* (two days each). It was developed by members of the Programmes team at UCL I&E in collaboration with two external facilitators who also deliver the workshops. Both facilitators have a background as entrepreneurs. A member of UCL professional services staff is involved in all the workshops, introducing their own entrepreneurial journey in SPERO 1 and providing feedback on students’ presentations in SPERO 1, 2, and 3. They are also available for troubleshooting any online or logistical issues. SPERO 1 runs approximately once a week during term time, while SPERO 2 runs two to three times per term, and SPERO 3, once per term.

Both ICR and SPERO switched from in-person to online delivery in March 2020 in response to the COVID-19 pandemic. ICR was delivered via Zoom, with lecture recordings and supporting material including reading lists, lecture slides, and guidance on entrepreneurship research databases all available via Blackboard. SPERO was run via Microsoft Teams, with class materials, recorded presentations, and group chats archived for later use by team members. ICR remained online throughout the ISIKLE project. SPERO moved to a hybrid delivery with students able to join all workshops either in-person or online from March 2022.

Both programmes aim to provide a ‘safe space’ for students to discover their entrepreneurial skills, develop their entrepreneurial mind-set, and gain confidence in developing enterprise ideas. During the two years of ISIKLE, the programmes attracted students from across all faculties at Manchester and all but one faculty at UCL.²⁸ Peer to peer learning was strongly encouraged, with students sharing knowledge and problem-solving approaches across these disciplinary lines.

²⁸ The University of Manchester has three faculties, namely Biology, Medicine and Health; Humanities; and Science and Engineering. UCL has eleven faculties, that is, Arts and Humanities; Bartlett (Built Environment); Brain Sciences; Engineering Sciences; Institute of Education; Life Sciences; Mathematical and Physical Sciences; Medical Sciences; Population Health Sciences; Social and Historical Sciences. Only Laws was not represented during the ISIKLE project.

Activities

ICR comprises one week of pre-reading and nine weeks of in-class sessions (see Table 4, below). These sessions include lectures on ‘Innovation and Entrepreneurship’, ‘Commercialisation’, ‘Evaluating Opportunities’ and a final lecture on ‘Next Steps’ such as accessing further university support and funding. The focus of the course is on supporting the students through tutorials to develop an idea for commercialisation from within each student’s own research. This can be an idea arising from within the PhD project itself or from the student’s wider area of research expertise. Students take part in 3 x ½ hour individual tutorials with a personal tutor/mentor acting as a ‘critical friend’ to discuss each student idea and offer constructive criticism and feedback. Student cohorts are capped at 25 to enable this one-to-one mentoring.

ICR is aimed at students in the third and fourth years of their doctoral degrees on the assumption that they will have a more fully developed research idea than early-year students and therefore be more likely to benefit from training in commercialisation. Implementation of the enterprise idea may or may not happen in either the short or longer term, but it is assumed that later year students are more likely to apply themselves to thinking about their next steps as their studies come to an end.

The SPERO workshops are all based around students working in groups of 3-4 with introductory and feedback sessions with facilitators and peers to support the group activities. In SPERO 1 and 3, students work on fictional case-studies to understand key steps and challenges involved in creating and sustaining a business or social enterprise. In SPERO 2, students work on an enterprise idea which they devise on the day of the workshop within each of the small groups. As well as in-class activities lasting 5 ½ hours, students on SPERO 1 are asked to view a series of short videos introducing the Business Model Canvas totalling around 15 minutes prior to the workshop (see Table 2). Students are also asked to reflect on the impact of their own research, again devoting around 15 minutes to the activity.

The ISIKLE project has focused on the development and evaluation of SPERO 1 (as described in section ‘Innovations and Rationale – SPERO’ below). Some wider outcomes for student learning have also been considered, for example when student interviewees had also completed SPERO 2 and 3 in addition to SPERO 1. As well as implementing changes to the existing SPERO 1 workshop, the team introduced a new mentoring course – SPERO 4 – with results of that evaluation also referenced in this report.

Table 6. ICR and SPERO programme characteristics

	ICR	SPERO 1
Degree level	Doctoral	Doctoral and Master of Research; (plus Early Career Researchers)
Degree year	Third and fourth	Any

Delivery format	Lectures and tutorials	Workshop / small group work
Compulsory / optional	Compulsory for specific Centre for Doctoral Training programmes / optional for all other programmes	Free choice option as part of compulsory training programme
Accredited	Yes	No
Assessment	Formal with grading	Informal, no grading
Staff	University academics and professional services staff x 3	Professional services staff x 1; External facilitators x 2
Activity focus	Developing idea from own research	Working on business / social enterprise case studies

Table 7. ICR and SPERO in- and out-of-class hours

	ICR	SPERO 1
Total in-class hrs	20	5.5 (9:30-16:30 with breaks)
Lectures / facilitator presentation hrs	8	1.5
Workshop/group work hrs	3	3.25
Individual tutorials hrs	1.5	0
Individual presentation delivery / viewing hrs	8	0.75
Work outside class hrs	130	0.5

While ICR share the same desired learning outcome, in helping students develop their entrepreneurial mind-set, we thus wanted to explore the value to students of the key programme differences set out in Tables 1 and 2 above:

- Timing of the programme in relation to the student's degree i.e., Year 1-4 or above
- Duration of the programme
- Format / delivery, i.e., lectures and tutorials versus workshop and small groups
- Compulsory or elective

- Accredited or not accredited
- Formally assessed or informally assessed
- Students work on own idea or on case studies

Mechanisms

Our aim throughout ISIKLE has been to help students enjoy and engage positively with the programme activities. Students should feel their ideas were listened to, and that their perspectives were valued and respected. It was important that students have a sense of choice around the programme activities, which was assumed to increase a sense of ownership and student buy-in. To take the emotional risk or leap into entrepreneurship, students needed to feel supported during and after the programme. They needed to know that their career and their lives ‘matter’, and to feel that their skills and ideas can make a difference in the world.

Outputs

During ISIKLE, 94 students completed the ICR course and 478 completed SPERO 1 (see Table 8, below.)

Table 8. Courses / workshops delivered & student completions during ISIKLE

	ICR		Student completions	SPERO 1	
	10 wks	4 wks		Workshops	Student completions
Year 1	2	1	55	18	236
Year 2	2		39	23	242

Outputs for ICR students included a formative worksheet outlining their idea for commercialisation; a completed Business Proposal Canvas for a case-study business; a second canvas for the own idea; and a slide-deck for their final, individual pitch. SPERO 1 students took away a completed or partially completed Business Model Canvas for their case-study, depending on the progress of their assigned group. They also had either speaker’s notes or a video presentation of their group delivering a difficult message in response to a set-back in the life of their fictional business (the format of this depended on the iteration of SPERO in which they took part - see ‘Innovations and rationales’ below).

Outcomes and impact

Key entrepreneurial competencies we wanted to develop in students, as outlined in the EntreComp framework, were:

- Learning through experience
- Coping with ambiguity, uncertainty, and risk
- Spotting opportunities
- Valuing ideas
- Self-awareness and self-efficacy
- Motivation and perseverance

We expected students to develop their transferrable skills in communication, presentation, teamwork, and commercial awareness. Through SPERO 1, we wanted students to recognise the value of being enterprising not only for their future careers but also within their current research. We expected that learning to identify and manage different stakeholders would be useful in fostering current relationships such as with PhD supervisors and funders. ICR, meanwhile, brought a further focus on skills in analysing, evaluating, and utilizing information, with students conducting research activities using patent and market research databases.

For both programmes, we expected to see increased understanding of entrepreneurship as a career option and of the practical steps needed to develop an enterprise. Increased knowledge of the support offered by the universities for student entrepreneurial activities was also expected. It was assumed that this would help to raise aspirations for developing ideas that create value and make a difference to others. This was in turn expected to bring a change in attitude, with increased positivity about future career options also supporting a greater sense of wellbeing in the present work of completing the PhD.

Longer-term outcomes included an increased likelihood that students would use their entrepreneurial mind-set for their careers and for other roles in community or voluntary engagement. This could involve being an entrepreneurial employee in research or industry or starting a new business or social enterprise. Our assumption was that students who develop and use their entrepreneurial mind-sets are more likely to achieve personal fulfilment and professional growth in various career paths.

Innovations and Rationale

ICR

ICR had been offered once a year prior to ISIKLE, but this was increased to three and two times in Years 1 and 2 of the project respectively. The aim was to increase potential enrolments overall while retaining the cap of 25 students per cohort and allowing for the same level of staff-student contact. Staff also identified an opportunity to introduce and evaluate a larger number of innovations over the period covered by the project.

The established ten-week version of the course was offered in Semesters 1 and 2 across both years (See Table 9, below). In the Summer of 2020-21, a new four-week version was also piloted. For this version, the number of in-class sessions was reduced from nine to seven and the remainder offered on a more intensive basis. Where there were 2 x 2-hours slots in any given week, these were generally compressed down to one and a half hours. This aligned with

staff availability as well as expectations that students might find it difficult to set aside any greater amount of time for formal contact. The group work, which had been envisioned primarily as a preparation exercise for the individual pitch, rather than as a standalone activity, was also removed. It was hoped that this alternative format might attract a more diverse group of students who would not otherwise have been able to commit to a ten-week version for example due to commitments as postgraduate teaching assistants. The team also anticipated that with less time to work on their commercialisation idea between in-class sessions students might produce presentations and projects of a lower quality than on the ten-week course.

Through Year 1 of ISIKLE, the ten-week version of ICR was judged by staff as the most successful. On the four-week course, staff found that students were not completing recommended reading and attendance at the individual tutorials was down. It was assumed that students had difficulty setting aside so much time in any given week, and that they likely needed more time between tutorials to reflect on feedback and therefore gain from additional meetings. Contrary to expectations, the quality of the student presentations at the end of the four-week course were comparable to the ten-week course. However, staff felt that from their own perspective it was too rushed and too pressured to have multiple classes each week.

Table 9. ICR ten-week course outline

Week	Activity / topic
1	Pre-reading
2	Lecture: Innovation and Entrepreneurship
3	Lecture: Commercialisation
4	Group tutorial: Presentation of individual research commercialisation ideas
5	Group work: Business model canvas and preparing a pitch for a fictional case-study
6 & 7	Individual tutorials
8	Individual pitches
9	Lecture: Next steps
10	Individual tutorials: Developing the idea further

In both years of ISIKLE, ICR continued to enrol students for whom the course was a compulsory requirement of their CDT. The course was also opened up as an elective unit for doctoral students on any programme at the University of Manchester. All students were asked to complete a formative worksheet describing their research commercialisation idea. They presented this for tutor and peer feedback, before working on the idea during one-to-one tutorials. Finally, each student filled out a Business Proposal Canvas and delivered an individual pitch to a panel. Those on the elective track did not have to complete the Canvas for the individual pitch but could choose to do so and receive a mark and feedback. If they did complete all assessment, they followed those on the compulsory track in becoming eligible to apply to the University's Kickstarter start-up support scheme.

In Year 1 of ISIKLE, as in previous iterations of ICR, the individual pitches were made only to the course tutors as a way of protecting the student's idea. In Year 2, the team extended this by asking students to pitch to tutors and peers alike. Course evaluation in Year 1 had already shown that students welcomed opportunities for increased peer feedback and saw the (online) classroom as a confidential space to share and develop their ideas.

On the ten-week course, students on both the compulsory and the elective tracks also worked in small groups on a case study for a commercialisation idea. They filled out a Business Proposal Canvas, setting out key considerations such as the industry sector and competition, the market and target customer, and possible revenue sources. Students were placed in groups for the activity, which was introduced by the tutor, before developing a group pitch to be delivered in the next session. Students had initially been given a single, technology-based case study from which to develop their Business Proposal Canvas and pitch. This was extended in Semester 2 of Year 1 of the project, so that students received a total of three case studies to choose from, namely: 'Smart electrochromic materials'; 'Smart Skin'; and 'Plant-based vaccines'. These were all technology-based products but were drawn from different disciplinary areas to potentially pique the interest of students from a wider range of backgrounds now represented on the elective track of the course. Even when students were working on a topic outside their immediate area of interest, it was hoped that the process of choosing the case study would increase their sense of ownership and buy-in to the activity.

To create a greater sense of accessibility and attainability for entrepreneurship, a series of short videos with ICR alumni was also created. Here, past students talked about their own entrepreneurial journeys and how they had taken their learning from ICR to develop their ideas further. Anecdotal feedback had shown that students wanted to hear from other PhD students in similar situations and how they had moved forward with their ideas to start their own businesses. The videos were shown during the final lecture and uploaded to Blackboard.

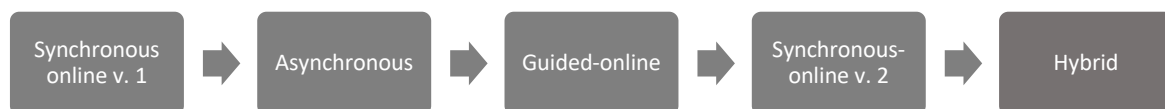
The team at Manchester also wanted to lower the barrier to entry for doctoral students seeking to take part in EE. The time commitment of ICR at ten or even four weeks would likely exclude many students, so in Year 2 of ISIKLE a programme of short, interactive training workshops was introduced. 'Developing an Entrepreneurial Mindset' (2 hours) introduces students to some of the practical skills of entrepreneurship including opportunity recognition, creativity and innovation, initiative and self-reliance, and problem solving. In place of the four-week version of ICR, two further workshops were introduced in the summer term of Year 2 –

‘Generating and Shaping Ideas’ (4 hours) and ‘Developing Solutions for Enterprise Creation’ (5 hours including break). The first workshop was delivered by two of the academic team responsible for ICR, while the second and third workshops were developed with and delivered by the facilitator who also delivers SPERO 1. These workshops were open to doctoral students in any year of their programme. The key rationale was to give students a chance to develop in-depth knowledge and skills in commercialisation but at an earlier stage of their doctoral degree and without staff-intensive, individual tutorials. It was hoped that this might lead to more enrolments in the ICR programme as students move into the third and fourth years of study. With greater awareness of the support available, more students might also be ready to approach staff at MEC and ask for help developing their own ideas.

SPERO

The SPERO 1 workshop went through five main iterations across the two years of ISIKLE. Each of the first four iterations ran for approximately one term beginning in September 2020, with the final, hybrid version running through to mid-June 2022:

Figure 3. SPERO 1 iterations during ISIKLE



Besides changes in delivery, each iteration of SPERO 1 included changes to content and aspects of the pedagogical approach. The aim through the asynchronous and guided-online versions was to increase enrolments by reducing staff input and allowing for a larger number of deliveries within the same budget. It was also hoped that ease of access for students through online delivery would attract students who might otherwise struggle to fit the course within their timetables. The return to synchronous online delivery and finally to in-person delivery responded to student desire for greater feedback from facilitators and peers.

The first synchronous online version retained all the key content from the in-person version, which had preceded ISIKLE (see Table 10, below). Following an introduction to core skills for entrepreneurship, students completed a personal goal-setting exercise, identifying the skills they most wanted to develop based around the Vitae Researcher Development Framework.²⁹ They then worked in small groups to fill out a Business Model Canvas for a fictional case-study supplied by the facilitator and identified key stakeholders for the business. They mapped these stakeholders onto a power / interest grid and produced a business plan with one-, three-, and five-year goals. In the closing minutes of the workshop, they were asked to share three learning points or actions to take away and apply to their current work as researchers.

Successful delivery online gave added impetus to existing plans to re-develop SPERO 1 as an asynchronous, online course. Enrolments had increased through the early months of the

²⁹ “About the Vitae Researcher Development Framework”. <https://www.vitae.ac.uk/researchers-professional-development/about-the-vitae-researcher-development-framework> (Accessed: 26/07/22).

pandemic, with extra sessions of SPERO 1 being scheduled to meet demand. Anecdotal feedback suggested that students were seeking additional training as many now saw their future careers as less certain and wanted to explore all options. Students also saw the benefits of any type of personal/peer connection during the reduced conditions of lockdown. Our aim for the asynchronous course was to retain the best of the in-person and live-online versions while increasing potential enrolments and remaining within staff budgets.

SPERO 1 already attracted the largest number of students. It can be taken as a standalone workshop, but also provides a feeder for the more advanced SPERO 2 and 3. It was hoped that more students completing SPERO 1 would lead to increased enrolments overall. Costs for increased provision of SPERO 2 and 3 would then be covered by savings made on the delivery of SPERO 1.

SPERO 1 asynchronous was delivered via the online training platform Moodle. Besides upscaling, there were also assumed advantages for accessibility. The asynchronous course could be completed anywhere in the world, with students able to work at their own pace and start and finish as they chose. There was potential as well for attracting a more diverse body of participants, such as more part-time students, those with caring responsibilities, and those completing professional doctorates, who might not be able to attend a full-day workshop during working hours. Finally, there would be benefits for auditory learners and for those with a reading / writing preference alike; all introductions to the activities were delivered through videos from the facilitators and as PDFs.

From a delivery perspective, staff input on the asynchronous course would be reduced to outreach, technical trouble shooting, and clarification of queries which could be addressed through revising the online material for future users. Monitoring of enrolments and completion rates could be completed by professional services staff without further input from external facilitators. Anticipated drawbacks were that with no formal assessment it would not be possible to track student completion beyond self-reporting by students. It was also assumed that students might be less likely to complete the course than they would either in person or live-online given that they were no external motivators or constraints.

Plans to mitigate these problems included supporting students to complete the course with a group of peers. This would provide potential motivation through peer encouragement and setting times to complete. An element of role-play was also introduced with the aim of increasing student buy-in. As with the in-person and live-online versions, students were asked to work through a Business Model Canvas and to identify key stakeholders for their imagined business. New for the asynchronous course was that they were also invited to follow a story about the business, that is, to take on a persona and to role-play a scenario. These personas mapped onto the three main areas for career expectation amongst PhD students as identified by the team, namely, to work in research; to work in industry; or to work for themselves as an entrepreneur. Students could therefore choose from Head of Research, Head of Customer Engagement, and Head of Company Strategy, before being promoted to Chief Technology Officer, Chief Marketing Officer, and Chief Executive Officer as the business grew. Students could choose to take on a role that aligned most closely with their own expectations or could test out a different role to stretch themselves and explore new possibilities. It was hoped that

engaging in this imaginative way with the content would spur completion of the activities and help students to retain their learning through a more emotional connection to the entrepreneurial journey. Finally, the role-play scenario included dealing not only with growth but also with a specific set-back for the business. Again, it was hoped that this would spur emotional engagement as students developed a sense of ownership over their company journey and felt invested in solving problems to make it flourish.

The asynchronous course was given a soft launch in March 2021 in which students read a holding notice on the UCL I&E website and approached the course organiser about SPERO enrolments. A total of 8 students enrolled and began the course in this way, with one checking all boxes to indicate that they had completed all activities.

To increase completion rates in Term 3, the asynchronous material was used as the basis for a guided, online delivery of SPERO 1. The same time was allotted as for an in-person or synchronous online course, namely 9:30-16:00, with one and half-hours' break. An introduction to the course and each of the activities was given by the course organiser before the students were placed in breakout groups of 3-4 for the day. Students returned to the full meeting after each exercise for a ten-minute reflection session with their peers, overseen by the course organiser. In the final hour, students were asked to deliver a two-minute, group presentation in which they outlined a problem being faced by their company and addressed stakeholders on how they would address this. Here, they were joined for feedback from the two facilitators responsible for the fully synchronous versions of SPERO 1, 2, and 3.

Initially students on the guided, online version had been asked to give their final presentations live so that subsequent groups benefited from feedback on earlier presentations. To level the playing field, students in later iterations were asked to record a two-minute video of their presentation. From staff observation and in-class feedback it was clear that students found considerable added benefit in seeing themselves and their peers on video and having the chance to critique their own and each other's performance. Staff felt that this was particularly valuable as the shift to online is likely to remain an important part of personal and professional communication. It was hoped that working to a set time and with other students would provide external motivation to complete. It was also hoped that the new format would bring a recruitment benefit for SPERO 2 and 3 with students having already met the facilitators and had a chance to build some rapport.

The first guided-online session attracted 31 students with 21 completing. Feedback suggested that the problems leading to drop-off were largely technical/logistical. Students noted that if one or two group members dropped out due to connectivity issues, those remaining might feel that the group dynamic had changed too much to want to stay or simply found themselves alone in a breakout room. One student noted that having found themselves alone, they could not work out how to get back into the main meeting room. Instructions on how to navigate Teams were given greater emphasis in later iterations, as was the message that students could contact the course organiser across the day with any technical difficulties. In the second guided online session, all 14 students who enrolled also completed the course, while for the subsequent six iterations there were 44 enrolments and 36 completions or a rate of 81%. Staff felt that student engagement had been high on the guided-online course and anecdotal feedback was very

positive about the content. Staff observation suggested that students also valued maximum opportunity for facilitator feedback and peer interaction with the whole group and not just their breakout group.

In Term 1, Year 2 of ISIKLE, SPERO 1 returned to synchronous online delivery to meet student desire for increased feedback. Key innovations from the most recent iterations were retained, including the element of role-play, and the final video presentation with its focus on dealing with a setback and delivering a difficult message. The choice of case-studies for students to work on for the group activities was also increased from one to three. The original case-study was kept, namely an IP rich, medical device. In addition, students could choose from a consultancy business providing research and evaluation services, or a social enterprise, that is, an app focused on mental health management with a social platform for engaging with like-minded others. The aim was to give students a greater sense of ownership through choice, as well as providing opportunities for students to find a case-study that either aligned with their existing interests or stretched them to try something new. A key consideration was giving choice beyond a product-based enterprise, so that those interested in services and community engagement could develop their thinking further. Student appetite for the different case studies was proven across the 23 iterations of SPERO 1 in Year 2 of the project, with 19 groups working on the medical device, 22 on the consultancy business, and 26 on the app.

The SPERO programme moved finally to a hybrid delivery from April 2022. A return to campus for most curriculum teaching had begun already in September 2021, although significant COVID-19 restrictions were still in place including the requirement to wear masks in classroom settings. The team felt that the workshop format would work best for facilitators and students only once the mask restriction had begun to lift, so in-person delivery was first reintroduced in Term 3. The workshops were promoted as being in-person, but students were advised of an online option once they signed up. The intention was to retain the benefits of online for those who wanted or needed them, while encouraging as many students as possible to return to campus. In-person delivery was assumed to be beneficial for students in enabling social interaction, networking, and the potential to find collaborators on entrepreneurial projects. Group work was also assumed to be logistically easier for many, with students working around a table rather than an online ‘whiteboard’ or shared screen. Richer communication was also assumed for those who responded to physical and audio cues such as body language and voice tone, elements which can be lost in a digital setting. During ten hybrid workshops, 62 students completed, 51 students or 82% attended in-person, while 11 students or 18% joined online.

In each iteration of SPERO 1, in addition to the group activities, students were shown a ten-minute video in which a former SPERO participant shared their entrepreneurial journey. As with the ICR videos, the aim was to increase a sense of attainability for current students by showing examples from within the PhD community. (See Table 10 below for reordering of and changes to activities across the five versions of SPERO 1).

Table 10. Order of SPERO 1 workshop activities during ISKLE

Activity	Live online 1	Asynchronous / guided online	Live online 2 / hybrid
1	Own research impact and value creation	Business model canvas (and own research)	Own research impact and value creation
2	Business model canvas	SMART goals	Small groups choose case-study
3	Stakeholder management	UCL PhD / SPERO student shares their entrepreneurial journey	Business model canvas
4	UCL PhD / SPERO student shares their entrepreneurial journey	Stakeholder management	UCL PhD / SPERO student shares their entrepreneurial journey
5	SMART goals	Applying stakeholder management to research	Stakeholder management
6	Applying entrepreneurial approach to research	Communicating your message – a product recall	Communicating your message – a product recall / data breach / service failure

In Term 2 of Year 2 a new mentoring / coaching course, *SPERO 4: Turn your idea into reality*, was piloted with four students taking part. This was developed and delivered by the SPERO facilitators and UCL I&E programmes team, with a focus on students developing their own enterprise idea as seen in ICR. The course began with a one-hour session for introductions and an overview of aims and logistics. Also introduced were the eight key areas that participants were expected to cover during the programme:

- Product / service proof-of-concept
- Customer segmentation
- Competitor analysis
- Business model hypothesis
- Start-up team structure
- Brand design
- Go-to-market roadmap
- Financial plan

Students were assigned to one of the two course facilitators who acted as business mentors or coaches. The student met online with their coach once a week for 45 minutes over a period of 6 weeks to discuss and develop their business idea. Sessions were arranged on a flexible basis via Calendly. In a final session, the students pitched their ideas to a panel of I&E Entrepreneurship staff for a small pot of university seed funding.

The course was rolled out in Term 3 with 20 students taking part. To increase overall

enrolments, while remaining within budget, students were assigned to one of two groups for coaching. Following an introductory session, groups met once a week for two hours over ten weeks. The sessions took place at set times, and usually involved some discussion with the whole cohort before splitting into the two groups. Assignment to the groups was based around the type of enterprise the students wanted to work on. One group focused broadly on IP rich products that tended to require longer, in-depth research and development, while the other included enterprise ideas relating mostly to services and consultancies. Student goals focused around the same eight areas as in the SPERO 4 pilot. In week 9, students in one of the groups practised pitching their ideas to the whole cohort, with members of each group receiving feedback from the facilitator and peers in their group. In the other group, students had a 15-minute one-to-one session with the facilitator, in which they delivered their pitch and received feedback. In week 10, students across both groups had a second pitch dress rehearsal session, in which they delivered their improved pitches to their cohorts and received feedback from their peers. To close the course, students delivered their final pitches to all their peers, with a judging panel of I&E Entrepreneurship staff awarding a prize pool of £8,000 to help students work on winning ideas.

One-to-one coaching sessions were offered on an ad hoc basis during the ten-week course. One facilitator followed a well-established approach to coaching by offering unlimited access and finding that most people will request an average of one session each which proved to be the case. The second facilitator offered a half-hour to one-hour session to each group member in place of a regular group session that had to be cancelled due to connectivity issues.

The teams also considered introducing an external mentoring programme at UCL and discussed how to provide such contacts at Manchester. UCL has a mentorship programme for members of the Hatchery, for example, where students, researchers, and recent graduates who are already working on a viable business idea are paired with an external entrepreneur. It was felt, however, that students on both ICR and SPERO are at too early a stage to benefit and that greater opportunity for knowledge exchange would come once the PhD entrepreneur had developed their idea further. We also looked at creating a programme of mini-internship opportunities for SPERO students to work with one of the UCL Hatchery businesses. This would best suit students of SPERO 4, so it is something the team will come back to in the next academic year now that the programme is established.

Joint activities

A joint event 'From PhD to Founder' was held online in mid-April 2022. One past participant from each of ICR and SPERO spoke for five minutes about their entrepreneurial journey. This was followed by a 'fireside chat' led by the ISKLE Strand 3 leaders, with questions focusing on how the programmes had helped students develop their ideas and how they had overcome the challenges associated with their venture. The floor was then opened for questions and discussion with the audience. The aim was to offer inspirational stories and insight into establishing and growing an enterprise as well as dealing with setbacks. Hearing from peers was intended to increase the sense of attainability for students and to help build a sense of

community between the two institutions. Seventy-two students attended with good engagement in the question session and both speakers expressing willingness to hear from attendees afterwards with follow up questions.

Key lessons during ISIKLE

ISIKLE allowed the teams at Manchester and UCL to observe each other's practice and make programmes change to reflect and build on successes of the partner institution:

- Online delivery has worked well for both the SPERO and ICR programmes. The hybrid delivery of SPERO showed there was a greater appetite for in-person learning than online, but anecdotal feedback was that students appreciated having the choice and that many of those that did join online would not have been able to take part otherwise. The UCL team therefore plans to retain the hybrid delivery, which works well given that there are multiple iterations of SPERO 1, 2, and 3 each year and if there are any technical issues students are usually able to join another day. For ICR, the Manchester team plans to develop a mixed rather than a hybrid delivery. Lectures and individual tutorials will most likely continue online, giving ease of access and greater flexibility for student attendance. Group work and final presentations would then be held in person to facilitate networking and social interaction. For UCL, SPERO 4 will include an in-person launch event and mid-point social event, as well as the established final pitch to the whole cohort to promote networking.
- Staff saw students develop greater confidence in their entrepreneurial skills and increased positivity around their future careers, even with very short exposure to EE. UCL will therefore continue to offer its one- and two-day workshops, while Manchester will embed the new programme of short courses developed during ISIKLE.
- To lower the barrier to EE still further for doctoral students at UCL, the I&E team will introduce a two-hour session “SPERO Introduction” for 2022-23. This will focus on helping students to market their skills to future employers through the lens of entrepreneurship. Students need not have any entrepreneurial ambitions but will be encouraged to develop their entrepreneurial mind-set to heighten the impact of their research and think about future career paths.
- The language of finance and business can be alienating for some students. Focusing instead on creating value, impact, and being self-sustaining can make entrepreneurship more relatable for many. Both teams will continue to use this more open language in promoting the programmes to a wide range of students.
- Greater choice around programme activities increases student engagement. This was observed on both ICR and SPERO, as students were given a choice of business case studies for group work. This benefit held for students who were able to work on an example that was more familiar to them, given their existing area of expertise, and for those who found themselves working outside their comfort zone in a group of mixed disciplinary background. To serve both groups of students, the Manchester team plans to develop a broader range of case-studies as seen in SPERO 1, with examples that are

product-based, service-based, and involve an element of community engagement, respectively.

- Working on one’s own idea clearly brings value in creating a potential business. Staff also saw benefits in increased student engagement, even when the idea was developed as a classroom exercise, as in SPERO 2, rather than a real-world business, as in ICR and SPERO 4.
- Individual tutorials allow staff to build rapport with students above and beyond what is possible in group work. The one-to-one dynamic gives the best opportunity for students to build confidence that their idea is viable, and that their careers and lives matter. The SPERO 4 pilot introduced this individual contact to mirror that offered in ICR, then moved to group coaching on the full course rollout. Individual coaching sessions were then reintroduced ad hoc, as the facilitators saw the need not only to address issues specific to each project, but also to build student confidence through personal attention.
- The SPERO 4 approach of mentoring students in groups, while also having them work on their own projects, worked very well in allowing students to cover a broad range of questions and challenges in entrepreneurship. Instead of covering the same issues multiple times in one-to-one meetings, students were able to learn from similar experiences amongst their peers. The team at UCL will therefore keep the group approach as standard, but also build in a time commitment from the facilitators to provide one-to-one sessions. Staff noted the benefits of having students seek out this one-to-one support, rather than having it automatically scheduled, since this gave the students ownership over their project and allowed them to seek the help as and when they needed it.
- Contact with students over a period of weeks helps build staff/student rapport and can help students know that further help from the university is available. As long-format courses, ongoing contact is built into both ICR and SPERO 4. For students on SPERO 1-3, the ISIKLE project itself gave this chance as the UCL team sent follow up emails at 4 and 8 weeks to arrange interviews and request completion of post-programme surveys. In the interviews themselves, it became clear that students valued this chance to reflect on their learning, ask further questions about training and support, and think again about their next steps. The UCL team intends to keep the model of a 4-week touch-point email for SPERO 1 students to remind them of SPERO 2 and 3 and of individual support via the I&E Entrepreneurship Advisor team.
- Staff observed that having a tangible output from the programmes is important for student satisfaction and a sense of progress. Through ICR and SPERO 4, students produce a business plan and slide-deck which they can continue to work on and use to pitch their idea to others beyond the course.
- Both teams recognised the value of maximising group work and opportunities for peer-to-peer learning and feedback. This was especially clear in the SPERO 1 asynchronous pilot, and the much higher completion rates once students were able to work together in the guided-online version.
- Attendance and engagement at the joint online event were high. Both teams want to continue the relationship we have built through ISIKLE by sharing our learning and

continuing to build a wider community for students to share their entrepreneurial journeys. We plan to use this format again of bringing together current students and ICR and SPERO alumni, to increase the sense of shared purpose and attainability of entrepreneurship for our doctoral students.





Chapter 4 Methodology of Evaluation

Introduction

The evaluation comprehensively synthesised findings from across the three strands in UCL and University of Manchester. It was oriented to understand, inform and ultimately suggest how universities can engage in a range of UG and PG students in KE activities. Crucially, it examined in detail effective practices in student engagement in KE activities implemented to bring social and economic benefits to themselves and to external organisations.

Quantitative and qualitative methods were combined in a mixed-method approach³⁰ to explore the personal, professional, economic and social benefits of KE activities to students and external organisations. Within the three strands, students were strongly engaged in the quantitative and qualitative phases of the evaluation. They answered surveys at the beginning and end of the project, as well as took part in semi-structured interviews and focus groups oriented to collect qualitative descriptions of ways in which they engage in KE activities and the external organisations they collaborated with. As part of the qualitative evaluation of Strand 1 and Strand 2, External organisations also took part in focus groups and interviews.

The Quantitative Evaluation

The quantitative evaluation was led by the Centre for Education Policy and Equalising Opportunities (CEPEO). They conducted a quantitative evaluation of the three knowledge exchange (KE) programmes (or strands) in ISIKLE: two based at UCL, and one co-based at UCL and University of Manchester. Specifically, they conducted a pre- and post- intervention survey among student participants in each of the three strands. After consultation with the central evaluation team and Strand leaders in ISIKLE, who identified the key outcomes, the analysis has been divided into five sections that correspond with the five measures of the survey as follows:

³⁰ Creswell, J. and Creswell, D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications: London.

- Participant (student) skills (leadership/independence, people/communication, self-determination/creativity, technical skills and an additional set of business focus skills asked within ICR only)
- Civic Engagement
- Graduate wellbeing
- Career
- Equality Diversity and Inclusion (EDI)

Quantitative Data Collection and Methods

Data from surveys conducted before and after the programme for all strands was analysed. Since each KE programme is different in nature, with different lengths and intensities of intervention, the timing of the surveys is different for each strand. In the light of this, rather than choosing a uniform date at which all surveys would be conducted, we chose the post-programme surveys to be conducted immediately after each intervention was complete.

We used convenience sampling, with each Strand Leader distributing survey links to students by email, before and after they participated in the KE programme. Note that not all students completed both the pre- and post-programme surveys, as can be seen in Table 11 below.

Table 11 shows the breakdown of the data received, the number of student respondents per survey, and the merged sample size which are respondents for whom we had both a valid pre- and post-survey entry.

Table 11. Survey respondents by strand

<i>Strand</i>	<i>Period</i>	<i>Sample</i>	<i>Merged sample</i>
Strand one: EV-EX	Year 2: Pre	31	12
	Year 2: Post	15	
Strand two: CRIS	Year 1: Pre	27	19
	Year 1: Post	3	
	Year 2: Pre	41	
	Year 2: Post	27	
Strand three: SPERO	Year 1(T1): Pre	57	60
	Year 1(T1): Post	21	
	Year 1(T3): Pre	54	
	Year 1(T3): Post	17	
	Year 2 (T1/2): Pre	73	
	Year 2 (T1/2): Post	26	
Strand three: ICR	Year 1&2: Pre	66	29
	Year 1&2: Post	33	

Notes: Ev-Ex only took place in Year 2 of ISIKLE. Merging both Year 1 and 2 of CRIS means we can make use of the low response rate in the Year 1 follow-up survey. SPERO is a shorter programme, and is conducted termly, hence the breakdown of responses by term. In the analysis, we combine the terms together providing just a merged dataset for the strand overall in order to maximise sample sizes.

As we are primarily interested in how KE participant skills and wellbeing changed after participating in the programme, we mostly restrict our analysis to the group of matched respondents (the merged sample in Table 1 above) – i.e. those that filled in the survey both before and after their programme. We note that any changes in outcomes over this time period could be attributed to other changes occurring outside the programme over the same time period and are not causally attributed to the programme specifically.

Our threshold for low counts in this report will be 5 to prevent any disclosure issues. Group counts lower than or equal to 5 will be omitted from results.

Given each programme/strand is quite different in nature, we have treated each strand separately; analysis is carried out across strands and does not differentiate between waves or different years. Where possible, we have benchmarked figures against national or UCL statistics to provide a better picture of those participating in knowledge exchange programmes.

Quantitative Analysis

Participant skills

To determine whether ISIKLE programmes were associated with a boost in self-reported skills, we carried out a regression analysis per strand and per skill, looking at the effect of time period on the skills scores. We also carried out the same analysis on groups of skills in order to have a more general picture of the effect of knowledge exchange on broader categories of skills.

Civic Engagement

The questions in the survey on civic engagement are derived from the British Social Attitudes Survey (BSA), as well as information and reporting from Involve, the UK's public participation charity. This means, where possible, we can benchmark our responses against the national responses.

Wellbeing

The first set of wellbeing questions form the World Health Organisation- Five Wellbeing Index (WHO-5).³¹ A set of five questions produce a minimum score of 0 and a maximum score of 25. We have standardised the score, multiplying it by 4 to give a final score out of 100.

The second set of wellbeing questions are an adapted version of the UCLA loneliness scale which is typically made up of 20 items. Because this four-item scale is a derived measure, there is no standard application for it and so for our purposes we have shown how responses compare before and after taking part in the ISIKLE programme.

31 https://www.euro.who.int/__data/assets/pdf_file/0016/130750/E60246.pdf

Career aspirations

We have reported the most common reasons for participation and the things participants find most important in their career. We have also produced graphs showing the change in responses to questions relating to career, business partners, and owning a business before and after the knowledge exchange programme.

Equality Diversity and Inclusion (EDI)

Several of the questions asked in the EDI section of the survey have counts below our threshold of 5 and as such have been left out of our analysis. We show the remaining statistics in Table 11, or in graphs where we are able to benchmark against UCL statistics.

Note that, in the absence of a control group who did not receive the KE intervention, we are reporting associations between programme participation and outcomes. These findings cannot be interpreted as KE interventions being responsible for any changes in skills, wellbeing or other features of the participants. The results of our before-after comparisons can be attributed to wider changes in the participants' outcomes, as well as participation on the KE programmes.

Qualitative Evaluation

Qualitative case studies were conducted longitudinally to examine the processes and outcomes of the innovation and scaling-up on the three strands. The qualitative case studies were led by a central team at UCL, working with an external researcher with the support from the lead administrator/researchers from the three strands. This ensured reliability, as a consistent approach to data collection and analysis was implemented at the end of the evaluation across the three strands.³² The consistent approach taken in year two also allowed comparisons of the effectiveness of different approaches, maximised synergies and the sharing of best practice. The central evaluation team worked in year two with the three strands in systematising data collection processes and insights. We explored the processes and effects of up-scaling the projects in different settings according to students, external organisations and facilitators' views.

The qualitative case studies drew findings from a naturalistic perspective³³. In line with the essence of qualitative research³⁴, the case study evaluation was oriented to unpack the specific phenomenon of KE according to participants' perspectives. Hence, the qualitative case studies utilised descriptive qualitative inquiry to explore, describe and understand the KE activities by gathering valuable primary evidence from real-life participants³⁵.

³² Carcary, M. (2019). The research audit trail – Enhancing trustworthiness in qualitative inquiry. *Electron J Bus Res Methods*, 7:11–24.

³³ Kim, H., Sefcik, J. & Bradway, C., 2017. Characteristics of Qualitative Descriptive Studies: A Systematic Review. *Res Nurs Health*, 40(1), pp. 23–42. doi:10.1002/nur.21768.

³⁴ Leung L. (2015). Validity, reliability, and generalizability in qualitative research. *Journal of family medicine and primary care*, 4(3), 324–327. <https://doi.org/10.4103/2249-4863.161306>

³⁵ Saunders, B., Sim, J., Kingstone, T., Baker, S., Water field, J., Bartlam, B., Burroughs, H. & Jinks, C., (2018). Saturation in qualitative research: Exploring its conceptualisation and operationalisation. *Qual Quant*, 52, pp.1893-1907. <https://doi.org/10.1007/s11135-017-0574-8>

We implemented three case studies (one per strand) as the focus was on showing similarities and differences among the strands regarding KE³⁶. The strength of this qualitative method is that it allows researchers to pay attention to the complexity and specificity of each case, and it is useful to obtain in-depth information relating to issues and events in their natural background.³⁷

Sampling

A criterion based or purposive sampling³⁸ was implemented by inviting students, external organisations and facilitators to participate in the case studies during year one and two.

Table 12. qualitative data collection by strand Y1 and Y2

Strand	Y1 (2020/2021)					Y2 (2021/2022)					
	S1	S2	S3 SPE RO	S3 ICR	Subtotal	S1	S2	S3 SPE RO	S3 ICR	Subtotal	Total
Student interviews	0	20	13	17	32	17	11	27	29	84	116
Students focus groups	0	0	1	0	1			3	2	7	8
External organisations focus groups	0	0	Non-applicable	Non-applicable	0	4	5	Non-applicable	Non-applicable	9	9
Staff interviews	0	0	0	0	0		1	0	0		1
Staff focus groups	0	0	1	1	0	1	1	0	1		3
Total	0	20	14	17	51	22	18	30	32	102	137

³⁶ Maxwell, J., and Chmiel, M. (2014) Notes Towards a Theory of Qualitative Data Analysis. In Uwe Flick (Ed). The Sage Handbook of Qualitative Data Analysis. USA: Sage (pp.23-35).
<https://dx.doi.org/10.4135/9781446282243.n2>

³⁷ Crowe, S., Cresswell, K., Robertson, A., Huby, G., Avery, A. and Sheikh, A., (2011). The case study approach. *BMC medical research methodology*, 11(1), p.100-115.

³⁸ Patton, M. Q. (2002). *Qualitative Research and Evaluation Methods*. 3rd Edition. Thousands Oaks. CA: Sage.

Data collection

As described in Table 12, 117 semi-structured interviews and 11 focus groups were conducted with students, external organisations and facilitators to reflect and explore in depth their views regarding KE activities³⁹. The central evaluation team developed a student data collection guideline (see Appendix 1), and an external organisations and facilitators' data collection guideline (see Appendix 2) which explored in a consistent way the same aspects in each strand. As each strand has particular aims and features, each facilitator included specific questions that complemented and customised the data collection. Hence the guideline has 80% of core questions, and 20% of strand-specific questions.

More precisely, the qualitative evaluation guideline explored:

- Participation's characteristics: who participated in KE activities and why participants took part
- Characteristics of strands that positively influenced the KE experience
- Outcomes
- Opportunities and barriers in participation
- Suggestions for improvement

In each case study we collected qualitative data through online semi-structured interviews and face-to-face focus groups during Year 1, and online (Teams and Zoom) during Year 2. These were audio recorded and transcribed verbatim for the analysis.

Pilot

In Year 2, each strand piloted the interview guideline by conducting and analysing one online interview before data collection started. The pilot interview was audio recorded and shared among the central evaluation team. This provided opportunities for enhancing the interview skills of participants as a whole as it allowed sharing of best practice and peer learning. The pilot also allowed for a better estimation of data collection time and worked as a mock interview for strand leaders.

Data analysis

We analysed the interviews and focus group transcripts by developing a hybrid method to content analysis⁴⁰, which combined an inductive bottom-up approach (what participants said) with a deductive top-down approach that explored the presence of themes informed by categories drawn from previous knowledge (what the Systematic Review found), themes derived from our research questions, and from the logic models developed in each strand. During inductive coding we assigned meaning to segments of text using labels (for example

³⁹ Galletta, A., (2013). *Mastering the semi-structured interview and beyond*. New York University Press.

⁴⁰ Chandra Y., Shang L. (2019) Inductive Coding. In: *Qualitative Research Using R: A Systematic Approach*. Springer, Singapore. https://doi.org/10.1007/978-981-13-3170-1_8

‘conditions for success’ or ‘enablers of KE’) that were present in the transcriptions. The deductive coding consisted of interrogating the data using categories informed by the literature (such as “KE mind-set” and “KE skills”), the research questions, and logic models (such as ‘Benefits of KE’ or ‘Limitations of participation’). Both procedures consisted in breaking down the transcriptions into smaller pieces of information and comparing the pieces for similarities and differences before regrouping them under themes and categories⁴¹. We created coding schemes using Excel spreadsheets. Interviews and focus groups were integrated and analysed into one coding scheme per strand. When similar instances started to repeatedly emerge, we became aware that the codes and themes had reached inductive thematic saturation, as no additional information was obtained, and accordingly, we applied selective coding for the analysis of the final transcripts by focusing exclusively on the new rather than the repeated data.

We implemented intra-case analysis (within strand), followed by inter-case analysis (between strands)⁴². We did this by an iterative process of categorizing and connecting data in order to understand how the data relate and interact within and across strands.

Triangulation

To ensure the validity and reliability of the case studies, method, data source and investigator triangulation were implemented⁴³. Interviews and focus groups were conducted to achieve method triangulation. Data source triangulation was obtained by collecting qualitative data from more than one type of stakeholder: students, external organisations and staff in order to include multi-angle and diverse perspectives⁴⁴. Meanwhile, investigator triangulation was attained through the involvement of the central evaluation team in all the phases of the case studies, discussing its sampling, data collection methods, analysis and preliminary findings. This provided multiple perspectives as well as added breadth to the work. Six evaluation workshops were conducted to triangulate and support the analysis.

41 Silverman, D. (2016). *Qualitative research*. Sage Publications: London.

42 Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). *Qualitative data analysis: A methods sourcebook*. 3rd. Thousand Oaks, CA: Sage.

43 Finfgeld-Connett D. (2010) Generalizability and transferability of meta-synthesis research findings. *J Adv Nurs*. 66:246–54.

44 Carter, N., Bryant-Lukosius, D., DiCenso, A., Blythe, J., & Neville, A. J. (2014). The use of triangulation in qualitative research. *Oncology Nursing Forum*, 41(5), 545–547.



Chapter 5 Evaluation Findings

Cross-Strand Quantitative Evaluation

Participant Skills

In this section, we consider changes in KE participants skills over the period of taking part in the programme. As detailed in Appendix 3, we collected information on 28 different skills. For ease of interpretation, we have grouped these skills into four categories. These groups are: 1) leadership/independence, 2) people skills/communication, 3) reflection/self-determination, 4) technical (and an additional 5th group for the four further skills asked in the ICR survey). Survey respondents could rate themselves between 0-10 on each skill, where 0 is ‘not confident at all’ and 10 is ‘completely confident’.

Figure 5 presents regression coefficients from a regression of time period on skill. Each point on the chart shows the increase or decrease in skill group within each strand, with confidence intervals shown around each point estimate. Where the confidence interval includes zero, this means there is no significant change in skill type in the post- survey compared to the pre-survey. For example, in Figure 5, we find participation in the SPERO programme is associated with a 1.04 point increase (out of 10) in leadership/independence skills after the intervention. On the other hand, while we find an increase in the same skill group for EV-EX participants (of 0.875), it is not statistically significant. For all the analysis in this section use the merged sample, described in Table 12. Note that in some cases (as described in Table 2) we only have very small sample sizes. The larger the sample size is, the smaller the effect size that can be detected, and the reverse is also true; small sample sizes can detect large effect sizes. Thus, it could be the case that we are simply unable to detect a significant effect due to the smaller sample sizes, and the results should be treated with caution as a result of this.

Table 13 puts these increases/decreases into context by showing the baseline (pre-programme) average skill for each strand, and additionally showing the regression coefficient as depicted on Figures 5-8. In terms of pre-programme skill levels, participants of all three strands (with SPERO and ICR – which are part of the same strand – reported separately) report being well skilled across all four dimensions of skills (technical skills being the least well developed). EV-EX and CRIS participants reported the highest pre-programme skills across the board.

First, looking at Figure 5, we can see that participants in all three strands reported small increases in their leadership/independence skills after the programmes. For both the SPERO and ICR, these are significant improvements of 1.04 and 0.95 points respectively, or around 17 and 15 %, relative to the baseline. The Evaluation Exchange shows similar increases but these are not significant. The smaller increases in CRIS are also not significant.

In Figure 6, we see improvements in people/communication skills for all three strands, with SPERO participants showing the largest and most significant improvements (of 18% or 1.12 points, from a baseline of 6.36) and Evaluation Exchange participants showing similar increases (12% or 0.94 points from a baseline of 7.75) at lower levels of significance. ICR and CRIS showed smaller increases, which were weakly significant and non-significant respectively.

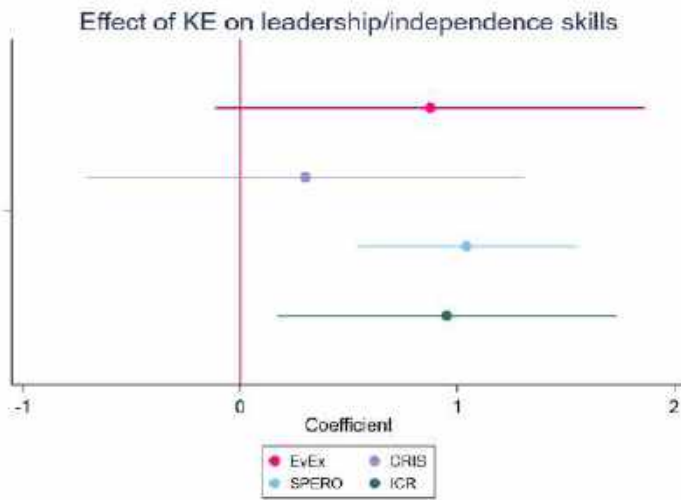
Turning to reflection/self-determination in Figure 7, we see that participants in the SPERO and ICR programmes again reported significant improvements along this dimension of around 1 point each – or 18 and 14% respectively, following their KE programme. Those in the Evaluation Exchange and CRIS strands also reported improvements but these were statistically indistinguishable from zero.

In Figure 8, we examine changes in technical skills, such as data handling and evaluation skills. Here, the story is much the same, with increases for each of the strands (of about 1 point), but with only SPERO and ICR participants experiencing significant increases of 20 and 15% respectively (but starting from a lower baseline).

Finally, in Figure 9, we present changes in business skills – which were only included in the ICR survey. There is a significant increase, of over 3 points (a doubling from the baseline), in reported skills in this domain for ICR participants.

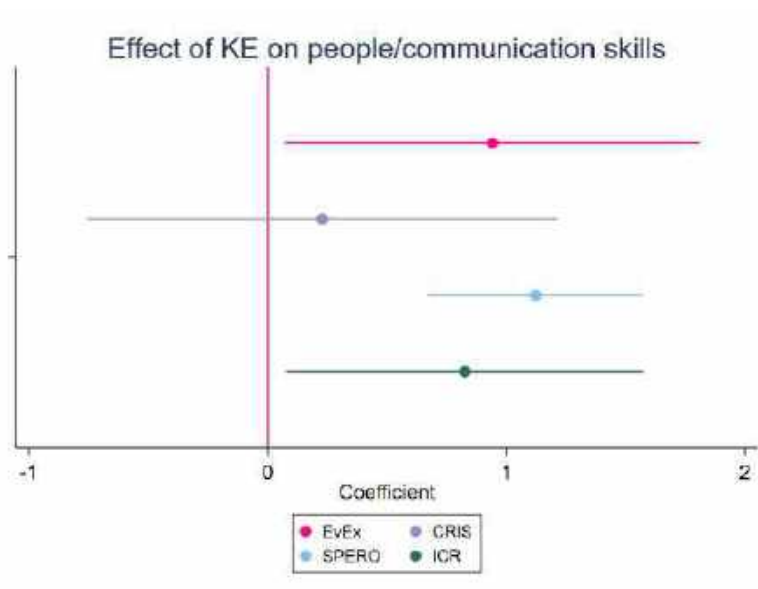
Overall then participation in strand three – SPERO and ICR – is associated with around a 1 point increase in skills – amounting to about 15-20% skills improvement across all domains measured. These are similar programmes being implemented in two separate institutions, so the similarities across these results is reassuring. Evaluation Exchange and CRIS participants also showed improvements, but these were in most cases not significant. As noted above, the particularly small sample sizes of the survey in the Evaluation Exchange may have impacted on these results, making it harder to find a small effect size. As noted previously, these results are all measuring associations between programme participation and outcomes and cannot be attributed directly to participation in the programme due to a lack of control group for comparison.

Figure 4. Leadership/Independence skills



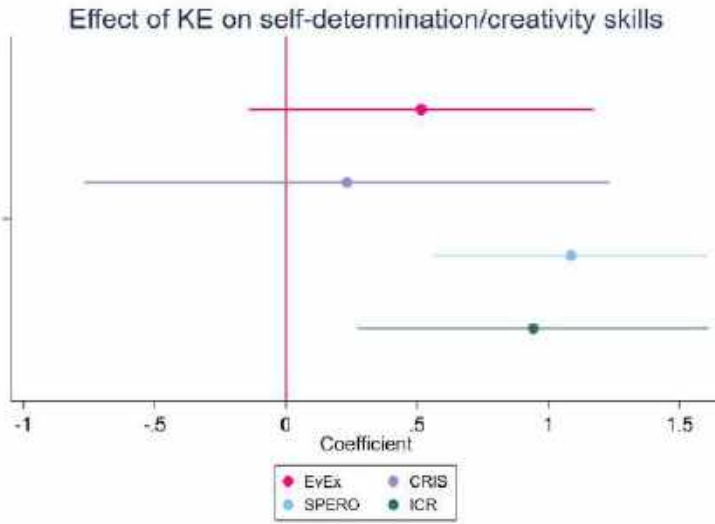
Note: Coefficients refer to point increase/decrease in each skill

Figure 5. People/communication skills



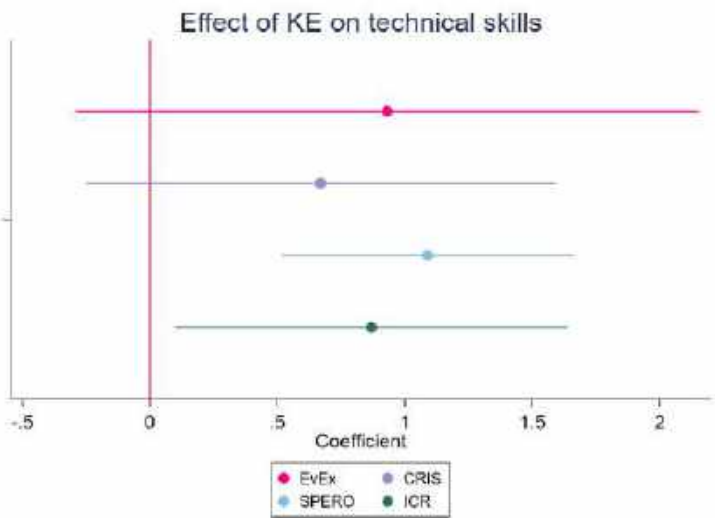
Note: Coefficients refer to point increase/decrease in each skill

Figure 6. Self-determination/Creativity skills



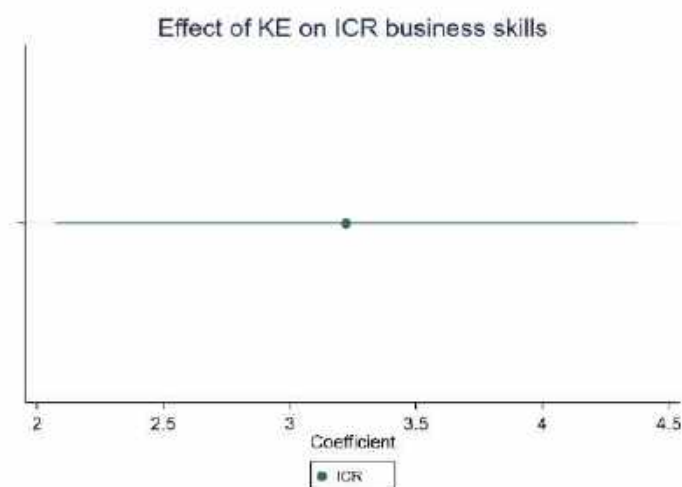
Note: Coefficients refer to point increase/decrease in each skill

Figure 7. Technical skills



Note: Coefficients refer to point increase/decrease in each skill

Figure 8. ICR business skills



Note: Coefficients refer to point increase/decrease in each skill

Table 13. Change in skills by Strand

<i>SKILL</i>	Pre-survey averages				Regression results			
	EV EXC	CRIS	SPERO	ICR	EV EXC	CRIS	SPERO	ICR
A- Leadership/independence	7.60	6.82	6.25	6.25	0.875 (0.48)	0.30 (0.50)	1.04*** (0.25)	0.95* (0.39)
B- People/communication	7.75	7.14	6.36	6.49	0.94* (0.42)	0.23 (0.48)	1.12*** (0.23)	0.83* (0.37)
C- Reflection/self-determination	8.07	7.14	6.21	6.55	0.52 (0.32)	0.23 (0.49)	1.09*** (0.26)	0.94** (0.51)
D- Technical	6.83	6.74	5.37	5.89	0.93 (0.59)	0.67 (0.45)	1.09*** (0.29)	0.87* (0.62)
E- ICR further skills				3.87				3.22*** (0.57)
<i>Sample size</i>					12	19	60	29
<i>Significance key: ***p<0.001 **p<0.01 * p<0.05</i>								

Notes: Skill 19: Data/information handling skills, including ethical storage of information was not asked in the CRIS surveys and so group D only consists of two skills for this strand (see appendix)

For completeness, Table 14 presents the full breakdown of all 28 skills for each strand (plus the additional 4 skills collected by the ICR programme). We present the pre-survey averages for each skill per strand, and the results from the model regressing skill score on survey period.

This more detailed table highlights the clear improvement in skills across the board for SPERO and ICR (though subject to the caveats about sample sizes mentioned above).

Table 14. Full results of all changes in skills by Strand

SKILL	Pre-survey averages				Regression results			
	EV EXC	CRIS	SPERO	ICR	EV EXC	CRIS	SPERO	ICR
1- Communication skills	8.33	7.57	6.52	6.75	0.58 (0.64)	0.44 (0.58)	0.97** (0.36)	1.11* (0.47)
2- Leadership skills	7.58	7.20	6.43	7.00	0.92 (0.59)	0.55 (0.59)	1.08*** (.30)	0.25 (0.44)
3- Being a self-starter	7.50	7.11	6.00	6.21	1 (0.76)	0.04 (0.55)	1.6*** (0.39)	1.17* (0.51)
4- Dealing with conflict	7.00	6.46	5.47	5.61	1.17 (0.61)	0.36 (0.82)	1.18** (0.37)	0.68 (0.62)
5- Reflective skills	8.58	7.37	7.15	6.82	0.58 (0.50)	0.55 (0.44)	0.45 (0.33)	0.89* (0.43)
6- Negotiation skills	7.33	6.65	5.80	5.86	1.17* (0.46)	0.56 (0.69)	1.28*** (0.37)	1.18* (0.48)
7- Influencing skills	7.00	6.80	6.13	5.57	1.17 (0.6)	0.54 (0.67)	0.92** (0.33)	1.39* (0.54)
8- Having a difficult conversation	6.33	6.12	5.08	5.25	1.58* (0.76)	0.15 (0.70)	1.12** (0.38)	0.39 (0.70)
9- Project evaluation skills	6.75	6.88	5.62	5.82	1.43 (0.69)	-0.17 (0.56)	1.35*** (0.29)	1.71** (0.50)
10- Thinking creatively	8.08	7.34	6.30	7.21	0.5 (0.61)	-0.41 (0.65)	1.13*** (0.32)	0.61 (0.46)
11- Interacting with diverse people and environments	8.75	8.20	7.25	7.11	0.42 (0.44)	0.22 (0.59)	1.19*** (0.29)	0.86 (0.43)
12- Noticing opportunities for change	7.92	7.60	6.20	6.32	0.67 (0.44)	0.15 (0.58)	1.11*** (0.32)	1.39** (0.44)
13- Taking responsibility	9.08	8.11	7.37	7.50	0.42 (0.30)	0.08 (0.55)	0.79** (0.27)	0.79 (0.43)
14- Finding innovative solutions	8.17	7.42	6.25	6.79	0.25 (8.17)	0.16 (0.60)	1.09** (0.34)	0.71 (0.43)
15- Listening skills	8.55	7.69	7.32	7.04	0.37 (8.55)	0.26 (0.52)	0.77* (0.33)	0.36 (0.46)
16- Presentation skills	7.08	7.15	5.93	6.46	1.42 (7.08)	0.04 (0.69)	1.29*** (0.38)	1.36** (0.49)
17- Putting ideas forward to a group	7.50	7.23	6.02	6.82	1.25* (0.55)	0.58 (0.57)	1.51*** (0.33)	0.75 (0.44)

18- Professional social media skills	6.33	6.26	4.35	5.32	0.83 (0.85)	1.51* (0.60)	0.92* (0.45)	0.64 (0.61)
19- Data/information handling skills	7.42	8.27	6.15	6.46	0.5 (0.74)	N/A	0.87* (0.38)	0.25 (0.46)
20- Working collaboratively	8.50	7.45	7.27	6.86	0.67 (0.41)	-0.22 (0.59)	0.78* (0.30)	1.11** (0.40)
21- Applying research skills in real life	7.75	7.02	6.12	6.25	1.08* (7.75)	0.63 (0.63)	1.2*** (0.35)	1.64*** (0.43)
22- Sensing, taking action, getting organised quickly	8.42	7.37	6.33	6.00	0.25 (8.42)	0.41 (0.63)	1.17*** (0.33)	1.36** (0.47)
23- Persevering, accepting & learning from failure	8.58	7.51	6.80	7.43	0.25 (8.58)	-0.18 (0.71)	0.92** (0.35)	0.25 (0.43)
24- Taking risks with thoughts/beliefs/desires	7.67	7.45	6.05	6.54	0.42 (7.67)	-0.10 (0.67)	1 ** (0.38)	0.86 (0.56)
25- Self-control/direction/motivation to work independently	8.08	7.18	6.87	6.32	0.58 (0.64)	0.14 (0.58)	0.53 (0.35)	1.14* (0.47)
26- Capacity to produce unique/valuable ideas	8.17	6.82	6.05	6.36	0.67 (8.17)	0.95 (0,65)	0.88* (0.37)	0.79 (0.50)
27- Create things spontaneously	7.33	6.00	4.85	5.82	0.5 (7.33)	0.16 (0.74)	1.83*** (0.41)	0.93 (0.55)
28- Team building for enterprise/venture	6.33	4.83	4.70	4.89	1.17 (6.33)	0.45 (0.79)	1.32** (0.45)	0.96 (0.67)
29- Develop a commercialisation/start-up idea				4.29				2.92*** (0.64)
30- Create a business proposal/outline				3.61				3.64*** (0.58)

31- Develop an entrepreneurial pitch				4					3.75***(0.60)
32- Participate in the university's entrepreneurial competitions				3.57					2.57***(0.73)
<i>Sample size</i>							19		
<i>Significance key: ***$p < 0.001$ **$p < 0.01$ *$p < 0.05$</i>									

Highlights from the table for the Evaluation Exchange programme are the improvements in the negotiation skills, having difficult conversations, putting ideas forward to a group, and applying research skills in real life. For CRIS, the improvements are around professional social media skills. For SPERO, the biggest increases appear to be in being a self-starter, putting ideas forward, and creating things spontaneously. And for ICR there were particularly large increases in project evaluation skills and applying research skills in real life. Skills that improved across all or most of the strands were negotiation skills, presentation skills, and applying research skills in real life.

Civic Engagement

We might expect KE programme participants to be particularly engaged in aspects of their community, such as volunteering, being members of groups or clubs, or taking part in local campaigns. In this section, we explore the most common reasons cited by programme participants for taking part in such activities, the most common types of voluntary work they undertake, as well as participation in clubs, and types of public participation. This analysis was carried out only on the baseline surveys (see Table 12).

Respondents were able to give multiple reasons for their civic engagement activities – including 14 possible reasons for helping, 10 possible reasons for volunteering, 5 possible reasons for attending clubs and groups, and 10 possible reasons for public participation (in all cases an ‘other’ category was also allowed). In each case we attempt to provide context by benchmarking the three most commonly reported responses against those in national surveys, or reports (as detailed below).

Reasons for helping

Participants mentioned a small number of common reasons for helping groups, clubs or organisations. Most common reasons were to improve things/help people; where a cause was really important; the chance to learn new skills; and where they had identified a need in the community. We can compare these reasons with respondents in the nationally representative 2020/21 Community Life Survey (CLS), where respondents were asked the same question^{45, 46}. Interestingly, the Strand members reported very similar reasons for helping as were reported in the CLS, apart from ‘spare time to do it’ which was not mentioned as often.

45

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/331521/Community_Life_questionnaire_2014-15.pdf

46 <https://www.gov.uk/government/statistics/community-life-survey-202021>

Table 15. *Thinking about all the groups, clubs or organisations you have helped since beginning the programme, did you start helping them for any of the following reasons: Most common reasons given.*

Most common response	CLS	EV EXC	CRIS	SPERO	ICR
1.	Improve things/help people	Improve things/help people	Cause really important to me	Improve things/help people	Improve things/help people
2.	Cause really important to me	Cause really important to me	Improve things/help people	Chance to learn new skills	Chance to learn new skills
3.	Spare time to do it	There was a need in the community/Chance to use existing skills	Chance to learn new skills	Cause really important to me	Cause really important to me

In our next three tables, we examine the reasons our KE students give for volunteering (Table 16), the kinds of community activities students involve themselves in (Table 17) and the types of public participation students are involved in (Table 18). In each case, we surveyed our respondents on the basis of the most commonly cited reasons given for volunteering, taken from the 2011 ‘Pathways through Participation’⁴⁷ report of Involve (the UK’s leading public participation charity). They interviewed over 100 people, aiming to understand how individuals get involved and stay involved in different forms of participation, to improve knowledge and understanding of people’s pathways into and through participation and of the factors that shape their participation over time. Thus, all of the reasons mentioned by our KE respondents are commonly found among public participants as a whole.

As Table 16 shows, students in all of our strands most commonly participate in volunteering to share skills. Those in EV-EX, CRIS and SPERO also mentioned volunteering for international NGOs. Volunteering in care settings or hospitals were also common among participants, as was being on boards or committees.

⁴⁷ https://involve.org.uk/sites/default/files/uploads/Pathways-Through-Participation-final-report_Final_20110913.pdf

Table 16. *Thinking about any voluntary work that you've been involved since beginning the programme, have you been involved in any of the following? Most common reasons given.*

Most common response	EV EXC	CRIS	SPERO	ICR
1.	Volunteering to share skills	Volunteering to share skills	Volunteering to share skills	Volunteering to share skills
2.	Volunteering for an international NGO	Volunteering for an international NGO	Being on boards or committees	Being on boards or committees
3.	Acting as volunteer translators/befrienders	Volunteering in a hospital, care setting/Being on local groups of national charities	Volunteering for an international NGO	Volunteering in a hospital, care setting

Looking at volunteering in groups, clubs and organisations (Table 17), this most usually takes the form of involvement in community activities, running community media outlets, or being members of sports groups. Some participants are also involved in places of worship.

Table 17. *Have you been involved with any of the following groups, clubs, or organisations, again since beginning the programme? Most common responses given.*

Most common response	EV EXC	CRIS	SPERO	ICR
1.	Involvement in community activities	Involvement in community activities	Involvement in community activities	Members of sports groups
2.	Running community media outlets	Running community media outlets	Members of sports groups	Involvement in community activities
3.	Involvement with place of worship/ Members of sports groups	Members of sports groups	Running community media outlets	Involvement with place of worship

In terms of public participation (Table 7), respondents reported activities such as signing petitions, taking part in demonstrations and protests, and contacting MPs. Some (e.g. in SPERO and ICR) were involved in activists networks.

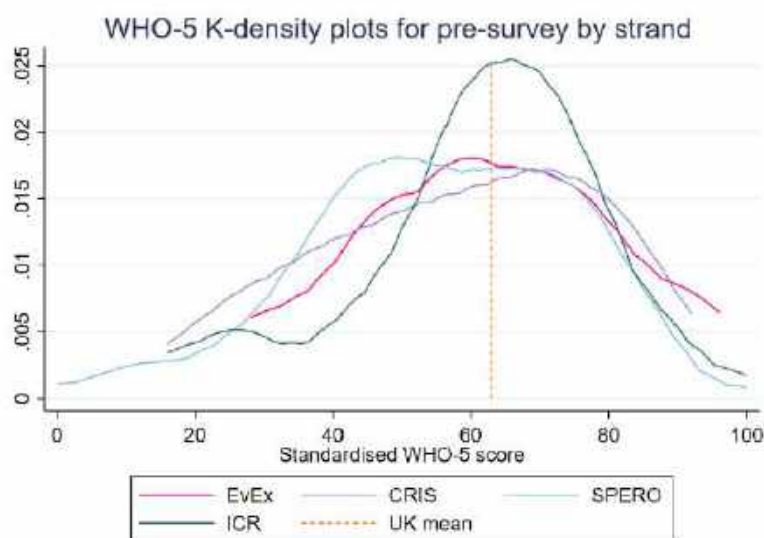
Table 18. *Have you been involved with any of the following types of public participation (related to democratic process) since beginning the programme? Most common responses.*

Most common response	EV EXC	CRIS	SPERO	ICR
1.	Signing petitions	Signing petitions	Signing petitions	Signing petitions
2.	Taking part in demonstrations and protests	Taking part in demonstrations and protests	Taking part in demonstrations and protests	Being part of an activist network
3.	Contacting MPs	Being part of an activist network	Contacting MPs/ Being part of an activist network	Contacting MPs

Wellbeing

We are interested in understanding wellbeing amongst our KE participants, and how this might have changed since their involvement in the programme. We surveyed respondents about their wellbeing based on the World Health Organisation’s WHO-5 wellbeing scale (standardised to give a maximum score of 100) as well as an adapted version of the UCLA loneliness scale (a four-item scale), as depicted below.

Figure 9. Wellbeing



The European Quality of Life Survey (2016) found that the UK had a mean WHO-5 score of 63.⁴⁸ Figure 20 plots the pre-programme distribution of wellbeing scores by strand. As the chart shows, while the UK mean is 63, there is a large spread of wellbeing scores, with some as high as 100 and as low as 20. Similarly, each of the KE strands have a very wide spread of wellbeing scores at baseline, though values are most commonly found (i.e. the curves' highest points) just below the UK mean.

Table 19 shows that at the baseline, each programme had wellbeing levels that were below the UK mean, other than Evaluation Exchange participants who appeared to have wellbeing levels at very similar levels to the UK. SPERO participants appeared to have the lowest wellbeing among the strands. As shown in Table 19, our statistical analysis did not reveal any significant positive or negative association between participation in KE programmes and overall wellbeing among any of the strands (or with all 3 strands put together).

Table 19. wellbeing regressions

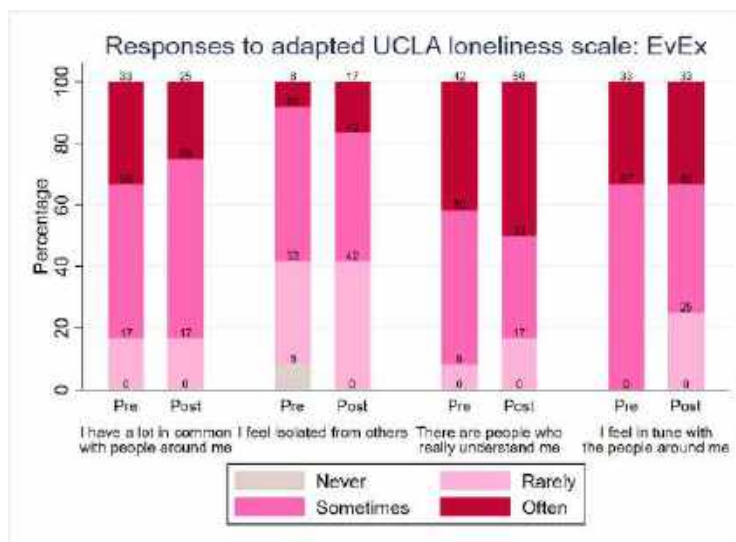
	ISIKLE (overall)		EV EXC		CRIS		SPERO		ICR	
Pre-survey average	58.14		62.67		59.16		55.53		61.19	
Post-survey average	56.07		63.33		48.67		58.87		56	
Coefficient (Standard error)	-2.07 (2.58)	0.42	0.67 (7.31)	p=0.93	-10.49 (6.34)	0.11	1.33 (3.65)	p=0.715	-5.19 (5.51)	p=0.351

⁴⁸ <https://www.eurofound.europa.eu/data/european-quality-of-life-survey>

Finally, in terms of wellbeing, we can examine types of loneliness among our KE participants. In each case we examine trends pre- and post- KE participation on 4 items from the UCL loneliness scale.

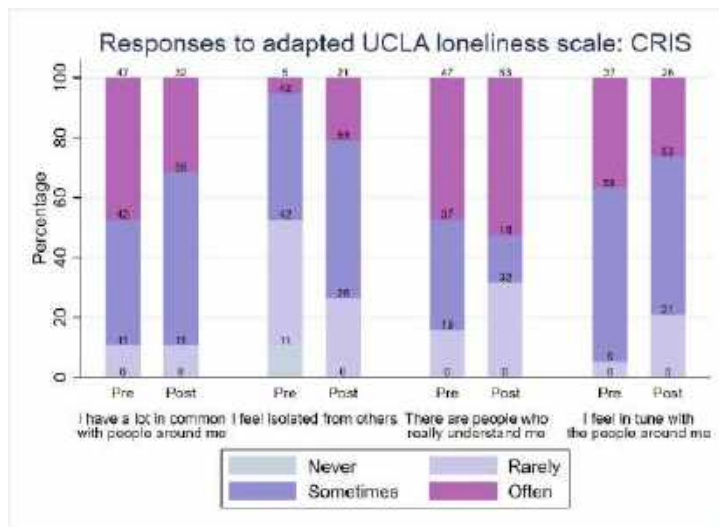
As can be seen in Figure 11 to Figure 14, there is some movement in the responses among participants. For example, in Figure 11, among Evaluation Exchange participants, there was an increase in the proportion of respondents reporting ‘there are people who really understand me’ often (increasing from 42 to 50%). A similar increase in the same question can be shown for CRIS participants in Figure 12. In Figure 13, among SPERO respondents, there was an increase in the proportion reporting ‘I have a lot in common with people around me’ often and sometimes, versus never and rarely. And in Figure 14 among ICR respondents, there was a small increase in the proportion of people saying they rarely or never feel isolated from others.

Figure 10. UCLA loneliness scale – EV EXC



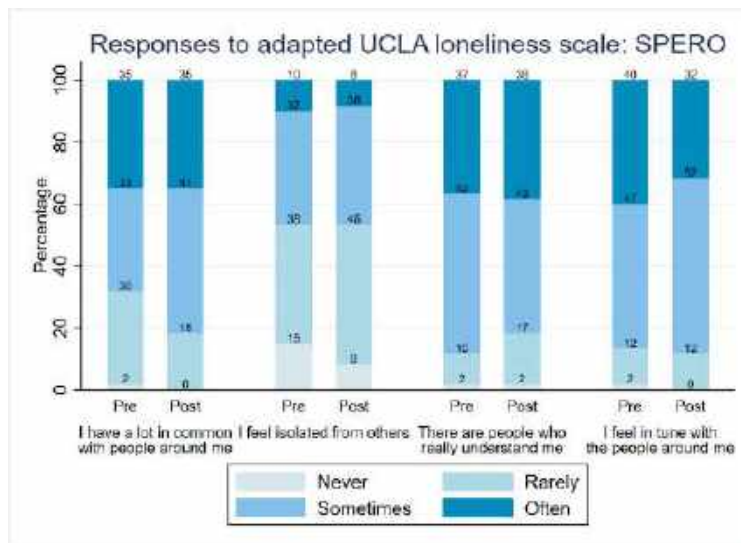
Note: The percentage for each bar is displayed above it. Categories with no respondents are represented by a zero (this sometimes effects multiple categories)

Figure 11. UCLA loneliness scale - CRIS



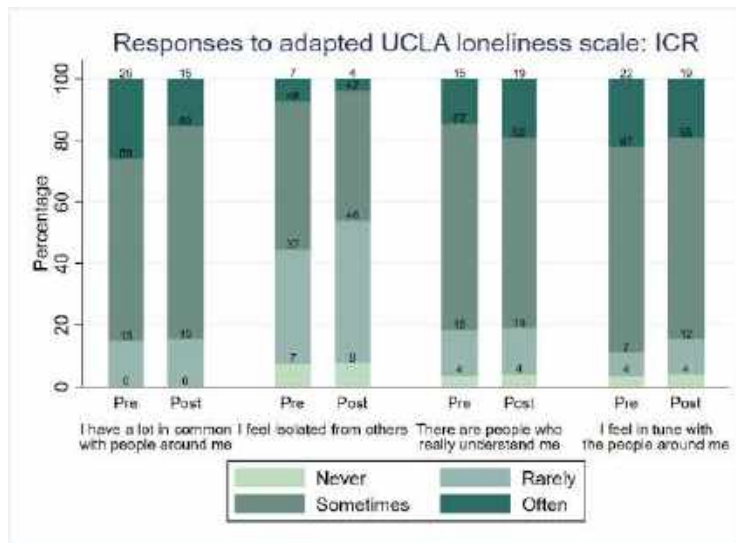
Note: The percentage for each bar is displayed above it. Categories with no respondents are represented by a zero (this sometimes effects multiple categories)

Figure 12. UCLA loneliness scale - SPERO



Note: The percentage for each bar is displayed above it. Categories with no respondents are represented by a zero (this sometimes effects multiple categories)

Figure 13. UCLA loneliness scale - ICR



Note: The percentage for each bar is displayed above it. Categories with no respondents are represented by a zero (this sometimes effects multiple categories)

Career Aspirations

Next, we can consider (at baseline) what is important for students in their future careers. As can be seen in Table 20, there are some interesting differences between strands. Having an opportunity to contribute to society, and financial security were seen as important reasons for all strands. But a positive work balance was particularly important to Evaluation Exchange members, whereas ICR members cited the opportunity to be creative as also important. Having the opportunity to be in control does not appear in the top 3 reasons for any of the strands.

Table 20. Thinking about your future career or your future, what’s important to you?

Most common response	EV EXC	CRIS	SPERO	ICR
1.	Positive work/life balance	Opportunity to contribute to society	Financial security	Financial security
2.	Opportunity to contribute to society	Positive work/life balance	Opportunity to contribute to society	Opportunity to be creative (2 nd)
3.	Financial security/Opportunity to be creative	Financial security	Positive work/life balance	Opportunity to contribute to society (2 nd)

Table 21 explores how students expect their KE programme to help them reach their goals. Again a number of different reasons were given. Evaluation Exchange and CRIS participants

expressed that they felt it would help them understand more about organisations outside the university, and to help find opportunities to develop new insights into their research and practise. SPERO and ICR members listed learning new skills as an expectation, including skills to enhance their chances of success in their future business, and skills to broaden their career choices. Interestingly, the option ‘developing new networks within and outside the university’ is not amongst the most common three choices for any programme.

Table 21. *How do you expect that participation in your student knowledge exchange programme will help you reach your goals?*

Most common response	EV EXC	CRIS	SPERO	ICR
1.	Understanding more about organisations outside the university	Finding opportunities to develop new insights into my research and practice	Learning new skills to enhance changes of success of my future business or start-up company	Learning new skills to broaden my career choices
2.	Finding opportunities to develop new insights into my research and practice	Understanding more about organisations outside the university	Learning new skills to broaden my career choices	Finding opportunities to develop new insights into my research and practice
3.	Learning new skills to broaden my career choices/ Developing new networks within and outside the university	Learning new skills to broaden my career choices	Understanding more about resources and support for start-ups within the university	Learning new skills to increase science-based innovation in industry

In terms of their own entrepreneurial activities, the strand members reported their current business ownership status, and their aspirations, before and after the programme (figures 10-12).

Perhaps unsurprisingly, SPERO and ICR members are more likely to mention that they are planning to start a business, although this was almost as likely at the outset amongst CRIS participants. The proportions in SPERO and ICR owning a business do not increase during programs, but those at some stage in planning to do so, do, particularly in ICR. Interestingly in all cases, strand members increased their likeliness of intending to partner up, should they want

to start a business, suggesting their participation in the programmes and working with other students may have been positive.

Finally, in terms of career aspirations, students from all strands, except Strand 3, reported a slight increase in having some, or a firm idea of what they wanted to do, whilst the proportion who were not sure dropped, again suggesting a positive experience from the programmes.

Figure 14. Business ownership status

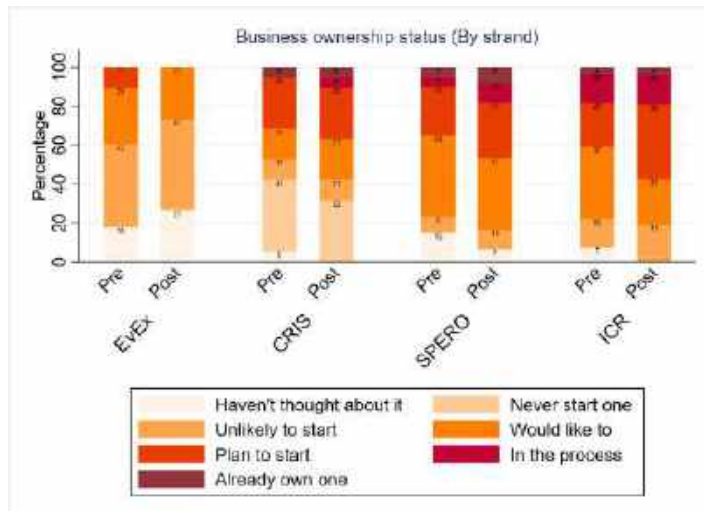


Figure 15. Business ownership - alone or with partners

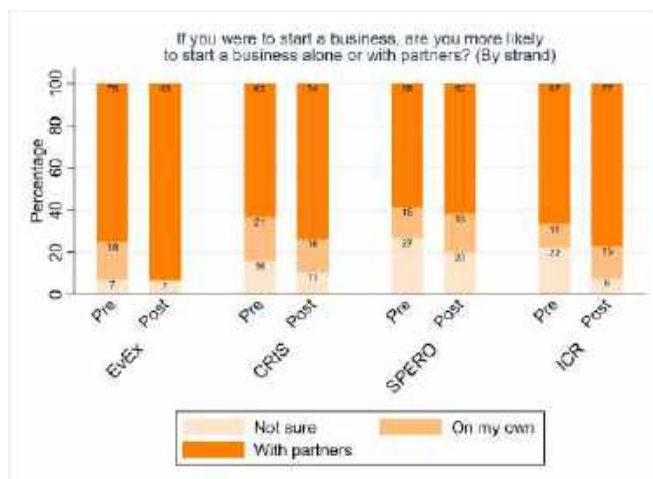
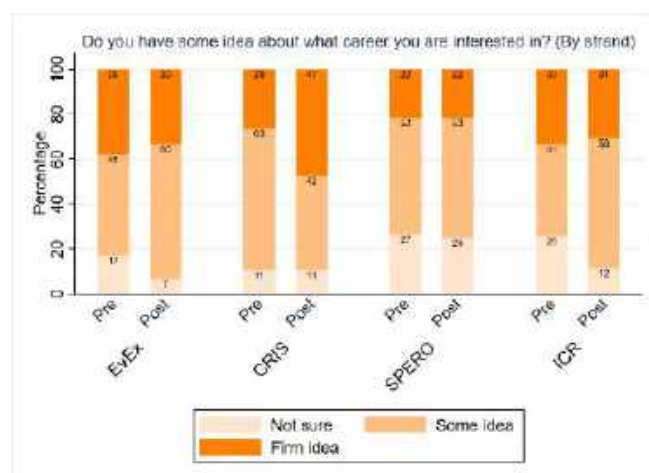


Figure 16. Career aspirations



Equality and Diversity

In this section we examine the characteristics of the students in each programme, with equality and diversity (EDI) in mind. These characteristics are taken from the pre-survey data, including those who might not have been matched to a post-survey. This is to get the best picture of who was involved in these programmes at the outset. Percentages are out of the total responses provided on each question. Different questions had different response rates so the samples for each group vary by characteristic, and so are a subset of the sample sizes shown in Table 22.

Table 22. Characteristics of programme participants

		EV EXC	CRIS	SPERO	ICR
FSM	FSM eligible	0%	76.47%	14.29%	N/A
Sample		10	34	70	
School type	State	N/A	52.54%	55.11%	49.09%
	Independent	N/A	16.95%	18.75%	21.82%
	International	N/A	30.51%	26.14%	29.09%
Sample		27	59	176	55
Highest qualification of parents	Above degree	53.57%	31.48%	35.29%	21.82%
	Degree equivalent	21.43%	44.44%	18.82%	41.82%
	Below degree		12.96%	38.82%	20%
	No qualifications		11.11%	7.06%	16.36%
	Below & no qualifications	25%			
Sample		28	54	170	55
Carer		N/A	13.33%	11.30%	13.56%

Sample		28	60	177	59
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Notes: Collected from pre-survey responses. Sample size varies by characteristic due to non-response. Counts less than 5 are not reported.

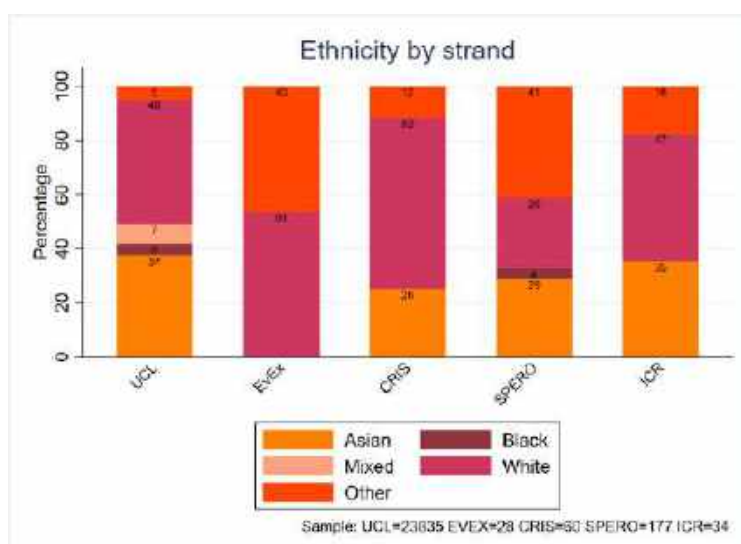
As Table 22 shows, the proportion of students who were on free school meals (FSM) when they were in school (a measure of household poverty), is quite varied by programme. Very high proportions of CRIS participants were FSM, while lower proportions were observed in the other programmes.

In terms of school attended, the majority are from state school backgrounds, though in all cases relatively high proportions attended independent (i.e. fee-paying) schools, versus the UK population which is around 7% of all pupils (DfE, 2022). A large proportion of students also grew up in other countries, and thus attended school internationally. The vast majority of students on ISIKLE programmes have a degree or higher.

In some cases, we are able to benchmark EDI characteristics against UCL as a whole. The following graphs depict these EDI characteristics benchmarked against 2019/20 data from UCL⁴⁹. Any groups that have not been shown have been omitted due to small counts.

Figure 18 presents ethnicity by strand, against ethnicity in the UCL student body as a whole. CRIS and SPERO (as well as ICR, which is based in Manchester) appear to be fairly representative of UCL as a whole in terms of their ethnic breakdown, with high proportions of Asian and white students. The Evaluation Exchange appears to be less representative, having a higher proportion of students reporting as ‘white’ and ‘other’ and a much lower proportion reporting as ‘Asian’ or ‘black’, by comparison with UCL generally. But we need to bear in mind the small sample sizes for this strand which means that groups with counts below five are not shown.

Figure 17. Ethnicity by strand

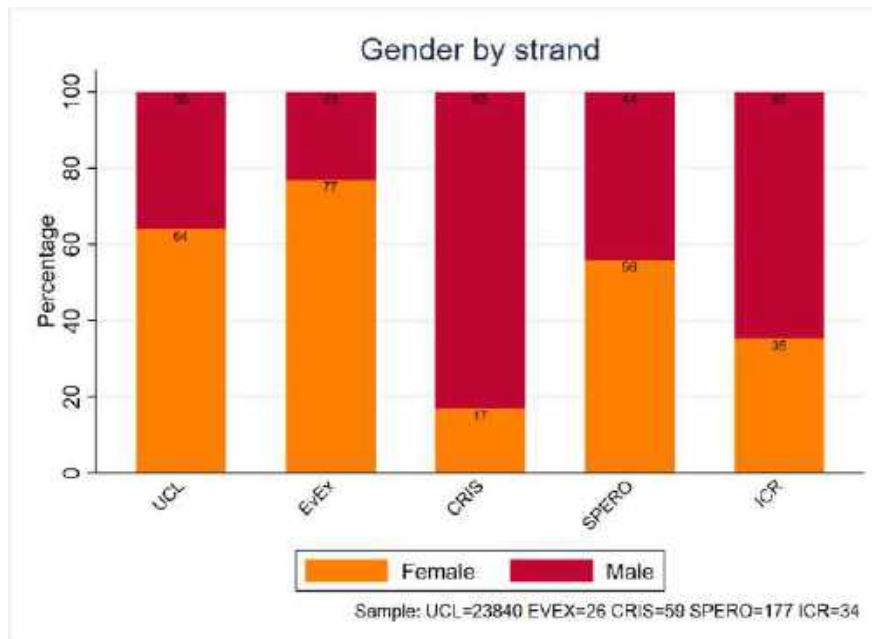


Notes: For these graphs we are using that supplementary student characteristic data for ICR strand

⁴⁹ www.ucl.ac.uk/srs/statistics/

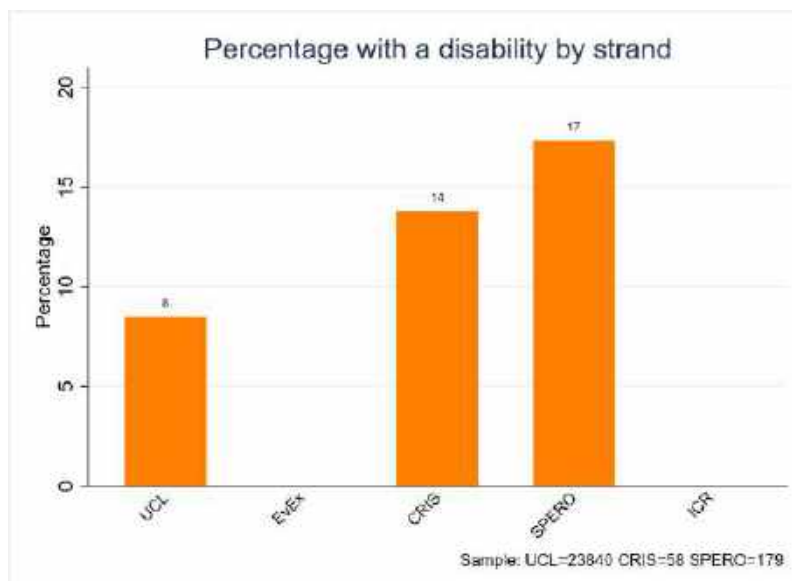
In terms of the gender split (Figure 19), the majority of students report as female in the Evaluation Exchange and SPERO, in keeping with the UCL student body as a whole, whereas in CRIS and ICR the majority report of male.

Figure 18. Gender by strand



The proportion of students with a disability can be seen in Figure 20. Disabled students make up around 8% of students at UCL, versus slightly higher proportions at CRIS and SPERO.

Figure 19. Percentage with a disability by strand



We have previously undertaken analysis of the characteristics of programme participants in the years leading up to ISIKLE (2017-2020). These were based on administrative data taken directly from internal university systems, and therefore present a more accurate picture of the diversity of these programmes, albeit for cohorts from years before ISIKLE. Though not shown here, these data for the most part present a similar picture to what we have shown above, which is reassuring, suggesting the results we have presented in this report are representative of the programmes as a whole.

Qualitative Findings Strand 1: Evaluation Exchange

Participant Characteristics

Twenty-seven participants were interviewed as part in the Evaluation Exchange (EV EXC) qualitative evaluation: seventeen students, four external non-HEI partners, and six staff members from the Evaluation Exchange delivery team.

Students belong to nine out of the eleven UCL's faculties and Advanced Research Institutes: Bartlett (Built Environment); Brain Sciences; Engineering Sciences; Institute of Education; Life Sciences; Mathematical & Physical Sciences; Medical Sciences; Population Health Sciences; and Social & Historical Sciences (except Arts and Laws). Thirteen students were at various stages of their PhDs; two interviewees were early career researchers (Research Fellows), one was a masters student, and one a BA student. Most of participants were located in the UK, whereas two were abroad.

External non-HEI partners also took part in the Evaluation Exchange qualitative evaluation. More precisely, four staff members from four charities who participated in the Evaluation Exchange took part in one focus group. They represented organizations of varying sizes, from very small to very large, and at varying stages of development.

Six staff members from the Evaluation Exchange delivery team further took part in the evaluation in the form of a focus group, including the course leads. Two of this team members also took part in a pan- ISIKLE focus group with the other programme leads.

Reasons for Taking Part

Students gave different reasons for joining the Evaluation Exchange. These reasons can be summarised in terms of a wish to: a) expand their professional future opportunities; b) expand their research profile; c) increase their involvement with the community and d) increase their involvement with the university. Most of students mentioned the first three reasons, whereas the last reason was mentioned by only one student.

a) Expand professional future opportunities: most students hoped to learn about the reality of how non-governmental organizations/ charities function by getting a foot in the door of the third sector. As one respondent put it: *'I'm interested in working for community organisations in the future and seeing how research can fit into that'* (PhD student, Strand 1, Interview 12).

b) Expand research profile: many students wanted to learn more about evaluation, develop new evaluation skills, and learn from how other people - such as their peers – work, especially in an interdisciplinary team, or work in an area linked with their research interests to gain experience and enhance their academic profile. A student from Clinical Education remarked: *'In my PhD I analyse data and I don't necessarily deal with patients or with communities so I thought it would be a good opportunity for me just use research skills for a real-world kind of application'* (PhD student, Strand 1, interview 13).]

c) Increase involvement with the community: some students saw the Evaluation Exchange as a way to get involved with their local community, particularly when they were moved to London for their studies, or wanted to start volunteering, either in general or with specific projects such as community gardens. A BA student from International Development considered that their interests coincided *‘really well with what the Evaluation Exchange proposed, which was working with communities in Newham and Camden’* They added:

So, I think that it has kind of worked really well on my behalf because it’s been a really tangible experience of how charities work in the local area and I’m local to East London anyway’ (BA student, Strand 1, Interview 16).

d) Increase involvement with the university: one student saw the Evaluation Exchange as a way to engage with UCL’s outreach communities:

I’ve been wanting to get more involved with the university since starting my PhD (...) Getting involved with the extra curriculum things. Getting involved with the communities that UCL has links to and ties to. And just kind of forging more connections between actual academia and people that are living in and around the city (PhD student, Strand 1, interview 17).

External non-HEI partners shared the common theme of needing to map and demonstrate impact for fundraising purposes amidst changes to the organization. One of the charities had grown significantly in recent years and therefore needed to professionalize as an organization. This involved finding better ways of collecting and analysing feedback and other data. Their immediate motivation for joining the Evaluation Exchange was that they had recently hired a fundraising manager who needed statistical data that they currently lack. Similarly, a staff member from a different charity felt their organization had changed a lot in recent years and needed a more systematic, ‘less ad-hoc’ way of demonstrating their values and evaluating their impact:

We really want to know how effectively we can demonstrate our values (...) we wanted to have a more comprehensive understanding how to do evaluation that can be embedded in our everyday practice rather than add-on programmes that people are trying to do it in a hurry or in a rush (External non-HEI partners, Strand 1, Focus group participant 2).

Another staff member explained that since their organization previously did not rely on fundraising, they had not developed tools for demonstrating impact and did not understand their demographic very well. Participants agreed that the Evaluation Exchange was a great opportunity for ‘pausing for reflection’ that pace of work in their sector does not allow for. As one external partner put it:

As a lot of organisations you’re just delivering, delivering, delivering and you don’t maybe look back often enough or look at what you’re doing, you know you’re doing it but you don’t really review it, so we really wanted a complete review of what we were collecting and what we were evaluating (External non-HEI partners, Strand 1, Focus group participant 4).

The focus group with Evaluation Exchange delivery staff emphasized the way community organisations used the Evaluation Exchange as a pause for reflection to work out what evidence or activity they needed help with. This supportive role was particularly pertinent after the Pandemic. Organisations had been “fire-fighting”, and experienced the Evaluation Exchange as a chance to re-group and “work out what their needs were live with us.”

Characteristics of the Evaluation Exchange that Positively Influenced the KE Experience

Participants valued six main characteristics of the Evaluation Exchange that positively influenced their KE experience. These relate to the mechanisms found in the SLR identified as possibly instrumental in benefits for students, namely: ‘authenticity’ ‘personal contact, ‘communication methods and frequency’, ‘managing expectations and boundaries and ‘mastery’.

a) Authentic and meaningful experiences that address real-world problems and needs with a potential for a positive solution for the external non-HEI partners: students valued the opportunity to apply their research skills to the ‘real world’ outside academia. The desire to break out of the ‘ivory tower’ was the driving force to apply their research skills to something more ‘useful’, ‘to make a difference’ and to ‘see how things happen on the ground’ in helping real organizations. The following responses are illustrative of these motivations:

The academic skills or the professional skills that I've got from elsewhere can get a bit ivory towered. So, it's nice to actually directly be useful to someone. (PhD student, Strand 1, interview 4);

The link with a real-life organisation and you don't often get that in courses that are on offer and I found that really appealing (PhD student, Strand 1, interview 5);

To be actually engaged with an organisation and see how our work could have value for them and that they were eager to listen to us and that we had something to say. So it was not only an abstract or hypothetical opportunity that oh one day I could do this and this could help somebody, but I have done it and I've seen that actually you know what I have to say can help. So I guess it boosted our confidence in that respect. (PhD student, Strand 1, interview 6).

b) Working together in multidisciplinary groups: Students felt the multi-disciplinary composition of their teams was beneficial in that it brought together a range of different perspectives and people applied different skills. Although people’s differing levels of expertise in diverse areas could be intimidating and made it hard to decide on an initial angle or approach, it made them recognise the uniqueness of what they had to offer. A student said the enthusiasm of the team boosted their faith in their own abilities:

It's really kind of interesting to be able to get that kind of interdisciplinary view on something. We had someone with a mental health background and someone with a social work background. So, it's like you're getting that nice kind of broad view that you can bring to what you're doing rather than kind of being too siloed in how you approach stuff (PhD student, Strand 1, interview 4).

External non-HEI partners echoed that teams' diversity was a huge benefit, but that it needed to be channelled properly during the initial stages of the project. Some staff had initiated a discussion about people's strengths and working practices during the first meeting in order to manage and utilize the diversity of expertise and personality types. A staff member suggested students should get more support from the Evaluation Exchange to figure out a framework for working together, so that the mediating role does not fall on the external non-HEI partners.

c) Personal contact with facilitators: Students expressed feeling supported through informal one-on-one interactions with Evaluation Exchange facilitators. As a PhD student remarked:

[the facilitator] suggested we apply for it and because the two [projects] in the Evaluation Exchange are quite similar (...) we develop this opportunity. So, we got a proposal and value and then approved luckily (PhD student, Strand 1, interview 9).

d) Social persuasion and communication: Students valued greatly the sustained communication with instructors, partner organizations and team members over an extended period of time (i.e six months). Through managing relationships, participants learnt a lot about what styles and methods of communication were more appropriate and effective. Participants also described how organizing meetings in-person helped their team overcome misunderstandings with the partner organization, and many students stressed the importance of clarity and reciprocity in their interactions with partner organizations, as illustrated in the following:

[the external organization] had identified some areas where they wanted to re-evaluate and drafted us in based on where they thought our strengths are. And so one person had more experience in developing a theory of change and they sat with them and looked over that. And then me and one person looked over the quantitative items to see what could be improved. And then two other persons were more on the creative and qualitative side. So we kind of went through a feedback process and reflected on it and tried to understand more also what they need and what is may be too far. So I think it was a co-creation and it was the dialogue once we actually got to the work (PhD student, Strand 1, interview 7).

Participants had differing views on the feedback received. Some found feedback from facilitators very encouraging and reinforcing, and gave them great confidence boosts, as explained by a PhD student in Clinical Education:

We, UCL researchers, were in contact with the charity through the head of the charity and she was present every meeting and she was sort of updating us on how the project was going and also clearly telling us what was working, what wasn't working and how we could, what type of, types of things would be useful for the charity and for staff to carry forward beyond just Evaluation Exchange (...). She also organised an event for us and staff to get together and for us to explain to staff what we've been doing with the Evaluation Exchange (PhD student, Strand 1, interview 13).

Others had not received comments on their team's project proposal, so thought feedback at that stage could have helped them make their aims more realistic and manage their expectations. Some students felt they needed more structured and focused support, in particular with regards to how to get started and what to expect. Some students, in collaboration with the partner organization, took the initiative to get feedback from the organization worked with to get their perspective through focus groups on the project they were proposing. One person from a different team pointed out they would have liked to have received feedback from not just the organisation, but also the service users:

The people from the community garden also bringing their sheer enthusiasm about the garden drew us in and it actually made us excited and got us to go there and it opened my eyes to how important these gardens are, particularly in London and these kind of hidden areas of greenery that often people don't know about (Research Fellow, Strand 1, Interview 11).

e) Mastery experiences achieved after working in complex and discomforting yet attainable challenges: The discomfort created from working with unfamiliar people, hailing from different disciplines and backgrounds, on an unfamiliar task, was highlighted by one student as an opportunity to learn about themselves and grow:

I think it's a really good experience to also get out of your comfort zone as a researcher and try to think about the same problems that we always think about in different ways and with a more practical application (PhD student, Strand 1, interview 13).

Both students and staff described challenges they confronted during the Evaluation Exchange and emphasized their learnings from overcoming these challenges.

f) Managing expectations and boundaries: Participants described the importance of agreements to formalise the expected behaviours and responsibilities of the team and organizations. Often this involved managing expectations. For instance, one staff member described narrowing the aims of the project significantly after the team they were partnered with fell apart, leaving just one researcher. Together with their one remaining student they made a very small and practical, but effective, change. Another staff member described realizing that the goal they had set for the students was unrealistic, because it required an in-depth understanding of the inter-departmental dynamics on the part of students. Although they failed to accomplish the goal, in the process they gained a greater understanding of the problem at hand. Another person described adjusting the scope from rewriting their theory of change and building a new framework for service delivery to identifying what they need to do at the

top level to allow their departments to go about their day-to-day functioning more effectively. Despite achieving much less than they had originally expected, they were pleased with this outcome because it allowed for flexibility of operations rather than enforced uniformity.

At first when we were suggesting a few other evaluation methods and maybe widening the focus, I think there was a little of resistance of, “oh we’re not so interested in that”, or “but we already know what the answers to that are”. But once we kind of shared things and discussed things, they were a lot more open (Research Fellow, Strand 1, interview 11).

Outcomes

Participants described gaining different outcomes from taking part in the Evaluation Exchange. These can be further divided into skills, knowledge, mind-set and concrete outputs.

a) Skills: Students described actualising and gaining different types of skills. These can be further classified into:

Project management and leadership skills: some students gained project management and leadership skills. The lack of a prescriptive division of labour within the team was one of the main challenges. Many students described being forced to become leaders and take more responsibility than they had anticipated. A few students described undertaking efforts to organize and motivate the team, such as using software to provide a digital platform for meeting and sharing resources.

One thing that I really wanted to get out of it was a bit more experience in the project management aspect of an evaluation. So, some of our initial meetings when we were defining our objectives and the kind of structure and sorting out milestones for the project, I tried to put a structure to that and so on. And yes, I felt that that kind of stretched me but in the ways that I wanted to be stretched (Research Fellow, Strand 1, interview 11).

Several students felt that although they knew about questionnaire design, report writing, graphic design, or quantitative analysis, the Evaluation Exchange provided them with an opportunity to hone their existing skills and gain confidence.

It’s definitely kind of clued me into the fact that I am more capable of that kind of work [graphic design] than I thought and therefore I may pursue jobs kind of closer to that route than I otherwise would have’ (PhD student, Strand 1, interview 15).

Crucially, participants also gained new skills from each other, including how to do a participatory research project and different approaches to research design.

Critical and analytical skills: students felt they added value to the project by bringing a critical, analytical or ‘scientific’ attitude.

Communication skills: students felt they developed their communication skills to adjust and provide bespoke solutions to diverse end users. Students also described learning about how to navigate the ‘client/consultant’ relationship, which included scheduling meetings, managing expectations, reaching consensus, and finding the right tone and style of communication. Some students gained communication skills by for example developing posters, promotional videos, pamphlets, Instagram reels, to enhance the visibility and uptake for the organizations and their users.

We had to find a way of being, communicating without using jargon (...) but making ourselves understandable to other people and that’s a challenge but it was a good challenge (PhD student, Strand 1, interview 13).

b) Knowledge: Students learned about the relation between research and evaluation, and how these can feed into each other. They also learned how to conduct evaluations more broadly and build a theory of change in specific.

I learnt a lot about how to work with I don't know, indicators and all this, theory of change was a new thing to me. So, it taught me how to think about evaluating whatever basically, not just organisations but I guess any policies. I guess I could draw on from the experience so, I definitely learnt a lot (PhD student, Strand 1, interview 1).

Few participants responded affirmatively to the question about gaining a better understanding of the local community, with some students explaining they lived far from the projects they were partnered with. At the same time, students gained insight into how communities operate. One student described how the Evaluation Exchange led them to recognize the importance of the interrelated connections and networks that bind communities together. They also learned about the utility of informal conversations as a way of getting to know communities and stakeholders and their needs, and explained learning a lot about diversity and representation through difficult but important conversations. For this student, learning about the “power” of communities was the key take-away from the programme.

Staff from the partner organizations suggested there was a KE between the students and the partner organisations and that the relationship had been mutually beneficial for the most part. One person learned that feedback from services users need not be a 20-page report but can instead take the form of small focus groups or comments on a wall. Another example included the difference between short-term priorities and long-term goals, with one person saying they had realized through the Evaluation Exchange that it is okay to focus on a few core policies while the organization is still small. Another person pointed out that while the students learn about how civil society organizations work, the organisation can benefit from the specific knowledge and approaches associated with the students’ respective disciplines.

Staff suggested there was more to gain for the students than for the organizations, given the gap in age and experience. Matching the emphasis on adaptability in the student feedback, one person said they found it interesting to see the student struggle to adapt their project to the needs and timeline of the organization. At the same time, becoming aware of importance of reflection, described as “taking a step back”, was a recurring theme in staff members’ reflections.

c) Mind-set: Students learned about the importance of flexibility and adaptability when working outside academia. They described working with the organizations and adapting projects to their needs and resources as a “reality check” about the restraints on research in non-academic settings.

The point of the Evaluation Exchange you know how research in an academic environment doesn't really map so easily on to a community organisation and I think you know as researchers we have to put a lot of things to the side and say okay these are things that we might do if we were evaluating something formally as an academic research project but in this situation it won't work and so yes kind of that flexibility and adaptability was definitely something which I sort of knew already but sort of saw in practice (PhD student, Strand 1, interview 12).

Conversely, staff at the charities described becoming more realistic about what they could achieve and prioritizing accordingly as a key learning from the programme. This adaptability manifested as mutual expectation management and emerged through/is related to the mastery experiences achieved after working in complex and discomfoting yet attainable challenges.

The Evaluation Exchange delivery team highlighted the change in mind-set that they witness in the organisations during and after taking part. Organisations who are working under considerable pressure and can be tempted to keep going in the same way, were given permission and support to experiment.

I think a lot of it is about confidence. I think they often start out thinking, this is scary and I don't know where to begin or I don't think we do this very well, but we'll just do the bare minimum, keep it safe, do the boring stuff. You know where we are. And I think a lot of it is about discovering that it is all right and it's all right to try doing it differently, see what happens. And creating that environment where it's okay to experiment, that is encouraged to experiment and see what happens and discover that they can (Evaluation Exchange delivery team, Strand 1, focus group participant 3).

d) Outputs: Students created a variety of concrete outputs for the partner organization, which they hoped would benefit the communities these work with ‘down the line. They created surveys and questionnaires with which the organization can assess need among their service users and/or evaluate and demonstrate impact. Sometimes students helped organizations understand the kind of data they already have and identify what data they need. Students also worked with organizations to create or update their theory of change. Other outputs included a handbook with guidance advice for evaluation, a pamphlet about the partner organization, a final report for the organisation’s steering group, an interactive digital map, an event to communicate the Evaluation Exchange work and an action plan for increasing diversity.

Students stressed the importance of these outputs as they were, on the one hand, a way of making their learning visible and able to share with the Evaluation Exchange, but on the other, they confirmed the usefulness of their work for the organisations as marked in many cases the end of their exchange. Conversely, when outputs were missing, students felt inadequate.

Staff from organizations also gave examples of concrete outputs, including a mechanism for feedback from service users and an up-dated theory of change. Additionally, or in the absence of concrete outputs, staff emphasized more intangible changes, such as a better understanding of the organization's priorities or better co-ordination between the organization's different departments. One staff member explained their organization has brought on a fundraiser manager and "completely flipped" the manner in which they operate after participating in the programme.

Opportunities and Barriers

Career opportunities.

Students did not report that the Evaluation Exchange had impacted their career interests or aspirations. Yet, they described many ways in which the Evaluation Exchange had enhanced their skills in job search and applications. More precisely, many students felt the Evaluation Exchange has boosted their career opportunities by giving them demonstrable evidence of interest in charity sector work and research and evaluation skills.

You know in interview questions where they're like, "How have you demonstrated this skill?" I think it's definitely given me that opportunity. Yes, I feel a bit more confident as well that my PhD has given me broader skills because before that I was feeling a bit like "oh, I can only do this one weird niche thing (PhD student, Strand 1, interview 3).

Others said they did not feel their career options had increased, but that they had gained a better understanding of the applicability of research outside academia. Several students felt more comfortable approaching organizations like the one they had been partnered with, either for their own research or for volunteering and job opportunities.

This kind of experience can be built into my CV directly actually and I can contact the communities more which will benefit me a lot for my future career (PhD student, Strand 1, interview 9).

The connection to the partner organizations was described by some as a valuable and on-going relationship, and some students had been told the organization would give them a reference for future job applications. One student had discussed setting up a one-off volunteering opportunity with the partner organization and their department. Evaluation Exchange also opened opportunities within different departments in UCL:

We've been able to interact with people from local government and community organisations as well as interacting with students from different departments and so on. So, yes definitely widened the networks (Research Fellow, Strand 1, interview 11).

Staff from organizations said they were impressed with the students' enthusiasm and that they were interested in maintaining the relationship with the students beyond the remit of the Evaluation Exchange, so as to take advantage of their interest and their skills and expertise. One person described this as a 'bonus for both of us.

Barriers

Covid-19 related delivery mode

Due to lockdown and other Covid-19-related public health measures, students working on the Evaluation Exchange were mainly confined to online working. Students found meeting online acceptable as they found conference calling an effective medium for learning and collaboration, which was especially convenient given people's busy schedules and the fact that some of the students were living abroad. One group used software for organizing the team, which was described by many students as a challenge.

Although not everyone experienced working online as a limitation, many expressed missing the face-to-face contact with other participants as well as not being able to visit many partner organizations and/or meet service users of the organization they were teamed with as a drawback that hindered communication and the development of a good working relationship.

At a distance you need more time to create personal relationships instead of just seeing each other sometimes for designing the research and the evaluation. While online, it was just very....okay, we have to do the meeting we have to this and that's it (MA student, Strand 1, interview 10).

What they missed the most was the opportunities afforded by face-to-face interaction for expanding their friendships and networks.

You do meet people remotely but the contacts are very constrained to these interactions. Whereas I guess that if we were meeting face-to-face there would be something beyond the Evaluation Exchange tasks that we could share like we could go to a cafe and then you know I could ask somebody about previous experiences or where do you live or what football team do you support. And yeah this was lost to Covid and then I would say yeah I might get in contact with someone from the team I was working with but I highly doubt that (PhD student, Strand 1, interview 6).

We've only met people online and I think that just prevents you from building networks (PhD student, Strand 1, interview 7).

Students also identified constraints derived from the online engagement with the Evaluation Exchange as a whole.

The trainings that were online we did one every couple of months, three in total which were run historically in person but obviously this year were online and so they were quite kind of limited with the amount of engagement that you might have had with other groups or with organisers of the programme and so when I went to the end event which

was a couple of weeks ago where we came together in person for the first time it almost felt quite disconnected (PhD student, Strand 1, interview 12).

The Evaluation Exchange delivery partners validated constraints from online engagement for students, reporting that students appeared to find it hard to engage with new people online in group work, they weren't used to having their camera on, or being asked to do more than listen. Students themselves spoke about feeling "disconnected" when they finally came together in person.

I think when we ask them to engage more interactively, there was always a feeling of a bit of kick back. You know, it was like, now get into a group and discuss this or produce something from that. It was sort of like, "Really"? (Evaluation Exchange delivery team, Strand 1, focus group participant 1).

Lack of time and varying levels of commitment

Time and commitment were experienced by students as barriers to participation. Some reflected they had other priorities, such as applying for jobs, studying and work-related commitments, and therefore felt they could not pull their weight. Others said that the amount of time people were willing to put into the project wasn't the same across the team, and that it was hard to schedule meetings and manage timelines because everybody had different commitments. This caused motivations to dwindle. Some people dropped out and one team was reduced to just one researcher.

Emotional: Other barriers to participation identified by students were of emotional nature. Some felt 'out of their depth', with one participant feeling unsure about their academic abilities compared to other researchers, but that this was resolved over time. Someone else felt too shy to ask for input and missed out on useful informal feedback because of this.

External non-HEI partners also identified time as a barrier, along with (and related to) the lack of resources. Staff explained that finding a member of the team able and willing to work with the students was difficult. One person said that there were two training days that took up almost the entire working day, which was particularly challenging.

Suggestions for Improvement

Students were prompted to make suggestions as to how the Evaluation Exchange can be improved. Identified areas of improvement included pedagogy, relationship management, and the course structure:

Interpersonal guidance: Some students suggested that they needed more support in organising their team, for example by assigning roles and responsibilities within the team more clearly. Relatedly, there was a desire for the Evaluation Exchange to be more involved with the relationship between the researchers and the partner organisation, for example by

facilitating an initial meeting to check whether the goals are realistic and the relationship, collaborative.

To support effective interpersonal teamwork, one suggestion was to have a team exercise at the start to identify everyone's weaknesses and strengths, both in terms of research methods and skills but also with regards to personality type and how one works in a team.

Choice: One suggestion was for students to have the option of being able to choose the organization one is partnered with. This would make it more personal, including for international students who cannot attend the in-person events.

Expectations: There was a desire for more clearly articulated expectations to both charities and students regarding time and capacity commitments. Management of expectations could prevent disappointment and dwindling motivation levels. Some students felt charities should get feedback from the course facilitators on the project feasibility as part of their application to the Evaluation Exchange, as well as clearly understanding the scope and limits of what the students were required to do. As well as expectations being set up upfront, students suggested feedback to manage expectations from the Evaluation Exchange on the project proposal after it had been developed.

Whole group learning: Students thought more could be done to encourage interactions between the different projects, for example by having a messaging board where people can share questions and resources. This messaging board could then be saved and accessed by future cohorts of participants, too. To enable this some students thought everyone should get to meet each other in person before starting the course. There were also suggestions for more of a climax at the end during which students learn about other teams' projects.

Course restructure: Students suggested being equipped with knowledge and understanding earlier on, for example by re-structuring the course to include a first seminar introducing theory of change and creative methods and generally starting evaluation training earlier. Students also appeared to want to start their relationship with the charity from a position of more understanding; suggesting running early on a beginner's guide to the training sessions without the organisations, and a roundtable to hash out people's initial understandings. Students felt this would allow them to start their charity relationship with the right questions.

Support and training: Some students wanted more focused and better structured support, and to have more one-on-ones rather than general training. There was also a desire for better communication, with one student giving the example of not having prepared for a troubleshooting session because it had not been made clear they were going to have one.

Course time: In terms of timing, most students were content with the length of the course, with one person anticipating that if it were longer, "it would be the same, just drawn out". Another student suggested the course could take nine months so that everyone can participate fully. One student suggested students take the course after their upgrade, although they were happy to have done it in their first year of the PhD as they had more time.

Finally, staff from external non-HEI partners also made suggestions for improvement, some of which overlapped with the students. Although they appreciated the creativity enabled by an

open and flexible dynamic, staff wanted a more structured approach to the collaboration. Echoing the students' recommendations, two people suggested making the first meeting between the charity and the students a facilitated one aimed at assessing the feasibility of the goals. They wanted a bit more support and guidance at the beginning to ensure the working relationship is off to a good start. There was also a desire for more time-efficient trainings if charities need to be present, because staff "can't spend 9 to 5 on Zoom". Relatedly, but conflicting slightly with the preference for more structure, staff suggested more flexibility regarding what a meeting should look like and how regular they should be. One staff member stressed that organizations should have an internal consensus on joining the programme, implying that the Evaluation Exchange should make this a requirement for participation.

Qualitative Findings Strand 2 - Community Research Initiative for Students (CRIS)

Participant Characteristics

Sixteen participants took part in the CRIS qualitative evaluation through interviews. More precisely, eight students were studying masters at the Faculty of Education and Society. The remaining three students were studying at the Bartlett (Built Environment). In other words, Arts and Humanities, Brain Sciences, Engineering Sciences, Life Sciences, Mathematical and Physical Sciences, Medical Sciences, Population Health Sciences, Social and Historical Sciences and Law were absent. At the time of interview students were finalising their masters.

External non-HEI partners also took part in the qualitative evaluation. Five members of staff from the community organisations partnering with CRIS agreed to be interviewed. Lastly, the course instructor was interviewed.

Reasons for Taking Part

Five main reasons were identified for motivating students to apply for the CRIS programme: (a) making connections with external organizations for their dissertation field work; (b) creating social impacts; (c) gaining new research and transferrable skills; (d) expanding professional future opportunities; and (e) receiving extra support with their masters. Throughout each motivation there was a sense that these students were outward looking; conscious of their effect on the world, and also the need to future-proof their careers.

a) Making connections with external organizations for their dissertation field work

First and foremost, students reported being attracted to take part in CRIS as a valuable opportunity to do field work for their masters dissertation. Some students reported that they would not have had access to a community sample to study without the support of CRIS. Some students did already volunteer and therefore had an existing relationship with a community organisation, but the additional variety of accessible organisations was appealing. Students were attracted by the thought of being able to network with many different organizations to choose the right one for their research interests. The range of organisations involved would allow them to explore a collaboration on their specific research interest, which has certain parameters during a Masters.

I wanted to do something with the local community like the migrants or refugees but I don't have the connections. And then I heard about CRIS from my classmates saying that they may be able to bridge the student to the local community so that's why I joined it'. (Masters student, Strand 2, interview 2).

b) Creating social impacts

Second, participants verbalised that they were drawn to CRIS because they wanted to come up with a dissertation that was ‘more than a grade’, that has social impacts, both for the organisation and for themselves.

I instantly knew I wanted to do it... just because with my undergraduate dissertation, when I finished it, it literally sat as a file on my computer for ever. So, I wanted to do something that had a tangible impact on somebody else this time. So, I knew that CRIS would allow me to do that, straight away (Masters student, Strand 2, interview 8).

c) Gaining new research and transferrable skills

Third, students anticipated that collaborating with local charities, organizations, and NGOs would allow them to develop new skills and enhance existing ones, such as qualitative research. Students who had a strong quantitative background looked forward to the opportunity for hands-on experience with qualitative research to develop skills for their future career plans. Additionally, some participants noted that they had theoretical knowledge that they were eager to understand how real-life settings put into practice.

d) Expanding professional future opportunities

Fourth, several students hoped to learn about the reality of how non-governmental organizations/ charity function by getting ‘real-life’ understanding into how they function, to understand how to work with clients, how to project manage and deliver a project on time. There was an understanding of academia or academics needing to learn to apply their skills to “the real-world” to sustain their careers.

I would also get to learn how organisations work and how research works and have kind of really important sort of like real world application skills. (Masters student, Strand 2, interview 3).

e) Receiving extra support with their masters

Lastly, several students spoke about being drawn to CRIS as an extra support, whether that be mentorship, with connections to field work, or through extra skill building. The advert for CRIS and the induction sessions featured students from previous cohorts detailing how CRIS helped them, and that was appealing.

I saw CRIS as a way for me to kind of I guess guide me through the university process..., I needed as much support and help as I could throughout this process, and CRIS was an opportunity that kind of presented that in a way where they were preaching something about giving support to students (Masters student, Strand 2, interview 4).

External non-HEI partners articulated that they were drawn to being involved mainly because they would like to create evidence for their projects to ensure that their activities were evidence-driven, and also to demonstrate their impact to support funding generation. The majority were small organisations which did not have the time or money to do research for themselves. Some organisations did have staff who were themselves researchers and they expressed being open to simply providing a learning experience for students, with the hope that they would also learn something. Aligned with this, organisations who themselves supported young people to grow, appreciated the principle of CRIS and felt it matched with their values.

Characteristics of CRIS that Positively Influenced the KE Experience

Positive knowledge exchange experiences appeared associated with the following key characteristics:

a) Authentic and meaningful experiences that address real-world problems and needs with a potential for a positive solution for the external non-HEI partners

Participants' emotional investment into making a real-world impact appeared to drive not only the motivation to sign up for CRIS but also to maximise their experience of it. Students who had conducted research in partnership with the community organisation spoke passionately about making a difference in society with their research.

b) Personal contact with instructor

The large majority of students verbalised feeling supported during and after the programme by the programme instructor. Whether they found a charity partner or not, students appreciated being encouraged to reach out for one-to-one time with the programme instructor throughout the programme. They felt someone wanted to hear about them and what they're interested in. These opportunities created a sense of nurturing, of safety, and also of validation in the student as a researcher, which was enhanced over time by the instructor listening and taking that student seriously. The course instructor was aware of this role and also took it seriously; highlighting how this attention took time. Being perceived as an ongoing support was suggested to be important in the context of a pressurised masters programme, particularly for some students who did not yet have the mentorship of a supervisor or did not know people or their surroundings in a new city.

We had two sessions where it was just kind of chatting and me telling [course instructor] how I'm doing and her listening and being supportive. So I think that and also just yes I really appreciated working with [course instructor] and all the effort that she put into helping me because yes she was really eager to connect with Repowering and just follow up with me to see how things are going (Masters student, Strand 2, interview 2).

c) Facilitation and network building

The CRIS staff acted as both knowledge broker, bringing new information and expertise to the students, and brokering the relationships with the community partners. The community partners interviewed also appreciated the facilitation of the CRIS instructor, to build initial relationships from a place of uncertainty.

d) Mastery experiences achieved after building their own professional relationships and navigating challenges in an unfamiliar complex environment

Students embarked on new professional relationships with their community partners, a task many of them were doing for the first time. They spoke about learning to listen to their own voices and to trust their own methodological decisions, when often stakeholders around them had different opinions. Interestingly, some of the strongest mastery growth appeared for students who realised that their planned community partner was not going to be right for them. They were pleased to learn that they were allowed to say no and forge their own path.

At the time, I didn't really think anything of it. But then, when I was reflecting on it, I thought, oh my God, that was actually quite a hard thing to do – meeting a random man in a coffee shop (the community partner). Definitely for my confidence as well. I think it really helped (Masters student, Strand 2, interview 8).

Several community partners articulated that the students had had to be brave, to collect data from people and in locations that they hadn't experienced before, such as remote farming communities, or working with children in inner city environments.

e) Tailoring the course to the student:

The course instructor elaborated that rather than a cohort model, where students all start at the same time and experience the same activities, students can sign up to CRIS whenever they like in the year. The instructor called this 'the tapas model.' That is, students are encouraged to take what they need from the menu that CRIS offers; the availability of which is dependent on when they signed up in the year, and whether they can make live sessions. There is no penalty or judgement for not taking part.

I've got a student now actually who just turned up in March. So, they haven't been to the skills sessions, they haven't had any one to ones with me until now, they haven't been to a networking event but they do love the concept of working with an organisation so they've popped up and they want to use the brokering side of what I do (Course instructor, Strand 2, interview).

The lack of prescription, combined with the instructor's role as personal contact and facilitator, created a sense for the students of being taken seriously. They largely felt that CRIS was 'accommodating', that is, their needs were seen and efforts were visibly taken to tailor solutions for them. The flexibility of learning, for example through live online sessions, and recorded sessions uploaded on the CRIS websites, was appreciated. Students spoke about being able to

access them when they had the time, whether they were at home or abroad, or not at all if they didn't feel they needed to. This sense of personal ownership was relaxing for most students, something which was highlighted as important during an intense masters programme.

I appreciate that CRIS wasn't like a – wasn't prescriptive or wasn't like – if you're interested in this, this is what you have to go to, or this is what you need to do, it was more here's the things that you can do. The freedom to pick and choose what you want, or you don't have to choose anything (Masters student, Strand 2, interview 4).

f) Communication methods and frequency

Students emphasised how vital was effective communication with their community partner and with the CRIS teams. This was particularly true when the relationship was being from scratch, or where students were less confident from the start. In terms of communication from the CRIS team, only one student did not report personal interactions or anything of a mentorship or coaching nature. This may have been due to the pandemic. They reported that more communication, from the course or even from peers, may have ameliorated the other external difficulties which limited their experience.

g) Managing expectations and boundaries

The positivity of the experience appeared to be maximised when the community organisation understood the expectations of CRIS, as they had a researcher in their team, or had taken part in CRIS previously, or when there was an existing trusted relationship between the student and the organisation. A good amount of time, and particularly face-to-face time, were reported as important to set up these expectations and boundaries between the different stakeholders. Vice-versa, the perceptions of the research student and the supervisor, of what is possible in the organisation, for example how many participants will be interviewed, seemed key to maintaining a positive relationship with the community organisation.

It's definitely good to know the supervisor and have some meetings with them. So when I started my relationship with [supervisor] we would have meetings with her and the students together and we had at least three meetings where we were trying to define the problem and how they would approach it to find the research questions (Community partner, Strand 2, interview 4).

Students also needed their academic supervisors to have a full understanding of CRIS and reasonable expectations and boundaries. Students reported that when students and staff in their department were not aware of CRIS, they struggled more in bringing CRIS to fruition.

h) Joint enterprise and interactions

Depending on their situation during or after the pandemic, students had different experiences of interacting with each other during the CRIS programme. Some students commented that there was not much time for peer learning, per se, but some of them had really appreciated

taking part in the networking events, the workshops, and the conference. Encouragement within these activities to talk to each other and explain their projects and ‘any barriers or successes’, enabled learning and reflection. Students appreciated learning from new peers from different disciplines or different backgrounds. More structured togetherness, such as the writing workshop where students wrote silently together in tables, then fed back to each other, appeared to give a sense of everyone working on the same goal, both reducing isolation and improving their work through new ideas.

The classes were in person which I really appreciated. For that kind of the part of the Masters programme I liked the face-to-face conversations and interactions that we had just because it heightens or elevates the learning process, so I'm glad I didn't have to miss out on that. And like I said the events that were in person from CRIS were really good because there's something in person that is just really good because you can have a chat and kind of have an authentic conversation with people (Masters Student, Strand 2, interview 4).

I wrote a couple of paragraphs to put in my dissertation. Then, at the end, we all fed back with what we enjoyed, what we found really hard about the writing, and we kind of gave each other improvements. Some people started suggesting that if you were talking about this, you should read this paper. Yes, it was really good, really collaborative... it was just really nice to hear that everyone else was in the same boat as me (Masters Student, Strand 2 interview 8).

Outcomes

Participants described gaining skills, knowledge and a change of mind-set from CRIS, as well as tangible research outputs. The students who didn't end up working with a CRIS partner on their thesis still reported that they had learnt a lot from CRIS, through their one-to-ones with the instructor, through communicating with real-life organisations, and through the CRIS events or teaching.

Communication skills

Students reported that their level of confidence, presentation and communication skills improved throughout the programme. Students were asked to talk about their research to their CRIS peers during zoom presentations, and informally had to explain their research to the community organisation. Students verbalised that both of these processes worked to improve their communication skills through adapting their language and articulating their ideas to different audiences. Several students reflected delightedly that they had achieved something quite new; essentially communicating in a professional world and explaining complicated ideas in plain understandable language.

None of them had research experience, prior to meeting me. So, there was definitely an aspect of me having to adjust my communication skills to come and say what this

research is and what I am going to be doing with it, just so that they were informed at every stage of the process. (Masters student, Strand 2, Interview 8).

Consultancy skills

Students spoke about learning how to fulfil the needs of an organisation who was almost their client. The output had to satisfy their ‘client’ and their other stakeholder, i.e. their supervisor. Learning how to negotiate between different stakeholders was tricky for some students, depending on the people involved, but was ultimately cited as a learning experience.

Knowledge

Several students mentioned that they had chances to learn new methodologies such as community-based research and participatory research. Additionally, the writing and citation sessions offered by CRIS were mentioned as helping to improve the dissertation write-up. More generally, some students were grateful for the constructive individual feedback provided from CRIS staff which helped to progress their knowledge overall.

Co-creating a project is something that I hadn't really actually experienced, it's something that we talk about my course like co-production of knowledge and collaboration in research but it was nothing that I'd even glimpsed like how that happens. (Masters student, Strand 2, interview 3).

Several students articulated that through CRIS they had been fortunate to gain access to people working in industries relevant to their research, which would have been extremely difficult otherwise. This grew their knowledge of real-life applications of their research area and current thinking and evidence.

Mind-set

Students had an appreciation of their mind-set being attuned to knowledge co-production in particular, and to the importance of public engagement in general. Most students had volunteered before, but for the ones with little experience outside of academia there was huge value in learning about lives very different to theirs. Students also reported being more aware of real-life applications of research, and how to spot a societal problem and propose to address it.

I think it makes the researcher think about how the knowledge can be used and applied to drive change like a lot quicker than just putting a paper into the abyss of gated academia that like no one would probably ever look at. Like so I think thinking about the impact from the start and using that to drive research. (Masters student, Strand 2, interview 3).

Wellbeing

The majority of students seemed to enjoy taking part in CRIS and felt a sense of wellbeing from having tried something different, learnt something new, and maximised the value of their masters programme.

I would consider every sort of feedback that she's given me is very, it's been so incredibly helpful. It's played an incredibly big part in making my course what it is, and also really identifying how to approach my dissertation. So there's like, yeah, I just don't know if I would have got there without [course instructor] help.' (Masters student, Strand 2, interview 6).

Outputs

Students who were able to realise their research project with a CRIS community partner felt that they had achieved a dissertation with real-world application. The research quality was also reportedly improved as a result of partnering with the community organisation. Students felt that the course teaching and the time for conversations with the course instructor and the charity organisations pushed them to develop their research proposal and improve the quality of the research itself. One student reported that first-hand experience with the community involved, and talking to the community organisation staff, helped them generate real-life explanations for the findings that they otherwise have considered.

Yeah, so I had a call with the CEO and I just asked him, I'm really struggling with my dissertation I don't know what I'm going to do? Then we had a call and tried to define the research like the underlying research question and what he would be interested in (Masters student, Strand 2, interview 5).

Community partner outputs

The community partners named a range of outputs for their organisations, whether that be physical or having an expanded mind-set. Only two detailed that they solely expected to receive the thesis. These partners were satisfied with this output for its development of their mind-set from the findings and the literature review.

Tangible outputs

Several partners wanted tangible evidence that they could take to funders, to try to get more funding so they could expand, or, as evaluation evidence to improve their activities internally. The format of the outputs ranged from: an engagement strategy deck; powerpoints of findings or recommendations for the charity based on the findings; a leaflet with the findings; data code and models for the charity to re-use.

Mind-set

Several community partners associated a new mind-set or a fresh pair of eyes with their partnership with the student. For one, the older demographic of the charity was enriched by the youthful perspective and new ideas of the student. They spoke about their assumptions being challenged. Another felt that the student, due to her position of independence, had been able to gain the trust of a new audience who wouldn't normally speak to them, thus generating new perspectives.

The legacy is that it will involve more stakeholders than it would have done, and it should be more just and collaborative than it would have been without her work. That's partly because of the way feedback works. So I don't think, for example, that we would have been so far more focused without her robust dissertation behind me (Community partner, Strand 2, interview).

Student and Partner Opportunities

Student career opportunities

In addition to individual development, the experience offered insights for students in terms of their career plans. For some, CRIS validated or opened up the idea of careers outside of academia, either because the contrast enabled a critical eye upon academia, or because working with 'real people' and creating a more immediate impact was a draw. Another student, who didn't complete their project with a community organisation but spent time with them, realised their skills were suited to driving change through policy writing rather than doing research themselves. One student reported that their community partner has suggested job opportunities for them when their masters was finished and has promised to send them openings. Others reported that they now are more open to jobs in the charity sector and understand where to look for them and how to apply.

Community partners opportunities

Some organizations really enjoyed the opportunity of working with students and had kept in touch afterwards. One clear opportunity was for more ongoing fruitful involvement with CRIS. One community organisation developed a productive working relationship with one the students' supervisors, and as a result had repeatedly worked with the supervisor and CRIS to develop research with 'at least ten' students.

Barriers

There were both internal limitations to taking part in CRIS, such as not being able to find a suitable organization to collaborate with, and external barriers, such as the impact of the Covid 19 pandemic. The Masters course could also impose some constraints, with the potentially

negative effects from taking on more challenges during a Masters course on student wellbeing. Problems were noted in a variety of areas.

Unable to work with a community organisation

Although students reported still gaining benefits regardless of producing a research project with a community organisation, it was challenging when a partnership didn't happen. For example, for some, the public health advice during the COVID 19 pandemic meant the project the student was meant to work on was closed, or participants couldn't be accessed, which led the student to end the collaboration.

Some students didn't find a community organisation which was right for them. Although CRIS has a list of organisations with which it has existing relationship, where there is no obvious match the student is then supported by CRIS to make a new link. Students who were in the latter situation and didn't end up finding an organisation expressed frustration. The process takes time which is at a premium during a masters programme and appeared stressful for the students.

I kind of got stressed out about deadlines in my programme, finding a supervisor, and then I sort of just started developing a project with my supervisor and then cut or uncommitted I don't know what the right word is with the organisation with CRIS (Masters student, Strand 2, interview 3).

This appeared to be more of a barrier if the student didn't have an existing link with an organisation through their own work or volunteering. Students appeared happy to use previous networks if they could and make use of CRIS' other resources and opportunities.

Lack of time and varying capacity for commitment

Most students mentioned the time restraint of completing the dissertation, which limits time to connect and build up a relationship with the local organizations through CRIS, and then carry out the field work. Part-time work and masters lectures got in the way for some students unable to attend CRIS learning opportunities.

Covid related

Although much of CRIS is held online, students participating during the pandemic suffered from not being able to meet their organisation face-to-face or have access to research participants. As mentioned earlier, students did appreciate the flexibility of CRIS, for example, being able to listen to recordings after seminars, or take part virtually. However, students who did meet their peers online appeared to benefit from it. Not having a regular, or face-to-face delivery, and low or non-existence bonds with their peers on CRIS, may have magnified external difficulties such as student uncertainty about their research proposal, or problems with community partners. One student described a period of uncertainty during the pandemic where

she was out of communication with the organisation and the CRIS instructor. This student thought that face-to-face relationships may have enabled a more productive project.

Yes I think both (online and offline) because then I can get to know about the other students experience like what I should do when like no one replies, or how many more organisations that I should send something (Masters Student, Strand 2, interview 1).

Interestingly, one community partner invited the student to stay with them and their family during the pandemic to enable data collection. Highlighting the importance of face-to-face time, the extra time and space together granted by this unusual situation appeared to promote two-way knowledge transfer.

Varying buy-in of supervisor

Low awareness of the CRIS programme from supervisors arose as a friction for students. Students reported that they would have liked their supervisors and departments to be more familiar with CRIS and that would make it easier for them to take part. One supervisor reportedly didn't understand the principle of co-production upon which CRIS is based, placing demands on the project to be a certain way, which clashed with the student's interests and those of the charity partner. The student was placed in an awkward position between understanding that the supervisor is grading the dissertation and wants it a certain way, and that the organisation has only come on board as they want something useful for themselves. Another supervisor was perceived as having too much investment, going around the student to do the data collection themselves. The community organisation perceived this as demanding, undermining co-production, and it ultimately strained the relationship.

I feel like I am in the middle like the child of like two parents getting pulled and like one says, and then the other one says, and then you are like oh no (Masters student, Strand 2, interview 7).

In contrast, students who had buy-in from their supervisor spoke very positively about the experience.

Students having little experience

Students appeared to find it more challenging if they were from disciplines which don't typically interact with the public. But in the same way they relished learning so much about a new area.

I came from engineering and have never done anything like this so it was all very new and I think that's why maybe I found it quite challenging (Masters student, Strand 2, interview 3).

Personal reasons such as low mental health and wellbeing

One student found CRIS was ‘beyond my capacity at that moment’ due to ongoing depressive symptoms. This student verbalized that they still learnt a lot from taking part but were not able to see the research project through with the community organization.

Low research experience of community partners

Students reported challenges co-producing a proposal with community partners with little to no experience of higher education or research. This created a sense of the responsibility for the quality of the project being entirely on the students’ shoulders. To navigate this, students leaned on the CRIS course instructor or their supervisor to refine their methodological ideas.

Challenge to create two outputs

Several students realised a tension between creating what they needed for their dissertation and creating an additional output for their community organisation to use. The latter hadn’t been the aim, but students recognised that community partners needed a more manageable, tailored output than their thesis. Students wanted to satisfy their community partner, but recognised that their course came first, and due to their time constraints, the intended additional outputs were being delivered late or not at all.

I think it was going to be just the dissertation but I think after the dissertation is done I am going to have to follow up with like actually this is more specific stuff related to your charity organisation. Because I can’t include it in the dissertation just because of my supervisor, so I will possibly be doing an extended piece just to send off to everyone afterwards (Masters student, Strand 2, interview 7).

This was also a barrier for the community organisation: several voiced that they had not received their expected output from the student. They had seen the thesis with the findings, but the additional output had not materialised. One community organisation was unhappy about this, perceiving that the effort they had given to the project had not been worthwhile without an output. Generally, both students and partners took ownership of time limitations and lack of communication in making this happen. One partner was sanguine: ‘it’s quite difficult sometimes actually making things happen, isn’t it?’

Low confidence in research proposal

One reason for two of the students finding CRIS more of a struggle than others, was because they joined CRIS with a general topic interest and enthusiasm to work with a community partner, rather than having a clear research proposal in mind. The students who appeared most satisfied with their experience of CRIS spoke about confidently delivering a clear proposal to the community partner early on, and their partner helping to refine that with their needs and knowledge. Interestingly, one student reported that at the networking event it was clear that some community partners had very precise proposals in mind, even down to the methodology, whereas others had no more information than a desire to take part and no prior knowledge of

the research process. It appeared from the interviews that these contrasting approaches could also be matched to students; as some students also had a fixed idea, and some were more just happy to be taking part.

Suggestions for Improvement

When they were prompted as to how CRIS could be improved in the future students had some suggestions.

Group work: The feedback was that there could be more face-to-face sessions and informal opportunities with other CRIS students for networking, and more formal group work during workshops, such as how to come up with new ideas together and present it; therefore, they can also learn from each other.

Clarity on the research proposal: Students with low confidence in their research proposal, or few clear ideas, suggested more training, structure and confidence building to produce the proposal. Another student saw a role for their dissertation supervisor in helping them create a proposal able to unite the needs of the masters programme with the CRIS structure.

I guess if there was a way for me to get some training through CRIS to maybe home in on a particularly research idea or how to better work with an organisation to come up with a research idea, I think I would've been interested in that (Masters student, Strand 2, interview 2).

Expectations for the output: Students suggested that community partners and their supervisors should have more clarity on the parameters of the project output. Students felt responsible to produce an additional output for the community partner than their thesis but felt that it would take them a long time, and might not be as relevant after the delay. Community partners agreed, asking for clearer timelines of when they should expect to receive their outputs and how exactly those would look. The majority of partners wanted a tangible, shareable output other than the thesis.

A firm 'ask' was for a closing meeting where students shared their findings and organisations could reflect on how they would be used. This did happen for some organisations but not all.

I think there was a kind of an agreement there'd be a set of recommendations, and I don't think we quite got to the set of recommendations. The report in and of itself, is good, but that's not a document that you can share, is it? (Community partner interview 2, Strand 2).

University and external understanding of CRIS: It was suggested that there should be more (internal/cross-department) communication between the CRIS programme and departments, as

the academic staff may not be aware of CRIS and how it works. More integration was suggested as a possibility to enable students to find a project which suits their interests, their academic supervisor's views and the parameters of the Masters programme, and the community organisation's needs. Students spoke about their peers in other departments being told that CRIS wouldn't work for their masters and they wished that it was built in as a possibility.

It would've been helpful to have somebody in my programme who understood what CRIS was because nobody, like none of my professors or supervisors or anybody, really knew what it was. (I wanted) people in my programme to help me think about what organisation would be able to develop a project that is relevant to my course but also can incorporate that CRIS structure. I was confused about how to integrate the two (Masters student, Strand 2, interview 3).

More community partners: Students largely appreciated the range of existing community partners, but those who hadn't had a fruitful collaboration suggested that a greater number and range of partners could be provided from the start.

In terms of how CRIS operates, some students recommended that there should be a noticeboard and forum where students can share their ideas and opinions between each other and inform CRIS of what kind of project they would like to work on. One student suggested that the noticeboard should be public so community organisations could see the research interests of students and potentially be inspired to get in touch themselves.

There was a good amount of (proposed organisations) and I appreciate the work that probably went into publishing those. Those were really helpful but I think I just didn't really see anything that I was super interested in so I went with kind of my own route but maybe if there had been like things to look for in an organisation that would maybe lead to like things to think about when you're choosing an organisation maybe would've been helpful. Because the examples were there and the proposed projects but I still kind of felt confused how to think about what sort of project would even be possible (Masters student, Strand 2, interview 3).

I would connect with more organisations because the way it was proposed to us at the beginning it made it sound like we would be able to meet more organisations or they had more partners already connected to them during the workshops [course instructor] told us that we would have to pick an organisation and they would have to go through them and then they would help us contact that organisation. (Masters student, Strand 2, interview 5).

Some students also wondered if they could be allowed to work with community partners outside London, and even outside the UK. It was felt that if there is not an ideal organisation within CRIS, it takes too much time to approach and convince a new community organisation to partner. Several students had existing personal connections with community organisations

outside London, which they wanted to use, while making use of CRIS' other support and learning options.

More community partner support: Generally, the community leads were enthusiastic about the support of CRIS. One partner suggested the need for more support in chasing up students when work hadn't been delivered, or their expectations weren't being met.

Co-production throughout: One community partner felt that they needed to be more part of the data collection and analysis process, for example by seeing an early draft of the findings to comment on their face-validity and explanation.

I think potentially the procedure, the data collection should be taking place with more interaction, more support of the organisation. And especially on the data analysis... like sitting down, like what do you think about this, is this realistic? At least a draft of the results should be presented. And say like are we close to it or are we just being crazy? (Community partner, Strand 2, interview 5).



Qualitative Findings Strand 3 - SPERO and ICR

Participant Characteristics

Seventy-four participants were interviewed as part of SPERO and ICR qualitative evaluation. More precisely, twenty-seven students took part in SPERO interviews, and sixteen students took part in three SPERO focus groups; twenty-nine students took part in ICR interviews and two in one ICR focus group. In all the SPERO interviews, and in two of the focus groups, participants were asked about their experience of SPERO 1. If the student had also completed SPERO 2 and / or SPERO 3, they were asked to specify if any feedback related only to the additional workshops. In the third SPERO focus group, four participants were asked about their experience on the SPERO 4 pilot.

SPERO participants belong to ten of UCL's eleven Faculties, which is Arts and Humanities; Bartlett (Built Environment); Brain Sciences; Engineering Sciences; Institute of Education; Life Sciences; Mathematical and Physical Sciences; Medical Sciences; Population Health Sciences; Social and Historical Sciences (only Laws was absent). In Year 2, SPERO participants included students studying with UCL affiliate Centres for Doctoral Training. Regarding ICR, participants were drawn from all three of the University of Manchester's Faculties, namely Biology, Medicine and Health; Humanities; and Science and Engineering. Students of SPERO and ICR were engaged at all stages of their studies from first through to fourth and final writing-up years for doctoral students. One SPERO student was a masters' student completing a one-year degree.

Reasons for Taking Part

Students had different reasons to join SPERO and ICR. These reasons can be further divided into a desire to build on their personal experience; gain theoretical knowledge; increase their hands-on practical experience; and support to develop a business idea with entrepreneurship and enterprise.

a) Personal experience

Many SPERO and ICR students had a baseline vision of entrepreneurship, articulating that they were attracted to taking part due to previous experience in some element of business. They had already experienced entrepreneurship directly (had created their own start-up business) or vicariously (being close to friends or family members that have done it). Examples of family and friends running their own businesses were cited as both inspiration and deterrent for starting their enterprise and joining the course.

I worked in an incubation as a part-time previously, so I witnessed quite a lot of projects which is about the starting of social enterprise, but I feel like it's very difficult to start a project (PhD Student, Strand 3 ICR, Focus Group 1 participant 3).

b) Theoretical/research knowledge about entrepreneurship and enterprise

Many SPERO and ICR participants wanted to formalise their knowledge on entrepreneurship or apply research to entrepreneurship. Theoretical knowledge was delivered through lectures in ICR and short presentations in SPERO from the facilitator as an introduction to small group work.

I want to know more about entrepreneurship and enterprise and all of these things, because I've never attended any courses (PhD Student, Strand 3 SPERO, Focus Group 1 participant 1).

Well in part it's just a requirement of our PhD programme so like we are absolutely expected to do it. That was only the first and foremost reason I was there but it was good to, I suppose like it was a bit early for me to say directly relate my project to a commercialisable idea because theoretical physics ends up being very blue skies research but at the same time it was really good to kind of be forced to think in a different way and like try and look at things through a different lens and it was also good just to see I think slightly more through that like industry commercial side because I do see myself leaving academia at the end of my PhD (PhD student, Strand 3 ICR, Interview 7 2021-22).

c) Hands-on practical experience about entrepreneurship and enterprise

Many participants joined as they wanted to learn the first steps of developing an enterprise. Where there had been formal training in entrepreneurship, the view was strongly expressed that this had been largely theoretical, and participants were looking instead for a more hands-on, practical experience.

When I saw the entrepreneurship course, I thought it would be something amazing to try and to see if I've got stuff for potentially spinning off a start-up or something along those lines, which is a kind of non-classical route in my view. So that's kind of what piqued my interest and I'm glad that the programme is in UCL, it's kind of cool (PhD Student, Strand 3 SPERO, Focus Group 3 participant 1).

d) Support to develop business ideas

Many SPERO students wanted to find out more about what support UCL offered for those who wanted to develop a business idea, as well as finding support developing their incipient entrepreneurial ideas towards completion through networking opportunities that were inspiring and motivating. International students, particularly, were also keen to understand how to set up a business in the UK.

Characteristics of SPERO and ICR that Positively Influenced the KE Experience

Participants valued five main characteristics of SPERO and ICR that positively influenced their KE experience. These relate to the mechanisms found in the SLR identified as possibly instrumental in benefits for students, namely ‘personal contact; ‘communication methods and frequency’; ‘social persuasion’ and ‘mastery.’

a) Personal contact with facilitators

SPERO 4 and ICR students expressed feeling supported through one-on-one tutorials. The frequency with which one-to-ones were mentioned by ICR students suggested they had the greatest impact on students developing their own idea and building their confidence in their own abilities. Students from ICR were particularly supported to broaden this mind-set by one-to-one tutorials. Time with the course tutors also gave students ideas that they hadn’t had before or challenged them with new perspectives on their ideas or knowledge. ICR students reported that the coaching of the instructors was necessary to allow them to reframe their skills, even with those who initially had not felt they were transferable, and to spin them into possibilities wider than they had been able to imagine. In SPERO 4 students emphasised how beneficial the one-to-one coaching element was; especially, from someone trusted yet constructively critical. Being listened to and having their ideas respected appeared to give students confidence in the merit of the idea and confidence that their skills and ideas can make a difference in the world.

Something that definitely helped was the 1:1 session, so the coaching I guess was a big thing for SPERO 4 because it was direct, like you were getting direct feedback on a weekly level, and that meant that you had deliverables each week, which was something to expect and I definitely liked how it went (PhD Student, Strand 3 SPERO, Focus Group 2 participant 4).

b) Working together in multidisciplinary groups

For SPERO and ICR students the emphasis on group work was regarded as valuable above all for developing skills in teamwork and communication, specially working with others in the context of little contact during the pandemic. Students on SPERO and ICR saw value in working with others from multidisciplinary backgrounds. This gave new perspectives and insight into different ways of thinking. Multidisciplinary also presented challenges, especially across the sciences and humanities. Participants noted that it could be difficult working in a group with science students, focused on developing a product, versus humanities students who were likely to focus on developing a service. Yet noting what feelings arose in themselves and how they dealt with emotions and group challenges developed students’ abilities to lead, to manage, and to work with others.

Whilst challenges inherent to collaboration with a small group in both SPERO and ICR were regarded as valuable above all for developing skills in teamwork, it helped improving communication and opening-up students’ mind-sets. Personal confidence in their existing

ability and ideas was particularly generated from working closely with others, both from direct support and in group work.

I felt that I got a glimpse or, like, a flavour of myself and hadn't had- felt for a while. This ability to, kind of, in a group, maybe take a role, maybe lead even a little bit. Because it's- it hasn't been easy for me. It's something that I really enjoy but somehow I got a kind of lost touch a little bit with that part of my personality (PhD Student, Strand 3 SPERO, Interview 3).

c) Social persuasion and communication

Students valued greatly feedback from instructors and peers. Students drew confidence from receiving positive instructor feedback as to the viability of their idea and from knowing that there are basic principles that can be applied to creating a start-up across different fields. Confidence also arose from being validated through being listened to. Validation was generated through tailored feedback from instructors and peers in response to presentations or pitches. In the guided online version of SPERO, students recognised the role that feedback played in guiding and validating their ideas and in articulating that they wanted more feedback than what was on offer in the final hour with the instructors. Students on ICR also called for more feedback after their group and individual pitches. In Year 1, the individual pitches were delivered only to the instructors as a way of protecting the idea. In Year 2, following calls from students for more feedback, the pitches were delivered to the full group for peer and instructor feedback.

d) Role-play

the activities aimed at developing a fictional company were seen to positively impact KE by SPERO and ICR students. Interactive entrepreneur-based activities allowed students to grow confidence in putting their knowledge into practice, as well as practicing skills such as meeting with investors or developing a fictional company. At the same time these interactive activities allowed students to recognise and feel confident about their existing skills, such as communication skills which became apparent when negotiating with their team or presenting to 'investors'. Apparently, it was not the authenticity of the task what mattered most, but the challenge and mastery of the task.

In the SPERO 1 especially, the main turnaround for me was for seeing it not from the outside, which is how I'd always felt before, but being put in the inside of the box and seeing, okay, if you're in this sort of place, there's certain goals that have to be fulfilled, there's a CTO, there's a CFO, etc., and these are just like, it can start off as one person that is literally is part of a four person team, just as you're mapping it out, so just a pragmatic sort of example driven thing really helped to get cogs whirring and get thinking, Hang on, this is how things work, this is not that hard (PhD Student, Strand 3 SPERO, Focus Group 1 participant 6).

e) Mastery experiences achieved after working in complex and discomforting yet attainable challenges

Students valued being challenged to work with people they had only just met. They learned to negotiate and defend their position, and to identify when it was best to compromise for the good of the project. Yet interactive group work, of which SPERO makes more use, built an additional manageable pressure right through the programme. At times working with other students with different viewpoints or styles of working was uncomfortable for some, particularly if some students had more dominant voices. Yet there was a sense from both SPERO and ICR students that the content and structure of their programmes were challenging them. Students spoke of learning completely new material and flexing that learning in absorbing interactive activities. Combined with the support and generation of confidence from other characteristics of the programmes, these challenges stretched the students to allow personal growth. For example, in SPERO students enjoyed being ‘thrown in at the deep end’ with the course activities. There was minimal explanation in the guided online version. They referred to the emotional risk of entrepreneurship and described feeling more ready to face any self-doubts about their abilities. Learning through experience and experience of failure was also seen as important. There was a sense of intense pressure felt by ICR and SPERO students. The wider entrepreneurial lens of SPERO perhaps in its broadness potentially created less pressure than ICR which shines the spotlight more directly on individuals’ commercialising their research interests. Overall, it was the right type of pressure for both SPERO and ICR. The fact that outputs of both programmes were not accredited for their PhDs encouraged students to consider their input as a practice, which gave them confidence to try, and to fail.

I had an idea maybe 18 months ago, a loose idea, and I didn’t really have the confidence to grab the bull by the horns and to move forward with it. So, doing SPERO I was sort of like a flame to kindling and I thought, okay, yes, that is something I could do, and it kind of evolved naturally from there (PhD student, Strand 3 SPERO, Focus group 1 participant 1).

The thing that I must say about the course is, it helps you think fast. We’re just going on next week, then onward, one thing to the other. And when a task is given, you have a short time to do that. So that actually helps you to appreciate how fast you can think. (PhD student, Strand 3 ICR, Interview 9 2021-2).

Outcomes

Participants described gaining different outcomes from taking part in SPERO and ICR. These can be further divided into skills, knowledge, mind-set and concrete outputs.

Skills

Students' skills and ideas were repeatedly emphasised as a product of many of the activities involved in both SPERO and ICR. Personal confidence appeared partly created from students feeling they had acquired knowledge and skills that could unlock entrepreneurship for themselves. Key skills identified by SPERO and ICR students were in teamwork, presentation, and communication. SPERO students also referred to project management and leadership, negotiation, stakeholder management and working under time pressure.

Knowledge

Students, including those who had previous experience with entrepreneurship, appreciated knowledge and guidance they had not previously encountered, for example regarding finance, intellectual property rights or creating a business model canvas as a planning tool. Some particularly learned about the importance of stakeholder management.

The most impressive is about the stakeholder part, because I use it in my real life, real business, and before that, maybe, sometimes, I send some message through different partners and I feel like maybe it's, I send the information it's the same, but after SPERO I consider different aspects of the stakeholder, because, about power and the interest part, they are different, yes. So when I'm facing some issue and then we should see aspects in different sides about stakeholders (PhD Student, Strand 3 SPERO, Focus Group 1 participant 2).

ICR students learned about generating and protecting IP. They gained an overview of the different types of business from tangible products to online services and about the costs associated with running these businesses. They learned about the processes of innovation and commercialisation and the differences between the two. They valued having access to business resources through the university, namely market research and patent databases. They learned about the language of business and more about the mentality of the world beyond the university. Students talked about now knowing where to go to get started with an idea and about how to ask the right questions of a project – spot the opportunity, link to market, narrow down the idea, implement the project.

Mind-set

Perception of the attainability of entrepreneurship appeared a key outcome, arising from the intersection between personal confidence and entrepreneurial imagination. Previous experience with entrepreneurship wasn't integral, as confidence in entrepreneurship being viable was created as well as magnified, in both SPERO and ICR. During interviews students talked with interest about their peers' ideas for translating research into business, heard informally during group scenarios or as part of activities. The confidence of their peers in the entrepreneurial career path appeared to give students permission to examine how their own research could link to products or services. For many, it was enough that their peers also were

considering careers outside of academia to give them a sense of validation and confidence to go forward.

Attainability of entrepreneurship was highlighted by some negative tone expressed by both ICR and SPERO students as to how transferable their research interests were to real-life ventures. A lack of optimism for entrepreneurship being attainable to them appeared to limit how much students could *feel* they were developing and potentially how much they absorbed. Hearing other students' ideas based on their research interests was inspiring; yet disheartening if students felt their own work would not easily develop into a start-up. The latter students appeared to want more of a solid bridge to help them imagine entrepreneurship in real life. For example, even students on ICR who felt its format *had* worked to 'connect science to business' for students, wanted more real-life case studies and more direct interaction with people working in the commercial world to support their imagination.

The need for more bolstering of the feeling that entrepreneurship is attainable was highlighted from one ICR student wanting to work on a real-life case rather than a student project in group work. Frequent positive mentions of the words 'real life' showed the value students placed on opportunities to hear from real businesses during the course. For some students, the link between themselves and achieving entrepreneurship was not joined up in their imagination and they struggled with that.

Support to take the leap into the new mind-set seemed a particularly key outcome, uniting both confidence in oneself and confidence in the attainability of entrepreneurship. Students used words such as 'stepping stone' and 'safety net' to visualise the sense of encouragement they were given from both SPERO and ICR instructors in taking a leap into a new mind-set. Some students from both programmes reported negativity as they couldn't imagine transferring their research interests into a commercial setting.

ICR students described themselves as better able to spot opportunities for commercialisation within their own research area if not their current PhD project. They were able to see problems as opportunities for creating potential products to address those problems.

I think I came up with quite a few different ideas and then I kind of surprised myself like, Wow! This is how you're meant to think (PhD student, Strand 3 ICR, interview 7 2021-2).

Asked if they felt their attitude towards risk had changed as a result of the course, some ICR students noted that risk was not addressed directly in the course. These students felt that they were risk averse and that that hadn't changed. It was suggested that it was possible to see risk as innovation and therefore approach it in a positive way. Where there was a sense of being already very creative with a lot of ideas, the course taught students ways of potentially bringing those ideas into reality. Students found they were becoming better at thinking more flexibly and being more adaptable, thinking 'outside the box'.

Students enjoyed being 'thrown in at the deep end' with the course activities. There was minimal explanation in the guided online version. They referred to the emotional risk of

entrepreneurship and described feeling more ready to face any self-doubts about their abilities. Learning through experience and experience of failure was seen as important.

It doesn't necessarily have to be a successful start-up that leads into a multi-billion company because for me that's not the most important thing. The most important thing is to make an impact on people's lives and have something that's sustainable (PhD student, Strand 3 SPERO, interview 1 T1).

Outputs

Students in SPERO enjoyed creating an output with their team such as a pitch or a video. Several students spoke about how this transformed theoretical learning into acquired knowledge. Creating a presentation at the end of the workshop where the students had to address stakeholders over a crisis in the company pushed them to work quickly and move on from any mistakes in the presentation process itself and live with the final product. They had to produce this at pace and valued the lesson in accepting imperfections.

Student career opportunities

SPERO students had a better understanding of what support UCL offered and felt motivated to access it. They described thinking more deeply about how their work can have real-world impact. They have been spurred to pursue connections such as through LinkedIn. They would not have had the confidence before. SPERO students also described themselves as now more willing to take a risk with the direction of their careers. They felt more confident in taking a financial risk. They would be more likely to try entrepreneurship. SPERO students also felt less anxiety about the future knowing they had options for the career outside of academia. This in turn made them more relaxed about their current studies. They had learned a lesson in taking control of what is in their lives and were applying this to directing their current PhD studies as well as taking an active approach to their career and how their work will have the greatest impact.

Current opportunities for career development for ICR students were around networking with other students, knowing how to access support through the university and external links, and being able to apply for Kickstarter funding. Views on future careers covered a wide range. It was possible to have 'no inkling' of how to move forward but believe that entrepreneurship was a real possibility. The course galvanized some students to pursue an enterprise based on their research. It helped other students understand how to start a business based on an idea unrelated to their research. Students of ICR came away with a sense of inspiration and confidence in themselves and their ideas. They benefited from positive reinforcement as to the value of their ideas.

In the presentation we have people, we don't have only or tutors so, have people from also using the work and commercialisation. And they actually helped us and they gave us suggestions of different companies that we can talk to after. And they gave us names

so we can send an email if we want to move or talk with them. So, in the end you have like a more, a better idea. (PhD student, Strand 3 ICR, Interview 10 2021-22).

Barriers

Covid-19 related delivery mode

Students saw value in online delivery as used in both courses. They noted that it was possible to join from anywhere in the world, making the courses more inclusive. There was no commute. It was easy to work on shared documents. It was also noted that it was easier to drop out of an online course rather than a face-to-face one if the participant felt the course was not delivering what they wanted. Inferred here is that there is a social pressure to remain for the duration when the course is face-to-face. As the respondent said, that could mean someone was more likely to sign up for an online course to begin with, knowing that they could easily drop out and not lose a lot of time. Despite recognising these benefits, students also expressed a marked preference for face-to-face activities. They felt more engaged with the learning in this setting. They valued the chance to network and the social aspect. It was noted that teamwork might have been easier face-to-face, but that it was helpful to practice this online. Inferred here is that there will be a lot more online working in the future. A preference for hybrid forms of the course was expressed by ICR students. It was suggested that the lectures and one-to-one sessions could happen online, but the group work and presentations could be done face-to-face with the whole group.

Lack of time and varying levels of commitment

A key barrier for both SPERO and ICR students was the time commitment. Despite during the pandemic it was possible for students to have more time because their other activities had been curtailed, SPERO students noted that by working in small groups, their experience of the day was very dependent on the other members of their group. It was possible to feel awkward working only in a pair, which happened when the cohort was very small, or someone dropped out after the groups were assigned. There could be some problem with a language barrier, but it was noted that peers were very helpful in overcoming this.

There was a sense of frustration from a number of SPERO students that their course did not necessarily allow them to work on their own idea, which is the format in ICR. In SPERO each group picked just one idea to take forward into a business proposal. Students recognised that they were learning other skills from the group work, but those with an idea, who felt it was attainable, wanted more time and space during the programme to support their own idea.

There was also a contrast in the time format. ICR's programme was spread out over repeated sessions whereas SPERO was conducted in a short burst. For ICR, the positive which students mentioned was that having segments of the programme spread over a number of weeks allowed more time and space to 'sit with myself and think about how my ideas apply to the future'. At the same time the duration created an ongoing competition to their PhD work, particularly if

they undertook the programme in their final year. The concentrated nature of SPERO allowed students to give their selves over to the task completely without distraction from or to their PhD.

Emotional

Students experienced emotional barriers such as an experience of ‘imposter syndrome’ and feelings of self-doubt, as well as lack of motivation.

Suggestions for Improvement

SPERO

SPERO has been delivered in several iterations during data collection which allows the drawing together of multiple suggestions across each delivery, although some suggestions may be less relevant to the current practice.

Timing of course: In terms of timing there was the same tension as for ICR students between believing that it would be beneficial to undertake SPERO early on and have the rest of their studies informed by the entrepreneurial mind-set, and that it might be better to take part later on when they have a stronger business idea.

Practicalities: There were a number of very practical adaptations to the course delivery, for example to send out the pre-material earlier than 24 hours before course. The course reading required was sometimes difficult to fit around responsibilities such as parenting and PhD deadlines.

Working across disciplines: Although students recognized that it was helpful to work as a group on one proposal, this format was also frustrating at times. Students found it challenging to work across disciplines. It was suggested that there was a need to work on something close enough to their own area, otherwise it was difficult to apply the learning to a different product or service. At the same time other students recognized that adapting what they did know and making use of transferable skills was teaching them entrepreneurial flexibility as well as giving them the opportunity to learn from others in their group who had different knowledge and skills.

‘Real life’ entrepreneurship: There were several ideas which lend themselves to improving the attainability of entrepreneurship. The case studies or experiences have to feel achievable and relevant to work for students. Social science students again wanted a broader range of

examples, focusing on disciplines such as healthcare rather than just products based on the hard sciences. Students looking to live or work abroad particularly asked for case studies or guidance from across the world, for example China or India. One student verbalized that when an expert or an advisor did come in their manner had been a bit distant and “top down”, which had not felt encouraging or like students could emulate them. Students asked for more relatable case studies, for example, of students using their academic work or research skills to bring a product of service to market, rather than fictional cases which did not bolster their confidence in attainability. Students strongly articulated that it would be helpful to hear from more recent alumni of SPERO or academia in general who were now translating their ideas into business; to be able to show not just tell that entrepreneurship from academia is possible. Taking this suggestion even further one student suggested the benefit of working on a task with a real company or start-up.

A bit less “them and us”. And maybe it’s an age thing I don’t know, the advisors seem older than most of the cohort of SPERO participants and well into professional careers. That they’ve had to work very hard to achieve and there was something distant about them (PhD student, Strand 3 SPERO, interview 16 T1 & 2).

Face-to-face: As in ICR a common expression was the wish to have worked more face-to-face with peers or to have more networking opportunities. Although the online learning had fulfilled most of their needs, students missed the group feeling of face-to-face, and felt that networking would have generated learning or opportunities throughout the day.

Ongoing relationships: Several students mentioned envisioning an ongoing role for building online peer relationships, such as sharing a Slack, or monthly zoom meetings.

ICR

Timing of course: As for SPERO, there were benefits and drawbacks to undertaking the course in any year of doctoral studies. It was wondered if undertaking ICR early on could help students take a more “applied” approach to their research and focus more on how to make impact. Students felt that it can be beneficial to learn early on in their PhD about niche areas and how something is being used. The opposing argument was that students in the first year felt that later in their course they would benefit more from ICR as their ideas would be more developed for commercialization.

Time was key for students, as those in the latter years emphasized the pressure they felt under to complete their PhD and get a job. Some students felt that taking ICR in the second year could be a perfect choice: students will have a more developed idea, yet students with lab-based work will not be too busy in the lab and all are less likely to feel overwhelmed by either publications or next career steps.

Time taken on ICR: Students suggested that it would be helpful to receive more information up front when they signed up about the time commitment in and out of class. Some students saw it as a big disruption to their research. Motivation to join up was not always entirely voluntary; those undertaking CDT courses had to fulfil a certain number of modules such as this. There were mixed feelings about whether students preferred a longer or shorter course. The 10-week version of the course was seen to allow time to fit the work in around other commitments. The weekly spacing allowed time for student reflection which they felt they wouldn't normally get. At the same time, the 4-week version could be easier to attend for those who have term-time commitments such as General Teaching Assistant work.

Credits: Students suggested that the course having credits was not a significant draw. Some were not aware that the course had credits or what consequence there were if they failed to complete. One student noted a more active drawback, suggesting that having credits created unnecessary pressure.

Course content: Students suggested the course could be more 'meaty' or information heavy. Concrete suggestions for learning included how to negotiate IP percentages with the University, how to negotiate with potential partners and creator founder agreements, to learn investment types and jargon, and to learn more about different ways to understand customer and do market research.

Face-to-face: Students wish to spend more time with each other in person to increase informal networking. Participation had been affected by Covid-19. Although zoom participation was useful for efficient use of time it limited the development of meaningful connections with other participants.

Group work: Reflecting enjoyment of existing groupwork, several students suggested they would like to see more time for teamwork, and more time with the whole cohort. One student suggested the group work could be longer and more challenging and should push students to collaborate more intensively.

This suggestion appeared driven by appreciation of the role of learning from others, also a wish to learn how to work with people and gain their trust. Interestingly, some students suggested a format used for SPERO, for an activity where teams of four or five would share their own ideas then choose one and work on it together to create a Business Canvas. During this it appeared to be important for everyone to put their own idea into the Business Canvas to think through how to actually start a business.

Real life: Students also wanted to learn more from experts, from more guest speakers of people with experience in commercial fields reflecting on how they reached their position. Important here was diversity of the commercial fields; social science students in general wanted more material relevant to them such as translating ideas into services not just products. International diversity would also be appreciated, for example hearing guidance on how to do market research in China.

As for SPERO, students wanted to learn about and work on more relatable case studies, in particular with a focus on Manchester / UCL doctoral students who have commercialized their research or started their own enterprise.

Feedback: More feedback was specifically asked for, particularly through more individual tutorials, and a role for lecturers to give some spoken feedback on the final pitch. This level of 1:1 support was hoped to go forward into anticipated future support. Practically, students asked to know more about the business school support and competitions at the University and beyond.

Overall, participants on both SPERO and ICR suggested that more networking opportunities with their peers would be valuable both during and after the courses. Students wanted to learn about and work on more relatable case studies, in particular with a focus on Manchester / UCL doctoral students who have commercialized their research or started their own enterprise.

Cross-case analysis of the three strands qualitative evaluation

Reflecting on commonalities and contrasts between the three strands of KE programmes highlighted many key lessons.

Regarding motivation to take part, students from the four programmes appeared to be looking toward the future. There was a sense that they were keen to make an impact on the society, whether that be through social impacts as in the Evaluation Exchange and CRIS or through support to commercialise their research or skills in SPERO and ICR. Students also spoke about a desire to increase their network, learn new skills, and expand their CV and mind-set.

Non-HEI partners that took part in the Evaluation Exchange and CRIS, expected their participation to support the generation of a useful output for their service, for example to map and demonstrate impact for fundraising purposes. In contrast to the Evaluation Exchange, not all CRIS partners reported an expectation for a tangible output. A small proportion, who already had researchers or a research background on the team, expressed that they were keen to help young people grow through learning experiences, and open to any learning themselves.

Despite the differences between strands, they shared many characteristics that positively influenced the KE experience, there were:

- (a) Mastery experiences from navigating challenges and testing their skills in unfamiliar and complex environments: Students across all programmes experiences challenges, key being working in teams or with multiple stakeholders, time pressure, acquiring new knowledge, and creating and delivering outputs. For example, on both Evaluation Exchange and SPERO and ICR, students reported being tested by having to communicate and work with a team of peers with different views, backgrounds, disciplines, or working styles. Students on CRIS, while not having to figure out interpersonal dynamics with peers, had to build relationships with multiple stakeholders with competing interests, i.e. their supervisors and

their community partner. One CRIS student reflected on her huge achievement of attending an in-person meeting, with a new person, from a different sector, by herself. CRIS's structure could be described as mastery building. It doesn't follow a 'cohort model' of participation, wherein students join together and are guided through the same activities. CRIS was described as following a 'tapas model'; students can join at any time, picking from a menu of teaching and possibilities. Students had to take ownership to gain what they needed. Evaluation Exchange and CRIS students had the additional pressure of delivering an output for an external organisation, using new skills and knowledge, although for SPERO and ICR students the short time frame and new content worked to create pressure to produce their outputs.

- (b) Authentic and meaningful experiences that address real-world problems and needs with a potential for a positive solution for the external non-HEI partners: The real-life needs of the community partners and their capacity to make a difference was hugely motivating to CRIS and Evaluation Exchange students to execute their project well. The students were also aware that this was valuable work experience; enabling them to test different skills in their real-life settings, gain contacts, and learn how another industry works from the inside. Students from both CRIS and the Evaluation Exchange articulated feeling lucky to get access to experts or industries that would be hard to achieve outside of these programmes. Interestingly, although SPERO and ICR students didn't encounter a 'real life' scenario, role play was used to mimic the authenticity of working on a 'real life' task. Pushing students out of their comfort zones with activities and time pressures they would have to cope with in real life if they developed a company, such as pitching to a client, or creating a business plan, reportedly enhanced the meaningfulness of the SPERO and ICR programmes. Yet, suggestions from SPERO students for more real-life content in the case studies, and more talks from real life entrepreneurs relevant to them, highlight the value of authenticity to KE.
- (c) Personal contact with facilitators: Across the strands personal contact supported and empowered the students to thrive and learn from the challenges of their respective programmes, as well as enabling other growth such as confidence or ideas. There was a spectrum of personal contact. ICR and CRIS students received 1:1 time with their facilitators solely to talk about themselves and their ideas. These students reported that being listened to and coached by their facilitators was stimulating and grew their confidence. Students across the programmes enjoyed informal time with their facilitators, for example for SPERO students during their in-person tasks. Students also appeared to need structured opportunities for technical support and for 'fire-fighting', particularly to engage with new content. Students in CRIS and the Evaluation Exchange reflected that for an ad hoc format of personal contact to work they needed to be proactive; when they weren't, they struggled.

- (d) Social persuasion and communication: Students across the strands highlighted both the communication skills they had learnt, and existing skills they had practised to bring their group work or project to fruition. Even for CRIS where students worked as individual researchers, a great deal of relationship-building and negotiating was key to success, for example in setting up their charity partner and supervisor's expectations. Likewise, for Evaluation Exchange students, the most satisfying projects appeared built on listening to what the other person/people wanted, and then together working out what was possible, methodologically, and with time constraints. For ICR and SPERO students, testing their ability to communicate and persuade each other generated lessons about themselves.

- (e) Working together in multidisciplinary groups: For students working on the Evaluation Exchange and SPERO and ICR it wasn't just having a team that was important, it was working in a multidisciplinary team. Despite working with students from different disciplines being sometimes uncomfortable, students acknowledged the huge value it brought to them; stretching their mind-sets as well as testing their communication and group skills. In the focus group, the Evaluation Exchange facilitators spoke of the successful efforts they had made to advertise their programme across the University in order to recruit students from a wide spectrum of disciplines.

- (f) Facilitation and network building; Joint enterprise: In the absence of multidisciplinary group work, other processes lent themselves to its positive aspects. CRIS students appreciated learning from new peers from different disciplines and backgrounds during CRIS workshops and conferences. Without the reassurance of working with a small team of peers and experiencing the same milestones at the same time, CRIS students also appreciated the role that the CRIS facilitator played of knowledge and relationship broker; guiding them through confusion and challenges. Opportunities within CRIS for structured togetherness with their peers, such as a writing workshop, reportedly gave students the sense of all working on the same goal, both reducing isolation and improving their work through new ideas. It was interesting that students on CRIS spoke of feeling together with their peers, during these activities, despite not following a cohort model of participation.

- (g) Managing expectations and boundaries: was key for a positive experience on CRIS and the Evaluation Exchange. This appeared due to the real-life scenarios, with students navigating a variety of stakeholders' needs. For students and community organisations on both programmes, a good amount of time, and face-to-face time were reported as important to set up these expectations and boundaries between the different stakeholders. Confusion and low confidence appeared to be a symptom of incompatible or unclear expectations and boundaries between students and their external organisations.

Outcomes: Participants described gaining skills, knowledge and a change of mind-set from all the programmes involves, as well as their different tangible outputs. For example, students across all three strands described growing their communication skills, for CRIS and the Evaluation Exchange largely through working with external partners, and for SPERO and ICR during a substantial team-work component. Time pressure combined with activities contingent on output enabled the development of project management and leadership skills. Due to the ‘real life’ format students working on CRIS and Evaluation Exchange reported new skills in stakeholder management. Technical skills and knowledge specific to the respective programme goals were a beneficial outcome of each. For example, Evaluation Exchange students described learning evaluation skills and methodologies and CRIS students reported being absorbed by participatory methods and community-based research, along with improving their academic writing. Students on SPERO and ICR grew their technical understanding of the business world, finance, and commercialisation, as well as building their toolbox of resources such as relevant databases and business canvas models. Another commonality was an expanded mind-set. The common thread was that students were given another experience, outside of academia, with different attitudes, priorities and pace. It wasn’t that the alternative was better or worse, but rather that its existence expanded their mind to society around academia and the connections between the two. Confidence was increased for all students through different processes. Working with community organisations reportedly was instrumental in showing CRIS and Evaluation Exchange students the existence of lives and careers outside of academia. Being given the opportunity to practice their skills in other settings grew students’ confidence. For SPERO and ICR students, hearing about the business world had a similar effect of growing their confidence, both through getting the opportunity to practice, but also through validating that entrepreneurship was attainable.

Opportunities and barriers

Career opportunities: In addition to individual development, the experience offered insights for students in terms of their career plans. The core similarity across the three strands was students being opened up to thinking more deeply about how their work can have real-world impact. Students on ICR and SPERO were more likely to have joined the programme due to an interest in entrepreneurship as part of their career, than students on the other programmes joining primarily because of interest in the voluntary sector. ICR and SPERO student commonly reported that their programmes had made them more likely to want to try entrepreneurship, to think it was attainable, and knowing how to access necessary resources or networks. The experience of working with community partners reportedly gave some CRIS and Evaluation Exchange students an interest in third sector work, whether that be through the idea of careers outside of academia, or of drawing the two together to making their research more translatable. Students from both CRIS and the Evaluation Exchange suggested that they would be more aware of and comfortable applying for jobs outside of academia after this experience.

Barriers: Across the programmes there were several barriers to KE in common, such as the challenges of delivery during Covid-19 restrictions, students and external partners (where relevant) having limited time and varying levels of commitment, and the interaction between

the course and emotional wellbeing. Although across the programmes, particularly in ICR and SPERO, students welcomed online course delivery because of relative ease of access, many said they missed the opportunities afforded by face-to-face interaction for expanding their friendships and networks. Students across the strands also implied face-to-face learning is more engaging, and that levels of commitment might be lower when delivery is online. Several students on the Evaluation Exchange regretted not having been able to visit the organisation they were teamed with. Similarly, while much of CRIS is held online, students participating during the pandemic said they found it difficult not being able to meet community partners face-to-face or have access to research participants. Students across the courses experienced a lack of time and varying levels of commitment as barriers. Students on the Evaluation Exchange mentioned it was hard to schedule meetings with teammates and partner organisations and manage timelines because everybody had different commitments and priorities, and because the amount of time people were willing to put into the project wasn't the same across the team. And while students on ICR appreciated having long timelines for their project, this also meant the projects competed with their PhD research for attention. Students on CRIS mentioned that because of the dissertation deadline, they had to build a relationship with the local organisations and carry out fieldwork within a very limited amount of time. Other barriers to participation identified by students were of an emotional nature. Some students on the Evaluation Exchange felt "out of their depth" or felt insecure about their academic abilities relative to other researchers, while others felt too shy to ask for input. Students on SPERO and ICR reported feelings of "imposter syndrome" too, and some mentioned a lack of motivation. Several CRIS students equally experienced low confidence and confusion as triggers to their emotional wellbeing.

Suggestions for improvement: When interviewees were prompted as to how the programmes could be improved in the future, suggestions such as managing expectations, facilitator support, and desiring more time with others cut across strands. Programme specific improvements are documented in their respective sections. Students and community partners across strands expressed a desire to have had a better visual on what shape participation would take, and more preparation for challenges they may face. Examples were making clearer expected roles, responsibilities and outputs, time commitment and timeline. A shared student suggestion was for more structured support and feedback from programme facilitators. Students recognised the value of mastering interpersonal working relationships, yet some in CRIS and the Evaluation Exchange suggested an enhanced relationship brokering and facilitation role for facilitators. This might not be support per se; one student suggested teaching confidence to navigate challenges. Students from ICR, SPERO, and CRIS asked for more informal networking time with their peers, as well as structured time where they could hear each other's ideas and get feedback on their own. Students across programmes asked for wider UCL understanding and buy-in for the programmes. Students suggested they would have liked to know about ICR and SPERO earlier, or like CRIS students, that departments were unaware, which impacted the supervisor relationship. Relevance of the content intersected with how meaningful students found the content. Students in SPERO and ICR suggested that more real-life entrepreneurship stories would expand their learning, as well as more tailored case studies, relevant to those in social science, or students planning to work in China and India. CRIS students wanted more

charities as options to increase the likelihood of making a meaningful match, while Evaluation Exchange students also wondered about tailoring student-organisation matching process.



Chapter 6 Conclusions and Policy Implications

We focus in our conclusions on the benefits to students accruing from our KE programmes, drawing on the evidence from our Systematic Review, and from the quantitative and qualitative elements of our evaluation. We consider first the evidence on benefits, and then discuss the barriers to engaging in, and benefitting from, KE activities, and the processes, or mechanisms, by which these benefits may occur. In the final part, we consider the policy implications of our findings and suggest further research.

Benefits to Students from KE activities

The ISIKLE Logic Models assume that our programmes may bring benefits to students in various ways, including through: a) increasing their understanding of their local communities and their general civic engagement; b) enhancing their skills, and particularly those which improve their employability; c) advancing their career planning; and d) increasing their general sense of well-being. Our qualitative evaluation provides evidence of gains for some students in all these areas, but the quantitative evaluation finds the strongest evidence of benefits in the area of skills. Both the qualitative and quantitative evaluations suggest that the benefits across different outcomes differ somewhat according to the programme in question. We begin by looking at the outcomes where the quantitative evidence is relatively weak and then turn to skills outcomes where it is much stronger. In both cases the qualitative evaluation evidenced these benefits.

Understanding of local communities and civic engagement.

Our before- and after- survey collected information about students' engagement with different types of civic organisations, and their reasons for participating, but the analysis of the data does not provide evidence of how these may have changed during the course of the ISIKLE programmes. The responses given showed only small variations across programmes in the types of organisations engaged with and the reasons for doing so. 'Involvement in community activities' was the top choice for all strands engaging in KE (except ICR), for which 'Sports

Groups' were the top choice; 'Running communities media outlets' was the second or third most common choice for the participants from three of the four strands. In terms of engagement in political activities 'signing petitions' was the most common choice for respondents from each of the strands, followed by 'taking part in demonstration and protest' and then 'contacting MPs' in three of the four strands. The reasons given for community engagement were similar for respondents for each of the strands. The most common reason for taking part in volunteering activities was 'volunteering to share skills', and for 'joining groups, clubs or organisations': 'improving things/helping people.' The quantitative analysis compared the responses to those in the 2011 'Pathways through Participation' survey of the adult population, and the answers given by of KE participants were very similar. This does not provide evidence that civic engagement was enhanced by participation in our student KE programmes, but the responses are notable for highlighting the desire amongst our participants to contribute to society by sharing their skills. Our qualitative evaluation also found this to be a factor which motivated many students to take part. Participation in KE activities reinforced this motivation among students, contributing to the benefits they derived from them.

Career Planning

It is commonly thought that student KE activities, such as volunteering and participation in internships, provide tangible benefits in terms of: a) enhancing participant understanding of what is involved in working in different occupations and sectors; b) increasing awareness of different career options available; and c) improving networks which may facilitate employment. Our quantitative evaluation provided some useful pointers as to what students expected from their participation and some rather limited evidence of gains in career understanding and planning arising from participation in our KE activities. Asked about how they expected KE participation to benefit them in this regard, respondents from each of the strands were most likely to select the following options: 'Understanding more about organisations outside the university'; 'Finding opportunities to develop new insights into my research and practice'; 'Learning new skills to broaden my career choices'; and 'Finding opportunities to develop new insights into my research and practice.' Perhaps surprisingly, 'Developing new networks' was only amongst the top three options selected with respondents from the Evaluation Exchange. Our quantitative evaluation does not tell us whether these expectations were fulfilled.

However, it does suggest some gains in career planning associated with participation. Respondents were asked if 'you have some idea about what career you are interested in.' The proportions responding that they were 'not sure' declined across three of the strands (by between 2 and 14 percentage points), with only respondents for CRIS showing no change on this measure. Our qualitative evaluation reinforced the findings about students wanting to participate in our KE programmes in order to understand local communities better and to share their skills to make a difference in the world outside the university.

Well-being

Our Logic Models assume that student participation in KE activities may enhance their general well-being. This may occur through providing additional contact with other students and external partners with similar interests and objectives. It can also arise through enhancing their self-confidence through providing opportunities to meet new challenges and learn relevant new skills. Where students are successful in meeting these challenges, it may increase their sense self-efficacy and confidence in their employability. In our pre- and post- participation surveys we asked students the same batch of questions commonly used in surveys to gage self-perceptions of general well-being. The pre-survey responses showed that ISIKLE participants generally had slightly lower levels of well-being than adults in the 2016 European Quality of Life Survey. Analysis of our survey data also showed that there were no statistically significant changes between scores in the two surveys, suggesting that participation in our KE activities was not associated with improvement in well-being. However, we cannot set much store by these results. Participation in ISIKLE began shortly after the onset of the pandemic which affected programmes through both years of ISIKLE. We would expect that this could negatively impact on perceptions of well-being and may account for scores for our participants being lower than those for adults who were not affected by COVID in the 2016 survey. A possible increase in the impact of the pandemic on our students' well-being throughout their period of KE participation may have overwhelmed any positive effects on well-being from KE participation.

Skills and employability

As we noted in the introduction, enhancing student and graduate employability is a major driver of policy interest in student KE activities. A frequent assumption, including in our Logic Models, is that employability is enhanced by the development of a range of skills which have not been the traditional focus of the academic curriculum in universities, and may be more readily acquired through collaborative activities with partners outside of the university. Our survey asked student respondents in both pre- and post- surveys to rate themselves on 32 different skills. Survey respondents could rate themselves from 0 – 10 on each skill, where 0 is 'not confident at all' and 10 is 'completely confident'. Most of these skills in the survey are considered to be generic, and thus subject to improvement through any kind of KE activity, whilst some were selected because of their relevance to the programmes in a particular strand. The quantitative analysis of changes in self-reported competence in these skills during the course of a programme was conducted both at the level of individual skills and in terms of clusters of skills. Five clusters were identified related to: 1) *leadership/independence*, 2) *people skills/communication*, 3) *reflection/self-determination*, 4) *technical* (and an additional 5th group for the four further skills included in the ICR survey). The analysis provides relatively strong evidence of improvement in many of these skills during the course of programmes.

Our regression analysis by skills clusters shows increases in average scores for the participants in each strand in all of the skills clusters, although this is not in all cases statistically significant. The average improvement - or effect size - is quite similar across skills clusters but varies

somewhat by strand. Respondents from all strands reported increases in their 'leadership/independence skills' after the programmes. For three of the strands the average increases relative to the baseline were quite similar (i.e. 11.5% for Evaluation Exchange; 15% for ICR and 17% for SPERO), but the increase for CRIS was considerably lower at 4%. For *people/communication skills*, there were again increases in average scores for three of the strands (ranging from 12% for Evaluation Exchange to 19% for SPERO) but the increase for CRIS was lower at 3%. For *reflection/self-determination skills*, there were skills gains in all strands but by quite divergent amounts (18% for SPERO; 14% for ICR; 6% for Evaluation Exchange; and 3% for CRIS;). There was a similar pattern of quite divergent gains in technical skills (from 20% in SPERO to 10% in CRIS). The increases in each skills cluster were statistically significant for SPERO and ICR, with participation in these Strand 3 programmes associated overall with around a one-point increase in skills - amounting to about 15-20% skills improvement across all domains measured. Baseline scores for all skills clusters were higher in Evaluation Exchange and CRIS than in SPERO and ICR, but with the latter two programmes seeing greater improvements in average scores. However, with one exception, the results for the Evaluation Exchange and CRIS did not reach conventional levels of statistical significance. This may have been affected by the smaller sample sizes for these two programmes, but still suggests the need for caution when comparing skills gains across programmes.

The regression results for the effects of programme participation on individual skills reinforces the conclusions from the skills clusters analysis. We find significant associations between programme participation and gains in many skills, but the number of significant associations varies considerably by strand. Participation in SPERO is significantly associated with improvement in the majority of skills (23 out of 32, or 72 per cent) and participation in ICR with twelve skills or 37 per cent). Participation in the Evaluation Exchange and CRIS is significantly associated with improvements in fewer skills (4 and 1 respectively). These are skills which receive particular emphasis on the programmes as shown in our qualitative analysis (including for the Evaluation Exchange: 'negotiation', 'having difficult conversations', 'putting forward ideas to a group' and 'applying research skills in real life'; and for CRIS 'professional and media skills'). We cannot attribute causality in these relationships, but we can say with some confidence that participation in all programmes is associated with gains in *some* skills (and most likely the skills areas which are most central to the programmes). Our qualitative analysis adds further weight to this conclusion.

The qualitative evaluation included the strand-leader narrative case studies and the post-participation interviews and focus groups, the latter being semi-structured and allowing participants to comment on perceived benefits across a wider range of skills and in more depth.

Students across our different programmes noted a multitude of ways in which participation had improved their skills. There was considerable commonality across programmes in the range new or improved skills that were highlighted. However, the ways in which students described the processes by which new skills were developed naturally varied across programmes, according to specific activities undertaken in different programmes. There were also some differences in the relative emphasis placed on different skills areas.

A common theme in the responses from students from all strands was around the opportunities afforded by KE activities for applying their knowledge and skills in, or to, 'real life' situations, with the additional motivation arising from the belief that this could 'make a difference' in the 'real world' outside academia. Interacting and collaborating with others from diverse backgrounds and with different types of expertise in different professional contexts afforded new challenges in terms of communications skills; applying their research knowledge and skills to specific organisational challenges could serve to widen knowledge and understanding and hone research methodologies; finding ways to adapt their communications and research skills to new environments could increase self-confidence and the sense of self efficacy. However, these processes took different forms depending on the kind of KE activities available on different programmes. CRIS and Evaluation Exchange students reported that collaborating with community organisations enhanced their understanding of lives and careers outside of academia. The opportunity to practice their skills in other settings grew students' self-confidence. For SPERO and ICR students, learning about the business world had a similar effect of boosting their confidence, both through helping them to develop their own entrepreneurial ideas and through validating their sense that putting such ideas into practice was attainable. While for CRIS and Evaluation Exchange students this occurred through working directly with external partners, in SPERO and ICR it occurred principally through exploring business case studies and scenarios and through sharing ideas with peers and staff. Students in the Evaluation Exchange felt that they developed their communication skills by having to adjust to new situations and provide bespoke solutions of value to diverse end users. Similarly, students from CRIS reported that their level of confidence, and their presentation and communication skills, improved during the programme through the process of adapting their language and articulating their ideas to different audiences. Some students on SPERO regretted that they had fewer such opportunities to interact directly with external partners but noted, nevertheless, how much their skills improved from collectively undertaking challenging assignments in small groups of staff and students.

Knowledge and understanding is another area where students in all programmes noted improvements through their participation in KE activities, but again this meant different things depending on the programme. Evaluation Exchange students did not necessarily gain greater awareness of the local community (many lived at some distance from their university and visited their partner organisations only infrequently in person), but several students described learning more about evaluation skills and methodologies from applying them in new situations. CRIS students reported being absorbed by participatory methods and community-based research, along with improving their academic writing; the writing and citation sessions offered by CRIS were mentioned as helping to improve the dissertation write-up. Students on SPERO and ICR, on the other hand, describe improving their technical understanding of the business world, finance, and commercialisation, as well as building their toolbox of resources such as relevant databases and business canvas models. ICR students, particularly, reported learning more about generating and protecting IP, and about the processes of innovation and commercialisation and the differences between the two.

The process of developing new 'mind-sets' was explored through a number of questions in the evaluations, since this had particular relevance to Strand 3 entrepreneurship education. In our

analysis of the qualitative data it became apparent that this was considered an area where students from all programmes thought they could benefit, although, again in different ways. As expected, students from ICR and SPERO tended to see this in terms of the ability to spot opportunities for entrepreneurial activity, and for commercialising business ideas. The process of sharing business ideas with peers and staff nurtured their confidence in the possibilities for translating ideas into marketable products. Students from the Evaluation Exchange and CRIS were more likely to envisage expanding their mind-sets in terms of understanding how societal questions could be seen through different optics from diverse professional standpoints and how they could navigate through these differences through enhancing their communication and negotiating skills.

Our qualitative evaluation also sought to explore students' perceptions of potential benefits to their 'project management and leadership' skills. As expected, responses suggested that this had more salience in some KE contexts than others. It was frequently raised by Evaluation Exchange students as an area where their collaboration with external partners could stimulate personal development. For instance, the non-hierarchical, collaborative research model of KE practised in the Evaluation Exchange provided multiple challenges which some student felt to prompted them to develop new skills in negotiation and initiative-taking, enhancing their general leadership potential. Some CRIS students reported that learning how to negotiate between different stakeholders, such as partner organisations and academic supervisors, could be tricky but was ultimately a good learning experience.

Career Development

Developing new skills would be likely to enhance the employability of students, but there were also other ways in which taking part KE activities was beneficial to students in terms of their careers. The core similarity across the three strands was in students being opened up to thinking more deeply about how their work could have real-world impact and how their skills might be useful outside academia. This gave students confidence that their studies were worthwhile and that they could find jobs where they could make use of their skills, even where prospects within the academic world were limited. As our quantitative evaluation showed, participation in our student KE activities did not necessarily lead to higher levels of certainty about preferred careers (although it slightly reduced the proportion who felt 'not sure' about their career choice on two strands). However, it does seem to have generally boosted student confidence that there were different avenues available and attainable. Some students on our entrepreneurship programmes reported that they were more likely to give entrepreneurship a go, just as some students on the Evaluation Exchange reported that participation had increased their interest in third sector work.

There were other quite specific and concrete ways in which students believed their participation on our programmes improved their employability, such as:

- helping them to know how to search and apply for jobs in specific sectors;

- giving them the confidence to approach organisations for volunteering or job opportunities;
- providing them with new contacts who would alert them to job openings and possibly provide references;
- furnishing them with demonstrable evidence of relevant experience which could be used to enhance their CVs and provide concrete examples of their knowledge of, and interest in, a given job in an interview situation;
- fostering new networks amongst other students which could be sources of advice and support;
- providing insights into how to access support through the university and external links, for entrepreneurship students, for instance, being able to apply for Kickstarter funding;
- developing the confidence to take financial and other risks in furthering their career development.

Barriers

Our narrative case studies and interviews with students identified a number of barriers to students participating in, and benefitting from, their KE activities. These included: Covid-19 restrictions, students and external partners (where relevant) having limited time and varying levels of commitment, and constraints to participation from poor mental health.

Covid

Due to COVID restrictions many of the KE activities during the two years of IKILE occurred on-line. Some students, particularly on ICR and SPERO programmes, welcomed the ease and flexibility of access afforded by on-line delivery of programmes. However, many students said they missed the opportunities provided by face-to-face interaction for expanding their friendships and networks. Several participants across the programmes suggested that in-person learning was more engaging and more likely to enhance student commitment, whereas on-line learning might have led to reduced levels of commitment amongst some participants. Some students from programmes involving external partners also regretted the lost opportunities for visiting external community organisations in-person and having face-to-face interactions with their staff and clients. In some cases students experienced frustration when the projects which they hoped to work with on in their chosen community organisations had to be closed because of the pandemic, or where they could not meet in-person with project participants due to Covid restrictions. Some students on ICR, expressed a preference for hybrid forms of delivery that offered both the flexibility of on-line access, but also the possibility of enhanced engagement through face-to-face interaction.

Time pressures and other course constraints

The competing demands on students from their main study programmes and their KE activities could pose problems for some participants across all our programmes. Time pressures may have been particularly problematic for those on one-year masters courses. Several students in the final stages of CRIS noted the difficulty of completing their academic masters dissertation at the same time as working with their partners in a community organisation on a project which involved a quite different type of output. Some students unable to attend CRIS learning opportunities felt that their lectures and part-time jobs also got in the way. We noted earlier how this contributed to many of those signing up for CRIS failing to sustain their engagement in KE activities over time. However, conflicting pressures over time were also mentioned by students from the longer doctoral studies programmes who were participating in our entrepreneurship programmes. The design of the ICR programme, with segments spread over a number of weeks, allowed welcome time for reflection, but it also protracted the tensions over time, particularly for those in their final year of PhD research. Some students welcomed the more concentrated format of SPERO which allowed participants to give themselves entirely to the task in hand without compromising their PhD work.

Other kinds of conflict between students' primary courses and their KE participation could also pose barriers to students benefitting from KE. Some students, particularly on CRIS, felt that either their supervisors or external partners were not fully in tune with the objectives of the programme, or had different perceptions about it, and that they felt somehow stuck in the middle between different stakeholders' divergent expectations. Students on CRIS were sometimes frustrated at the amount of time required for finding a suitable external partner to work with. Some also reported challenges co-producing a proposal with community partners with little to no experience of higher education or research, despite the consistent efforts made by the CRIS team to build capacity within partner organisations for working with students.

Mental health challenges

Other barriers to participation identified by students were of an emotional nature. Some students on the Evaluation Exchange said they felt insecure about their academic abilities relative to other researchers, while others felt too shy to ask for input. Students on SPERO and ICR reported feelings of 'imposter syndrome' too, and some mentioned feelings of self-doubt, as well as lack of motivation. Several CRIS students also talked about low self-esteem and poor mental health during the pandemic as hampering their potential to benefit from KE activities.

The Processes and Mechanisms which Promote KE Benefits

In line with the Systematic Review and the quantitative evaluation, the qualitative evaluation provided a detailed description of seven processes or mechanisms that worked as engines for the realisation of KE benefits. These were: 1) Mastery experiences from navigating challenges - such as working in teams, delivering outputs working with multiple stakeholders, and testing their skills in unfamiliar and complex environments; 2) Authentic and meaningful experiences

that address real-world problems and needs with a potential for a positive solution for the external non-HEI partners; 3) Personal contact with programme facilitators; 4) Social persuasion and communication to bring their group work or project to fruition; 5) Working together in multidisciplinary groups that pushed them out of their comfort zone; 6) Facilitation and network building or joint enterprise in the absence of a multidisciplinary group; 7) Managing expectations and boundaries was key for a positive KE experience.

Although these seven mechanisms were common across the three strands, they differed to an extent according to the programme in question. For example, the authentic and meaningful experiences derived from real interactions in the Evaluation Exchange and CRIS, but from role play in SPERO and ICR.

The Strengths and Limitations of our Evaluation

Our Systematic Review of the Literature noted the methodological weakness of most studies which seek to evaluate the benefits of student knowledge exchange activities. Very few studies - even amongst the 33 judged most robust of the 199 studies selected - were designed in a way which would allow rigorous estimation of the benefits of student KE interventions and could demonstrate causality in the relationships between intervention types, characteristics and processes and the outcomes of interest. Evaluations typically involved only one type of student KE activity and were thus not able to compare the effectiveness of different approaches. They rarely defined the measures used to identify intervention characteristics and outcomes with adequate precision and often provided limited information about the KE activities actually undertaken with external partners. Whilst some studies noted intervention characteristics, processes and mechanisms (including pedagogic techniques) which might potentially enhance the benefits of KE activities to students and partners, few were able to test the effects of these in a rigorous way. Only 13 studies collected and presented sufficient information for it be possible to calculate effect sizes for any factors associated with student benefits, and very few studies used control groups in a way that would allow inference of causal relationships.

The design of the ISIKLE programme and its evaluation was such that we were able to overcome at least some of these limitations. ISIKLE was originally conceived as what the Systematic Review terms a 'multi-faceted intervention' and, as such, involved different types of student KE activity whose relative effectiveness might be compared, at least in theory. With the benefit of the prior professional experience of the delivery team, we were able to develop some initial hypotheses about what types of KE activity might deliver different kinds of benefits to students and partners, and how this process might work, and we were able to elaborate these more systematically into Logic Models as the programmes took shape, and in discussion with the Systematic Review team. In the process of developing the quantitative evaluation we were able to define measures of characteristics, processes, and outcomes with some precision. As part of the qualitative evaluation, we were also able to document the activities that occurred on each programme in considerable detail, as summarised in the 'strand narratives' in this report. A further advantage of this mixed-method approach was that we were able to collect rich data on characteristics, processes and benefits of our programmes, as perceived by programme staff, partners and students, which could not be collected through a

survey instrument and would not have been amenable to quantitative analysis. The quantitative analysis of the before- and after- survey data was able to estimate ‘effect sizes’ for the different interventions on a range of outcomes, if not for all outcomes of interest.

However, we were not able to overcome the major limitation to a rigorous quantitative evaluation because of the absence, as in other studies, of control groups and data on post-graduate employment outcomes. We had planned to use HESA data from the Graduate Outcomes Survey to compare the employment outcomes of graduates who participated on our KE programmes with a matched group of graduates who did not participate. This proved to be impractical since the data would not have been available for analysis until several years after the end of our programmes, and we would not have been able to include findings in our ISIKLE reporting within the time frame specified.

These two short-comings in our evaluation, as in others, lead us to recommendation on the design of future evaluation in the next section.

Policy Implications and Recommendations

Increasing our knowledge of the benefits of student KE activities.

The ISIKLE project has enabled us to understand better the benefits of different kinds of student KE activity, the processes through which these benefits occur, and the barriers which often prevent students gaining the full benefits from them. However, there are still significant limits to our knowledge and understanding. We still have insufficient hard evidence about any benefits accruing in terms of future employment. Although we find significant associations between student KE participation and a range of positive outcomes, we cannot be sure that these relationships are causal.

Our first policy recommendation therefore relates to future research and evaluation. Where Government funding is allocated to projects devoted to scaling up, improving and evaluating student KE activities, it is essential that these interventions are designed so that the most rigorous kind of evaluation is possible. This necessitates extending the longitudinal frame of the projects in such a way that it is possible both to assess impacts on future graduates’ employment outcomes, and to use existing survey data in a way that permits the use of control groups in the data analysis. With a four-year project reporting timetable, it would be possible to establish KE ‘intervention groups’ and ‘control groups’ from university-collected data, by matching KE participants with a group of students with similar characteristics who did not participate in KE programmes. The graduate outcomes for the two groups could then be compared using linked data from the HESA Graduate Outcomes Survey (in terms of employment status, salary, occupation and industry). HESA outcomes data is collected from graduates 15 months after graduation (and published about a year later). In practise reporting would therefore need to be three to four years after the start of KE programmes.

Encouraging universities to maintain a diverse portfolio of student KE programmes

The evidence from our ISIKLE evaluation is that different kinds of student KE programme can deliver different sets of benefits to students and external partners. Our evaluation suggests that all four of the distinctive ISIKLE programmes had some beneficial outcomes in terms of skills and career planning, but that the outcomes varied in significant ways, appealing in specific ways to different groups of students.

Maintaining a diverse set of KE offers is likely to be the most effective way to meet the different priorities of diverse groups, and thus to enhance the reputation of the university KE offer and maximise recruitment overall.

Focusing on the employability-enhancing features of student KE programmes

Students in all the ISIKLE programmes were motivated by a desire to increase their employability through participating in KE activities, particularly in the context of uncertain labour market conditions during and after the pandemic and in the light of the increasing competition for good graduate jobs.

Student KE programmes may differ in some of the specific benefits they offer, but they need to retain a focus in all cases on enhancing the employability of their student participants in their careers and sectors of choice.

Increasing diversity in recruitment to KE programmes

ISIKLE identified a variety of barriers to increasing diversity in recruitment to its KE programmes. The programmes are not equally ‘visible’ across different departments in the university; students from under-represented groups may face particular problems in accessing them, because they are working part- or full- time whilst studying, or because they have demanding family and caring responsibilities, or because they spend considerable time commuting to their universities. Students from under-represented groups may also lack the funds for the additional travel required to take part in certain activities. Those experiencing particular challenges with competing demands and time pressures may be discouraged from participating in KE activities which are voluntary and extra-curricular rather than integral to their main study programmes. Experience on our programmes also suggested ways to mitigate some of these barriers.

Diversity in recruitment to student KE activities can be improved by university-wide publicity for KE programmes, the provision of allowances for student travel to external partner locations and participation in surveys, and through the flexible delivery of activities, including through maintaining the use of hybrid delivery modes adopted through the pandemic. Where internships are used as the vehicle for student Knowledge Exchange, priority should be placed on setting up paid internships to encourage a more diverse range of participants. Knowledge Exchange programmes which are credit-bearing and more integral to the curricula of main study programmes may, in some cases, be more attractive to those from under-represented groups with limited time and resources to participate in activities which are considered voluntary.

Scaling -up via extended networks

The SEKE programme (Student Engagement in Knowledge Exchange), which funded our projects, places great emphasis on collaborations across universities and the benefits of using wider networks to scale-up KE programmes nationwide. ISIKLE can attest to the value of these. Our partnership between UCL and University of Manchester in the provision of entrepreneurship programmes proved highly beneficial in terms of sharing best practise and generating fruitful ideas for innovation in the delivery of their two programmes. The Evaluation Exchange demonstrated the potential for replicating a successful KE programme in a new area as a way of geographically rolling out KE activities. Part of its ongoing plans are to develop a nationwide network of evaluation exchanges and toolkits which will allow the rapid replication KE activities based on university-VSO collaborations in evaluation challenges.

The roll-out of successful student KE programmes in higher education country-wide can be supported through university partnerships and the development of national knowledge exchange networks.

Making student KE central to the student experience

The provision of opportunities for student KE is not central to the student offer in all universities and the provision of such opportunities is not always seen as a way to achieve a comparative advantage in student recruitment. Our experience on ISIKLE suggests that where particular KE programmes manage to attract greater support at senior management levels this may be crucial for their long-term sustainability.

Universities need to make student Knowledge Exchange central to their strategic plans for improving student learning opportunities and for enhancing the overall student experience. They should view the provision of widespread, diverse and high-quality student KE opportunities as an element in their comparative advantage in attracting students. Commensurate resources need to be made available for supporting the labour-intensive processes involved in instigating and sustaining successful student KE programmes. Universities can benefit from competing for funding from the Higher Education Innovation Fund (HEIF) and from Research England Development Fund (RED). They can also use Widening Participation funding to support KE programmes to attract a more diverse range of students.

Appendixes

Appendix 1: Student interview guideline

I. Introduction

Thank you for taking part in this interview. My name is [your name] and I am working on [EE/CRIS/SPERO/ICR].

The aim of this interview is to understand your views about [EE/CRIS/SPERO/ICR].

Your views are vital to help us finding out how the experience has been for you in particular, and to identify best practice in student engagement in Knowledge Exchange activities across the wider higher education sector in general.

There are no right or wrong answers as we are interested in your experience with [EE/CRIS/SPERO/ICR].

This interview will be recorded but all the information that we collect will be treated confidentially by keeping participation anonymous.

While results will be made available neither you, nor any participant will be identified in the report.

Participation in this interview is voluntary and you may withdraw at any time.

II. Participation characteristics

First I will ask you some questions about you and your participation in [EE/CRIS/SPERO/ICR]

1. What is your course and your department?
2. Have you volunteered/ had an internship/placements/ research collaboration before?/Strand 3: Did you have any previous experience with entrepreneurship? Either yourself or your family?
3. Why did you take part in [EE/CRIS/SPERO/ICR]?/ Strand 3: What did you hope to get out of SPERO/ICR?
4. How was your experience of participating in [EE/CRIS/SPERO/ICR]?/
5. As part of [EE/CRIS/SPERO/ICR]: with whom did you work? VSO/private companies? What do they do?
6. How has COVID affected your participation in [EE/CRIS/SPERO/ICR]?
7. Did you face any barrier to take part in [EE/CRIS/SPERO/ICR]?

III. Strengths of your experience

I will ask you some questions about the positives of taking part in [EE/CRIS/SPERO/ICR]

8. What knowledge, skills or understanding did you apply to [EE/CRIS/SPERO/ICR]?
Strand 3: Has SPERO/ICR taught you any new behaviours or ways of thinking?
9. What new knowledge, skills or understanding did you gain from [EE/CRIS/SPERO/ICR]?
10. What did you value most about your experience?/ What did you find most helpful?
11. Would you say that participation has open up new opportunities/career opportunities?
If so, how? If no, why?
12. Have you developed new networks that may open up opportunities/career opportunities? If no, why?
13. Do participating in [EE/CRIS/SPERO/ICR] has helped you clarify your future plans?
If so, how? If no, why?
14. 14. Have you gained new knowledge and understanding of your local community?/of the UCL's community?/of the UoM's community?/ of the business world? If so, how?
If no, why?
15. 15. Have you helped delivering solutions/co-design evaluations/service improvement strategies/ tools? How did that work?
16. 16. What are the main opportunities/strengths derived from working in [EE/CRIS/SPERO/ICR] for you? those involved in your team? for the wider community?

IV. Specific aspects of [EE/CRIS/SPERO/ICR]

Strand 1: I will ask you some questions about specific aspects of the EE

- How did you co-design the evaluation project? How did that work in practice?
- What have you/your team created with the organisation? Is the new knowledge? How will the created products be used?
- What would you say you learned from this experience? Did you learn anything new? E.g. evaluation knowledge, related to your degree, about yourself
- What would you say were the benefits and challenges of working in such a varied (multi-disciplinary, and beyond) team?

Strand 2: I will ask you some questions about specific aspects of CRIS

- Please introduce a little bit about your dissertation collaboration. Who did you collaborate with? When did you first meet and what happened?
- Thinking about what you wanted to achieve, how much of this happened?
- What was surprising about collaborating? Any unforeseen benefits or negatives?
- How did you co-design the evaluation project? How did that work in practice?
- What was the best thing about this collaboration?
- Do you and your organisation have plans for a usable product for the organisation? Is it the knowledge, i.e the dissertation usable in itself? Is there any usable product for the organisation?

- In addition to your dissertation, are you planning to create any form of dissemination of your dissertation for the organisation?

Strand 3: I will ask you some questions about specific aspects of SPERO/ICR

- Are you better at spotting opportunities now? How?
- What did you value most about your experience?/ What did you find most helpful?
- Entrepreneur?
- Risk-taking?
- Length of the course?
- Should the course have credits?
- How was the timing of the course regarding your PhD?
- How was the online work?
- Did the workshop material support your understanding?
- Anything that is missing from the course?

V. Limitations of your participation

I will ask you some questions about the difficult aspects of taking part in [EE/CRIS/SPERO/ICR]

17. What are the main limitations/challenges you faced working in [EE/CRIS/SPERO/ICR]?
18. Were the main limitations/challenges resolved? How?/ Strand 3: Did SPERO/ICR help you in developing the skills necessary to overcome the challenges?
19. If you could improve [EE/CRIS/SPERO/ICR], what would you do?/ Strand 3: What would you do differently if you were delivering the programme?/ What needs to be improved?

VI. Future steps

I will ask you some questions about your future after taking part in [EE/CRIS/SPERO/ICR]

20. How do you think that taking part in [EE/CRIS/SPERO/ICR] will impact your future?/ Strand 3: To what extent has your experience with SPERO/ICR influenced your thinking around your future career?
21. Would you recommend [EE/CRIS/SPERO/ICR] to other students? To other organisations? Why?
22. Is there anything else you would like to add that I haven't asked, and you think important?

Thank you for taking part in this interview!

Appendix 2: Facilitator interview guideline

Introduction

You are invited as a Strand Leader to explore your experiences working together and the extent to which there has been learning derived from the ongoing collective knowledge sharing and collaboration across ISIKLE. This online focus group/interview is oriented to provide an opportunity to reflect and capture the journey undergone by each strand as a result of been part of the project.

Strand level

1. What have been your main learnings?
2. What have been your main achievements?
3. What have been each strand's main challenges?
4. What aspects of your strand are similar to the other strands?
5. What aspects of your strand are different to the other strands? In which way are they unique?
6. Have you got questions for the other strands or things you would like to learn from them?

Learnings at the ISIKLE level

7. To what extent have you learned from working with the other strands?
Have you changed anything about your work/practice? Implemented any learnings?
8. Regarding learning at the project level: what worked? what didn't work? what could be improved over the final phase?

Collaboration at the ISIKLE level

9. Focusing on collaboration at the project level: What worked? what didn't work? what could be improved over the final phase? (i.e team meetings, collective writing, away days, writing reports, emails and other interactions exchanged between meetings, other?)
10. What have you achieved or done differently as a result of working together?

Future steps

11. What is missing to enhance collaboration across strands even further?
12. What opportunities to collaborate and learn in the future would you like to have?

13. What do you anticipate arising from these collaborations in the future? What could help get these realised?
14. Is there anything that we haven't asked that you think important to add?

Appendix 3: Skills Groupings

1. Communication skills, confidence in talking to people working outside the university
2. Leadership skills, taking control of a situation w
3. Being a 'self-starter', not waiting for instructions w
4. Dealing with conflict, such as strong disagreement with you or between two others in a group
5. Reflective skills, self-awareness w
6. Negotiation skills, discussions aimed at reaching agreement
7. Influencing skills, convincing others about something w
8. Having a difficult conversation w
9. Project evaluation skills w
10. Thinking creatively
11. Interacting with people from different backgrounds and different environments w
12. Noticing opportunities for change
13. Taking responsibility w
14. Finding innovative solutions to problems w
15. Listening skills w
16. Presentation skills, such as public speaking
17. Putting forward an idea to a group w
18. Professional social media skills e.g. Twitter, LinkedIn w
19. Data/information handling skills, including ethical storage of information w
20. Working collaboratively with others, or in a team environment
21. Ability to apply your research skills in real life situations / different contexts
22. Ability to quickly sense, take action, and get organised under uncertain conditions.
23. Ability to persevere, accept and learn from failure.
24. Ability to take risk with what you think, believe, or want to do.
25. Ability to influence and control your own behaviour, actions or thinking to achieve the self-direction and self-motivation necessary to work independently
26. Capacity to produce new ideas, insights, inventions, products or artistic objects that are considered to be unique, useful, and of value to others
27. Ability to spontaneously create something without preparation
28. Ability to build a team to form an enterprise or new venture
29. Develop a commercialisation/start-up idea based on an application of your research
30. Create a business proposal/outline for commercialisation of a product/service
31. Develop an entrepreneurial pitch
32. Participate in the University's entrepreneurial competitions e.g. Venture Out, Venture Further, Harari Enterprise Award, etc.

- A. Leadership/independence
- B. People/communication
- C. Self-determination/creativity
- D. Technical
- E. ICR business skills