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**Designing a Digital Research Accelerator Programme for the Social Sciences at
UCD: Preliminary results of a faculty-library collaboration**

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Abstract

Alongside calls in the literature for research skills development for undergraduates, University College Dublin's College of Social Sciences and Law (CoSSL) has identified a need for research skills education for its new Bachelor of Social Sciences programme. In collaboration, academics and the library have created a new course, the Social Sciences Research Accelerator, designed to provide foundational learning of research skills for students transitioning to conduct research projects in their final year. Preliminary testing of the course,

which included a small user-testing group of undergraduates who engaged with course activities and then completed a survey evaluation, has been positive. This paper details the partnership between academics and library staff toward a common scholarship goal, including the creation of learning materials, early testing of content, and future work.

Keywords: digital research, undergraduate research skills, information literacy, digital literacy, online learning, social sciences research

Introduction

Preparing undergraduate students to conduct research, and participate in scholarly communities is an emerging priority in higher education (HE). The skills and competencies underpinning academic research activity are diverse, and have been increasingly complicated by the advent of Internet-based research methods and the ramifications of ‘datafied’ scholarship and e-research. ‘Datafied’ scholarship was recognised by SCOUNL in 2017 as a major trend impacting the work of academic libraries, and is defined as research that is “increasingly underpinned by large datasets and digital artefacts, involving open, networked, algorithmically driven systems” (Pinfield, Cox & Rutter, 2017, 4). Integrating research learning into undergraduate curricula is most usefully viewed at the programmatic level, as a sequential, scaffolded approach, with opportunities to learn embedded at key points in the programme. “Scaffolding” in this context describes the provision of incremental, temporary learning supports by the instructor at different key points of a course or programme, to enable students to gradually achieve higher levels of skill and understanding than if they were working alone. Kleine Staarman & Mercer describe scaffolding as “a particular kind of dialogue between a relative expert and a novice through which the novice can be guided

to make sense of a difficult task” (2010, 79). Stakeholder collaboration, involving academics, librarians and educational technologists ensures that a wide range of active and interactive research learning activities and resources can be put in place to ensure the attainment of learning outcomes. In the project reported here, the launch of a new undergraduate BSc Social Sciences programme in the College of Social Sciences & Law (CoSSL), University College Dublin in 2017 provided the impetus to consider how interactive research skills training for Social Sciences undergraduate students could be embedded in the penultimate year of their degree, preparing them for significant research projects they will undertake during their final year.

Background to the Project

The initiation of the Social Sciences Research Accelerator online course was linked to two major initiatives at University College Dublin: the Curriculum Review and Enhancement Process (2015-2017) and the launch of the new four-year BSc Social Sciences programme in the College of Social Sciences and Law (CoSSL) (2017). Two themes in the final report of the Steering Committee for the Curriculum Review and Enhancement Process were particularly relevant to the development of this course: “Embedding research in the undergraduate experience” and “An expansion of use of technology to enhance learning” (UCD Curriculum Review and Enhancement Process Steering Committee, 2017, 14 and 22).

In Autumn 2018, CoSSL’s Teaching & Learning Committee was charged with producing recommendations for embedding research experience into Years 3 and 4 of the new BSc Social Sciences programme. The Research-based Education Working Group was established to carry out this task, with membership consisting of academics

from four schools in the college, administrators from the programme office, a student representative, and the liaison librarian for the Social Sciences.

In line with the general trends regarding research skills for undergraduate students (e.g., Fung 2017, 20-38, Meulen, 2017, 6-9), the Working Group discussed “*differential supports that may be required across the programme to support a diversity of research experiences at stage 4,*” which would, for example, increase awareness of research ethics and development of critical thinking skills (UCD Research-based Education Working Group, CoSSL, 2019, 28). During the group’s deliberations, it also became clear that in order to achieve the research learning outcomes for Year 4, which include designing a research project (UCD Research-based Education Working Group, CoSSL, 2019, 31), students would need to acquire some core research skills during Years 2 or 3. Among the skills identified as essential were information searching, critical thinking, writing a literature review, understanding research ethics, and managing research data.

The working group’s report specifically mentioned the use of library resources as a means of expanding student outcomes in relation to data analysis, literature reviewing, and critical thinking, and highlighted the need for collaboration between the schools and the university’s library to share expertise in core dimensions of research, as well as for a programme-level view of the development of research-related skills, as recommended several years earlier by UCD’s Fellows in Teaching & Academic Development (Brennan, L., Cusack, T., Delahunt, E. & Donnelly, S. 2016, 25). The report also included several key recommendations relevant to this project: for example, Recommendation 5 stated that “there is potential to work across Schools to share expertise in particular approaches and dimensions of research” (UCD Research-based Education Working Group, CoSSL, 2019, 25), while Recommendation 8 indicated the “need for more support for both faculty and students to enhance awareness and

understanding of research ethics, support critical thinking and data analysis skills, and better articulation of what and where research is within the social sciences.” (UCD Research-based Education Working Group, CoSSL, 2019, 28)

Based partly on this report, and on the general trend for embedding research learning in undergraduate curricula, the liaison librarian for the Social Sciences identified an opportunity to develop a module co-designed by the library that would introduce these foundational research skills to undergraduate students in the BSc Social Sciences programme. The advantages of embedding librarians in undergraduate research experiences are well documented (Knapp et al., 2014, 139-140; Wiebe, 2016, 244-247; Hoffman et al., 2017, 220-224; Rustic & Wood, 2018, 246-247), and a module would offer students in the BSc Social Sciences programme the benefit of a collaboration between librarians and academics to enhance their research outcomes.

In February 2019, CoSSL launched an Undergraduate Curriculum Development Award to provide funding for modules offering substantial innovative research learning opportunities. The lead applicant in submissions for this award was required to be an academic, and the call encouraged collaboration between schools in the College. The liaison librarian approached an academic in the School of Information and Communication Studies (ICS), a school with a long history of producing reusable content for embedding digital research skills in their undergraduate curriculum. A team was formed, including the library, ICS, and the School of Psychology. In collaboration, the team conceived a proposal for an online, self-paced module that would maximise use of high quality but under-utilised learning resources in both the library and ICS and prepare students for their research projects in Year 4. With funding secured, module design began in May 2019.

Innovation

The project offered two key points of innovation: 1) a collaboration among academics and librarians, which includes student input, to enhance student learning; and 2) a six-unit, GPA-neutral, self-paced online course to enable third year students to develop, enhance, and reflect on foundational research skills, and prepare them for more advanced research activity in the fourth year of the BSc programme. Digital learning activities and digital resources were combined, partly sourced from existing resource collections within the Social Sciences and the library, covering essential areas of the research process. The presence of a teaching assistant was envisioned as a means of helping students with any arising queries around content and technology, as well as to guide students through content by offering comments around reflective assignments to ensure fuller learning in learning units.

Literature Review

The rationale for implementing the Social Science Research Accelerator project was informed by a growing body of literature attesting to the critical importance of embedding research learning into undergraduate curricula in Higher Education Institutions (HEIs): “The education of students should lead them to ask research questions of increasing sophistication, specificity, depth and breadth, that set them on a journey towards making the unknown known” (Willison & O’Regan, 2007, 399). Whether through direct participation in solo, collaborative or guided research projects, or through learning about the paradigms, methods, and tools of research in their disciplines, experience of research and research skill development are increasingly viewed as integral elements of undergraduate education and important programme-level learning outcomes: “Assisting undergraduates to develop research skills and techniques

is a key aspect of the intellectual journey of students as they develop as researchers” (Healey & Jenkins, 2009, 54). Although traditionally viewed in relation to postgraduate, rather than undergraduate, education, a gradual shift in perspective has driven research and inquiry to the forefront of discussions about the meaning and value of an undergraduate education in the 21st Century. This view resonates closely with the question of the graduate attributes that students should ideally display on completion of their degrees, including those which go beyond discipline-specific expertise to focus more broadly on students’ holistic growth as citizens, as well as future academics or employees. According to Hill, Walkington & France (2016, 156), these attributes include “critical thinking skills, such as intellectual curiosity, analytical reasoning, problem-solving and reflective judgement; effective communication; leadership and teamwork skills; research and inquiry skills; information literacy [and] digital literacy,” in addition to overarching personal and metacognitive qualities, the latter defined as self-awareness and understanding of one’s own thinking and learning processes and preferences. Critical thinking, the overarching concept that unites these different areas of ability, encapsulates the set of higher-order cognitive processes that support the development of deeper and more complex levels of understanding, the ability to make decisions and to identify and solve problems based on the synthesis and analysis of evidence, the ability to make meaningful connections between abstract concepts, and to generate new knowledge or perspectives on existing subjects. Another catalyst for embedding research in undergraduate curricula has been the desire to improve and enhance the links between research and teaching in HEIs, which are “complex and influenced by a wide range of factors, such as departmental structural arrangements for organising research and teaching activities, and a potential gap in making connections between staff research outputs and students’ learning” (Edwards *et al.*, 2017, 16).

Attitudes towards research and teaching tend to be discipline- or even faculty-specific, and this approach increases the challenges around identifying a model of undergraduate integration that works across subjects and institutions.

Research skills are perceived as important for undergraduate students for multiple reasons. Apart from preparing them to undertake graduate research, knowing the processes, tools, and methods associated with both general and discipline-specific research can support students to become fully immersed in the discourse and scholarship of their chosen fields and, consequently, to develop a gradual awareness of themselves as “stakeholders in the worlds of university research” (Healey & Jenkins, 2009, 20). Willison & O’Regan (2007, 395) suggest that, since universities are “scholarly communities,” the purpose of undergraduate education should be “to induct students into that community,” first through observing, then increasingly as engaged participants through carrying out their own research or collaborating with others. Crucially, Healey & Jenkins (2009, 9) further observe that embedding research in the curriculum also enables a view of the student as a “a potential producer of knowledge,” rather than passive consumer. This perspective is also reflected in the new *Framework for Information Literacy for Higher Education*, which supports the idea that students’ entry into and participation in scholarly communities are heavily influenced by their grasp of the core concept of “Scholarship as Conversation,” which defines research as “a discursive practice in which ideas are formulated, debated, and weighed against one another over extended periods of time” (ACRL, 2016, 20). Information literacy in this context is conceptualised as actively participating in and contributing to the disciplinary research conversation, wherever and whenever it takes place. Other benefits of research experience and learning for undergraduates include “enhanced capacity for critical thinking, problem-solving and independent thought, [and] deeper understanding of how

disciplinary knowledge is co-constructed, challenged, and communicated” (McGuinness & Fulton, 2019, 26). Ultimately, the core aim of research learning in undergraduate curricula is for students to become *participants* in research, rather than just consumers.

The transformative effect of the Internet and digital technology on research and scholarship adds a further layer to the argument in favour of undergraduate research and what its focus should be. While the growth of Internet-based research methods and social media analytics have influenced the conduct and outputs of research for a number of years, the rapid evolution of datafied scholarship has raised “unprecedented concerns about research ethics, the management and storage of large datasets, evolving research metrics, open access publishing, and the increasing complexity and quality of digital research and information tools” (McGuinness & Fulton, 2019, 26). Bartling & Friesike (2014, 5) described this era as the “second scientific revolution,” which is characterised by trends, such as open science, e-research, Big Data, data science and digital humanities, amongst others. As a result of these transformations, “researchers may find that they need new skills and knowledge to work most effectively and take advantage of the new opportunities that this age of data-driven research presents” (Federer, 2016, 35). Inculcating a research culture for undergraduates should, therefore, include exposure to these evolving research paradigms and approaches, in order for them to understand how scholarly communities are responding to and engaging with these changes. The shift toward datafied scholarship further opens the door for the librarian’s role in supporting undergraduate research learning, particularly around newer areas of practice, including research data management, data curation, and data visualisation: “Extending information literacy to include programs on data management and curation provides a logical entry point into increasing the role of libraries in supporting e-research” (Carlson & Johnston, 2015, 12).

In terms of how research learning can be embedded in undergraduate curricula, Healey & Jenkins' well-known model offered a starting point. Based on their perspective that the best way to integrate research is "to mainstream it and integrate it into the curriculum for all students" (2009, 122), they described four main approaches, which vary according to the extent of student active engagement in the processes of research and inquiry implied in each one, namely:

- **Research-led:** learning *about* current research in the discipline. Examples of this approach might include faculty discussing their own research projects in class, lecturing on the dominant research paradigms in their disciplines, embedding digital resources such as TED talks from YouTube in the Learning Management System (LMS), or inviting guest researchers to present to the class, either in-person or remotely.
- **Research-oriented:** developing research *skills and techniques*. Here, examples might include practical, hands-on tutorials or workshops on specific research methods or tools (e.g., NVivo, SPSS, interview techniques), or asynchronous, self-paced online tutorials or courses.
- **Research-based:** *undertaking* research and inquiry. This approach involves students in actively planning, developing and carrying out solo or collaborative research projects with guidance from an instructor or academic supervisor. It may simply involve desk research, or could incorporate empirical work, including data collection and analysis. It might also encompass students working with faculty as research assistants on existing projects. In some cases, it might involve contributing to journal publications or conference presentations.
- **Research-tutored:** engaging in research *discussions*. The final approach casts students as emerging scholars, engaged in (guided) critical analysis and

discussion of research in their disciplines, and in taking their first steps as participants and contributors to the scholarly community. In addition to in-class discussion, this could also involve written critiques, or making contributions to online debates in private or public fora.

(Healey & Jenkins, 2009, 6)

Healey & Jenkins also emphasised the importance for an undergraduate curriculum to include opportunities for all four approaches: “Using a wide variety of methods of learning and assessment is a sensible strategy to respond to the mixture of different preferred learning styles that characterise the students in our course” (Healey & Jenkins, 2009, 8). Other relevant models include University College London’s “Connected Curriculum” framework, which is based on the view that “the predominant – although not necessarily exclusive – mode of learning for students should be active enquiry and, where possible, engagement with current research that is pushing forward what is known in a particular field” (Fung, 2017, 4). The core principle - i.e., students learning through research and inquiry - is connected to six associated dimensions of practice, which focus on differing approaches to ensuring that research and inquiry are woven throughout the curriculum - for example, “Students connect with researchers and with the institution’s research,” and “Students make connections across subjects and out to the world.” Willison & O’Regan (2007; 2015) also proposed the *Research Skill Development Framework* (now RSD7), a model designed to facilitate the incremental development of students’ research skills during their programmes, through identifying six main facets of research (i.e., embark on an inquiry; find the necessary information; evaluate and reflect; organise and manage; analyse and synthesise; communicate and express), which are each expressed in terms of a continuum of incremental student autonomy, from Level 1 to Level 7 (the highest level of research autonomy). The aim of

the RSD7 framework is to serve as “a conceptual tool for diagnosis and planning, promoting understanding, and interpretation of both potential and realised student research skill development” (Willison & O’Regan, 2007, 401).

Common to all three models is the need for a seamless, flexible, and scaffolded approach to research learning that spans the student’s entire undergraduate experience; Healey & Jenkins (2009, 39) suggested that incorporating research learning into undergraduate curricula requires “a set of linked structured interventions at course team, department, institutional, and national levels,” rather than depending on one particular model or approach. Equally, it is important for the research learning opportunities in the curriculum to be made explicit to students, so that they are aware of what, when, and why they are learning (Edwards et al., 2017). Signposting the type of research learning that will be embedded (e.g., research-oriented, research-based) and the activities that will be employed to support this learning at different stages in the curriculum, is an important means of cultivating an expectation of research among students and ensuring that they are aware of the meaning and importance of any research learning activities that they encounter in their programmes.

Method

Approach

The project adopts an action research approach, recognising the intent of the work to inform the provision of support to students in the development of their research skills. However, it is also influenced by models of practitioner research, in particular Mitchell, Shaw and Lunt’s description of this as “A practitioner or group of practitioners [carrying] out enquiry in order to better understand their own practice and

client groups and to improve service effectiveness. These, typically small and localised, studies, have the potential to be shared with colleagues working in similar environments” (2008, 5). Also influential in the design of the research is the model of autoethnography, which repositions the researcher and importantly their personal experience as a reflexive part of the research process. The value and contribution of this approach in education research has been highlighted by Hughes, Pennington and Makris (2012), among others. As a result of these influences, the methods recognise and capitalise on the role of the practitioner research in the context of the study.

The project implementation involves three core phases:

- Phase 1: Collaborative development of module and pilot testing;
- Phase 2: User testing;
- Phase 3: Focus group evaluation.

This paper reports on Phase 1, which is ongoing through Spring-Summer 2020. It must be emphasised that this project is still in progress and the outcomes to-date reported in this paper are preliminary in nature.

Phase 1: Collaborative development of module and initial pilot testing.

First, specific learning outcomes were developed collaboratively for each core topic to guide the design and content of the learning units. The course was structured as six individual learning units, each corresponding to key foundational research skills as follows:

1. Developing a research topic (learning to select and develop topics for research)
2. Literature searching and evaluation (learning to search and evaluate search outcomes critically)

3. Critical academic literacy (learning to examine and use academic sources critically)
4. Research Ethics part 1 (using information ethically and referencing literature)
5. Research Ethics part 2 (learning to conduct research ethically)
6. Research Data Management (learning good data management practices)

The course was rolled out for online learning via Brightspace, the Learning Management System (LMS) used at UCD.

Learning materials and activities are contained within each unit and may be accessed in sequence or according to students' preferences and individual research learning needs. Existing materials, including e-tutorials, LibGuides, and online resources produced by academics and librarians, as well as new items, such as short videos with academic and library experts about each research topic, were assembled in each unit.

A group of four students volunteered to complete and review the first two learning units in September 2019, and provided useful feedback for developing the remaining learning units. Suggested modifications to improve the learning experience achieved through the course were implemented and the final four learning units were finished, keeping in mind student feedback. This paper includes content from this part of user testing.

Phase 2: User testing

The overall course has been in user testing with students since January 2020. A second group of 5 students is currently in the process of completing the course in its entirety. The results of this testing will be available during the summer of 2020. It should be noted that this paper does not report on this phase.

Phase 3: Focus group evaluation

Collaboration has been explored through a reflective focus group with staff involved in the course to support formal reflection on and discussion of the experience of implementation. A reflective focus group is a particular form of focus group, enabling group reflection. In this project, the team of collaborators gathered and reflected together on all aspects of the project. This approach draws heavily on the action and practitioner research models described earlier. Fook (2008) discusses the contribution of reflection as an aspect of research, noting the role of reflective focus groups in influencing the development of a project in the context of participatory action research. Given the practice-based focus of this research, the opportunity for the members of the wider research team to come together, led by one member of the team not directly involved in the development of materials whose role was to prompt and probe discussion, supported deeper and critical reflection on the experience of the development process to date. This process also reflects Fook's (2018) concept of creating a backstory for the research.

Focus groups will also be held with student testers in the summer of 2020 to capture students' reflections on their online learning experience and content in the course. These will follow a traditional focus group structure, with moderators and the small group of student user testers. Given the restrictions caused by COVID-19 on physical meeting, these focus groups will be held online.

The overall evaluation will integrate the findings from across the strands described above to identify the key lessons from the development and implementation of the module. In this paper, staff reflections have been included to elaborate on collaborative partnering for this project.

Data collection and analyses

Reflective focus group with the team

The reflective focus group with members of the project team was audio-recorded, the recording was transcribed, and the data were interrogated for common themes arising around project development and implementation, using a line-by-line constant comparative approach by the team. As noted above, one team member, who had worked on other areas of the project other than content development, moderated the focus group and all team members contributed to a team reflection on the project.

Student testing of the first two learning units

Preliminary testing for the module was conducted with four students who volunteered from ICS. Because research has shown that achieving successful learning outcomes strongly correlates with how much the student enjoys the learning material, as well as with students' feelings of being challenged by content (Muelen, 2017, 20), early testing of initially developed learning content was considered essential to the overall project development. Students were initially approached through advertising via announcements in ICS courses in the Learning Management System (LMS), Brightspace, followed by word-of-mouth invitations disseminated in classrooms. Four students agreed to test the first two learning units; they all attempted these learning units.

Preliminary survey of early users

The initial user testers completed a brief survey about the course to provide feedback. The survey asked a series of open-ended questions about students' engagement with the

module, including general questions about the experience, helpful and unhelpful learning aspects of the module, technical issues encountered, topics or suggestions to be added, likeliness to recommend to other students, and general comments. Data gathered were aggregated and summarised; the team then used this feedback to improve the first two learning units and then to develop the next four learning units.

Findings

Preliminary Module Testing

Student feedback on the first two learning units was positive overall. All respondents reported having a pleasant learning experience that was helpful and worth recommending to other students. Students appreciated the scaffolded approach to the module, and identified the combination of different types of media [e.g., video introductions followed by e-tutorials] as helpful to their learning process. Participants commented on the fact that they did not know these resources existed, and valued having them together in the LMS: “Just to have all the resources gathered in one place like this and to have a clear form and structure to follow - "start here" - one unit at a time, is really helpful when you're new to research.”

Student testers also helped by identifying contents issues, such as broken links, repetition, unhelpful content, video problems and volume issues. Student feedback enabled the team to examine the overall structure of the Web and library resources sections of the module from the student perspective, remove resources identified as less helpful and add greater guidance for the students to pace themselves through this material, ensuring the scaffolded approach to the learning process continued throughout all units in the module.

Student testers highlighted some technical problems, e.g., some had problems with e-tutorial and/or video functionality. The team addressed technical issues with the assistance of CoSSL's EdTech, who facilitated resolution of software and software integration issues, such as browser compatibility and video volume. Because students are likely to engage with the online course via varying Web browsers and because software updates and changes can affect integration of tools, understanding the potential issues around technology was essential for ongoing course development in the online environment. Software integration and other technology issues could potentially become a challenge for future iterations of the module.

Reflective focus group with the project team

The data from the reflective focus group is still being analysed, but preliminary findings suggest that the opportunity to meet as a team and discuss the project process from the perspective of a collaborative partnership proved a highly useful exercise for team members, offering insight into project development which supported ongoing development of the online course. Team reflections on the impetus for the project, the coming together of a team, and the development and challenges of content and supporting technologies enabled the team to deepen their perspective of the essential partnership for this project and ways in which this cross-disciplinary and cross-university unit approach could facilitate future learning development. For instance, observations about the wider teaching and learning initiatives in CoSSL which underpin this research helped to contextualise this project in the College and university.

This reflective focus group identified the launch of the new four-year BSc Social Sciences programme, the adoption of the new LMS, Brightspace, and the report from the Research-based Education Working Group (2019) as catalysts for the creation of the

module. It was also agreed that the initial intention for creating the module was using existing but under-utilised digital resources to help third year students in the BSc Social Sciences programme acquire foundational research skills that would help them complete a larger piece of research in their final year.

The focus group also discussed difficulties in the design, implementation and delivery of the module. They included the technological challenges of incorporating interactive digital content and making it available for the long term; the administrative challenges of embedding the module into the BSc Social Sciences programme and recruiting the intended cohort of students into it; and the educational challenges of structuring the content, “creating the pathway through the resources. That it's coherent and that, you know, it's an interactive learning experience for the students” as well as encouraging students to engage with the material and complete the module.

Technological difficulties made up a significant part of the discussion, and there was consensus on the need for a stable software environment in order to ensure the sustainability of the module in the long term. However, it was also agreed that there are considerable difficulties in achieving such an environment in the digital realm. The discussion also touched on the significant administrative burden, cost and time commitment involved in developing and maintaining the content of the module.

Crucially, the team agreed that the partnership between academics, a librarian and an educational technologist, each bringing a different but complementary set of skills, was key to the success of the project.

Discussion

The project importantly brought together the expertise and experience of academics, university librarians, and students to influence undergraduate engagement with research literacy skills. The library and individual schools have developed e-learning materials

separately, which are often under-utilised by staff and students; this project facilitated bringing together materials to promote a more unified, college-wide awareness and understanding of how to use these materials in learning. The new course combined existing resources with new material to create a cohesive research learning experience and to encourage students to explore further the various research supports and resources that are available to them during their education. This new configuration of reusable content has allowed the team to consider the application of learning materials directly within the student's experience, as well as to consider how students engage with existing material and how future learning materials might be created around students' learning needs.

Research has shown that multimodal ways of learning, such as those applied in this project, result in deeper learning experiences for students (Ramachandram and Taylor, 2017). For this project, students who have tested module content to-date have demonstrated that they welcome multimodal ways of communicating in their social lives and that they accept these as part of their university experience.

A significant challenge faced in the development of the digital research skills course has been technological in nature. Because technologies continue to evolve, monitoring the technological environment will be an ongoing topic for this course, as it is for any online-based educational resource.

Conclusion and Future Work

The project is now in a final testing phase with undergraduate students at the time of writing this article. Once this phase has been completed, student feedback will be used to make final edits to the module. In late 2020, the module will be handed over to CoSSL for its official roll out to undergraduate students. In the meantime, additional

funding has been secured to develop brief snapshots of student learning. Students will create and manage video content for each of the six learning units in the current project, in which they talk about their acquired learning about the full range of research concepts and skills included in this module.

The course developed to-date has provided an opportunity to explore how learning resources developed by both academic units and the library can be embedded into academic modules and linked to specific research-related learning outcomes, rather than existing separately from the academic process or created in isolation with repetition of effort. The course has also identified gaps in the library's provision of resources to support undergraduate research, leading to the development of new tools, such as a guide on research data management for undergraduate research projects. Future work, involving the academic-library-educational technologist collaboration established through the current project, will include continued development of open educational resources. Importantly, the team will revisit existing digital content, such as e-tutorials, which can be more easily adapted to changes in technology.

Overall, this project demonstrates the potential for academic and library staff partnerships. Each team member brought specific expertise in developing teaching materials, module design, student enrolment, and managing the research ethics process, all of which have been key elements of the successful realisation of the project.

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Appendix: Questions that emerged from the reflective focus group

- Q1: What was the intention in designing this module?
- Q2: Was there a vision of who would benefit from this, and not who we decided we'd go with, but in the beginning, who were the intended targets?
- Q3: We're talking about four-year Social Sciences programmes. You're talking about four years' worth of students. Was there any initial or particular group of students that you had in mind?
- Q4: Was the new programme structure and the new VLE also influencing those initial intentions
- Q5: If you were thinking back over the last few months of activity (take that point where the project started and we had a plan, we had a design, we had a budget – to now) what for you have been the unexpected challenges in operationalising that vision that you have?
- Q6: With the e-tutorials, are you happy that you've ironed out the kinks, for the pilot?
- Q7: If you were preparing educational resources, do you want them to work the way e-tutorials were supposed to work or do you want something different?
- Q8: Can I bring this back to the original intention and the word that was mentioned was interactive. Was that what the original intention was?
- Q9: Is there always going to be a need to update this material?
- Q 10: In the original vision, it was going to be XYZ. But the reality has been A to Z and all the steps in between. Are there any other components of the original plan that have been unexpectedly challenging, and how did you solve it?

- Q 11: If you were then listing top tips to the next group of enthusiastic young things who come through, what's the top tips for creating that structure, for creating that frame?

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