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The role of EU funding for UK Educational research

Case study

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1 Introduction

Educational research at UK universities covers a range of issues and perspectives and involves a variety of methodologies. It includes studies of both formal and informal schooling, and covers the spectrum from pre-school through to adult education. It covers a range of themes including organisational issues, social justice, curricula, assessment, innovation and economic impact.[1]

This case study looks at the role of EU funding for Educational research in the UK, exploring the impacts of this funding on individuals, institutions, policy and practice, and the potential impact of a change in access to EU-funded research. The study covers the period between 2007 and 2016 and focuses on the EU Framework Programmes for Research and Innovation (FPs) while also considering EU's Lifelong Learning (2007-2013) and Erasmus plus (2014-2020) education programmes.

This report presents the following:

- Quantitative analysis of EU funding for the UK's Educational research. This analysis is based on data from the European Framework Programmes and the UK Higher Education Statistics Agency (HESA).
- The profile of three UK university departments in relation to Educational research: King's College London, a large research-intensive institution; the University of Exeter, a smaller research-intensive institution; and Manchester Metropolitan University, a relatively less research-intensive institution.
- A synthesis and conclusions highlighting the role of EU funding for Educational Research in the UK

2 EU funding for Educational research

2.1 UK participation in EU research and innovation programmes

EU Framework Programmes are the main source of EU funding for research, including for Educational research. The programme structure generally does not follow academic disciplinary lines and so Educational research is found in multiple parts of the programme. The European Educational Research Association has identified 11 areas of Horizon 2020 where Educational research could contribute to the programme objectives.[2]

Combining manual selection with a data mining approach, the study team has identified Educational research projects with UK participation from FP7 and Horizon 2020. As there is no agreed classification identifying Educational research in the EU funding data, these figures should be seen as estimates. The data mining approach is described in Appendix A.1.

Following data mining and cleaning, we identified a total of 177 participations by UK organisations in Educational research projects under FP7 and Horizon 2020. As shown in Table 1 below, these are found in many parts of the framework programme. Information and Communication Technology (ICT) is particularly well represented in terms of participations and funding, reflecting the high priority given to ICT funding in the EU framework programmes more generally. The great majority of UK participations in ICT projects were on the topic of 'Technology-Enhanced Learning' (FP7) and 'Technologies for better human learning and teaching' (Horizon 2020), projects that often involve interdisciplinary work with technological and social science elements. In the FP7 Science in Society (SiS) programme, most projects with UK participation focused on 'Young People and Science', and particularly different aspects of science education and inquiry-based learning. A large proportion of UK participation under this

[1] British Educational Research Association [BERA] (2013), *Why Educational Research Matters –A Briefing to inform future funding decisions*, August 2013, p 4.

[2] Lejf Moos & Peter Gray (2013), *The European Educational Research Association's Agenda for Horizon 2020* (available at http://www.eera-ecer.de/about/projects-partnerships/eera-and-horizon-2020/)

programme is in 'Supporting and coordinating actions on innovative methods in science education'. Under the social science and humanities programmes (FP7 Socio-Economic Sciences and Humanities, and Horizon 2020 Societal Challenges), the UK participation covers topics related to lifelong learning for young adults in the context of employment and growth, as well as more socially focussed projects about youth and social exclusion and inequality. . Finally, in addition to the participation in thematic programmes, UK educational research has attracted several grants for investigator-driven research (European Research Council [ERC]) and support for researcher training and career development (Marie Sklodowska-Curie Actions). A more detailed overview of UK participation across different parts of the EU Research and Innovation programmes can be found in Appendix A.2.[3]

Table 1 UK participation in Educational research projects in FP7 and Horizon 2020

Programme	UK Participations	UK Coordinator / host	EC Contribution to UK (average) (€)	EC Contribution to UK (total) (€)
FP7 - IDEAS: European Research Council	2	2	1,535,586	3,071,172
FP7 - PEOPLE: Marie Curie Actions	9	7	152,073	1,368,657
FP7-COOPERATION: Information and Communication Technologies (ICT)	71	7	291,935	20,435,437
FP7-COOPERATION: Socio-economic Sciences and Humanities (SSH)	12	1	167,193	2,006,317
FP7-CAPACITIES: Infrastructures	5	0	54,971	274,857
FP7-CAPACITIES: Science in Society	54	6	202,216	10,919,652
H2020-Pillar I: European Research Council	1	1	1,400,214	1,400,214
H2020-Pillar I: Marie Skłodowska-Curie Actions	3	3	210,256	630,767
H2020-Pillar II: INDUSTRIAL LEADERSHIP – LEIT - Information and Communication Technologies (ICT)	10	2	482,590	4,825,902
H2020-Pillar III: SOCIETAL CHALLENGES - Europe in a Changing World - Inclusive, Innovative And Reflective Societies	7	1	429,795	3,008,568
H2020 - Science with and for Society	3	0	105,104	315,313
Total	**177**	**30**	**457,449**	**48,256,856**

Source: Technopolis based on EU eCORDA

EU Framework Programmes primarily fund research and innovation but also support other, related activities. The types of activities undertaken depend partly on the funding instrument and UK Educational research has benefited from different types of support as shown in Table 2 below. It appears that, whilst the majority of UK participations are in research and innovation projects, about one in three participations and 20-25% of the funding are for different types of coordination, networking and support actions.

Table 2 UK participation in educational research project by type of funding scheme (FP7 and Horizon 2020)

	UK Participations	EC contribution to UK
Frontier research grants (ERC)	3	4,471,386

[3] This finding could be sensitive to the method used for identifying Educational research. If a more restrictive definition were used, ICT might feature less prominently.

	UK Participations	EC contribution to UK
Researcher training and career development (Marie Curie)	12	1,999,424
Collaborative research and innovation projects	102	31,331,292
Coordination and support actions	60	10,454,754
Total	177	48,256,856

Source: Technopolis adapted from eCORDA.
Note: The four types of funding schemes have been aggregated from a more detailed breakdown shown in Appendix A3.

The European Commission's Directorate-General for Education and Culture (DG EAC) provides another stream of funding for many Education Departments at UK universities. These programmes are not primarily meant to support research. For example, the Lifelong Learning Programme (2007-2013), with a budget of 7bn euros, supported a range of networking and exchange activities for schools, higher education, adult education and vocational training. Table 3 provides an overview of UK participation in the programme.[4]

Table 3 UK participation in the EU Lifelong Learning Programme (2007-2013)

	Projects coordinated by the UK	Projects with UK participation	UK participations
COMENIUS (Schools)	27	262	417
ERASMUS (Higher Education)	34	180	314
GRUNDTVIG (Adult education)	70	324	482
LEONARDO DA VINCI (Vocational education and training)	266	1523	2268
JEAN MONNET (EU integration)	2	2	2
TRANSVERSAL	42	249	432
Total	441	2540	3915

Source: Technopolis, based on data from the European Commission[5]

2.2 Dependency of UK higher education institutions on EU funding

In 2014/15 UK higher education institutions (HEIs) received close to £5.6m of funding from EU government bodies[6] in relation to Educational research, which is equal to 10% of the total research grants and contracts. This represents a steady increase in funding received since 2006/07, which was £2.5m, just over 4% of total funding (see also *Figure 1*). The increase in the volume of EU government funding as well as the increase in the proportion of EU government funding over the total funding awarded to Educational research suggests that the discipline became more dependent on EU government funding in recent years.

UK government funding to Educational research has decreased substantially over recent years from £43.7m (76%) in 2006/07 to £29.8m (54%) in 2014/15. In particular, UK central government bodies, local authorities, health and hospital authorities have been decreasing funding towards Educational

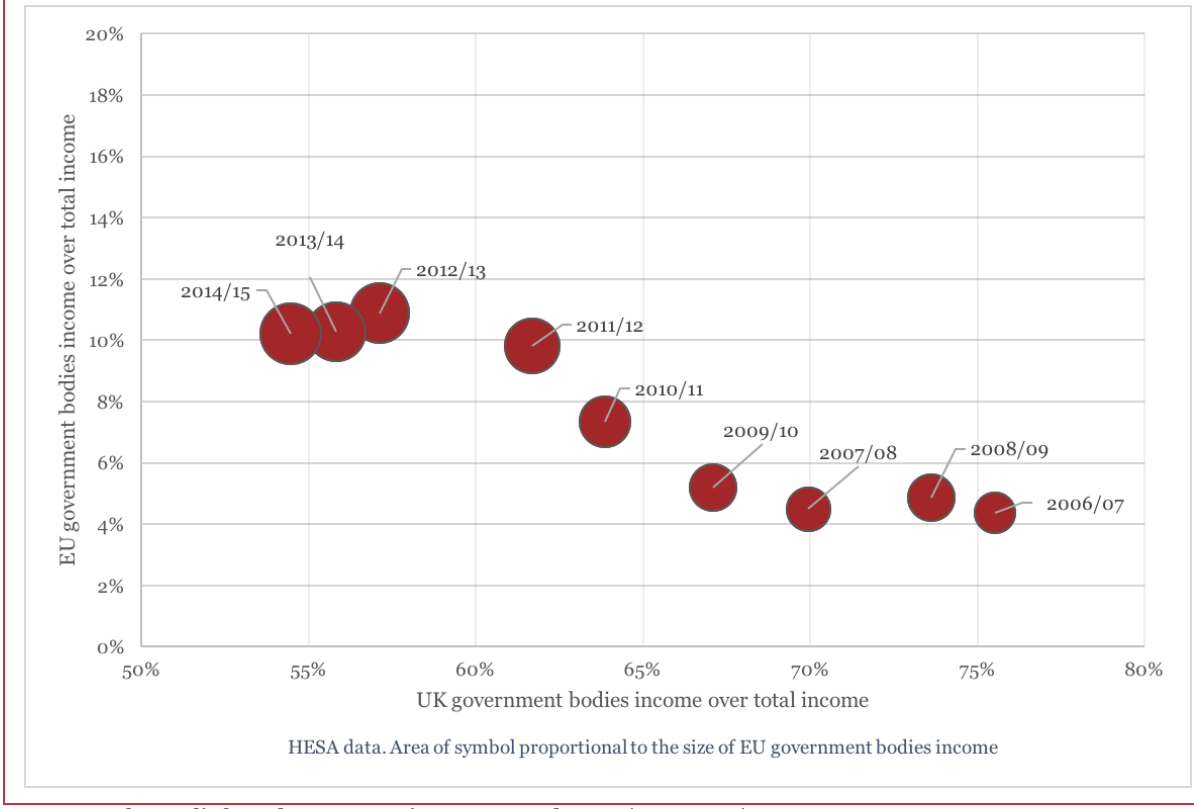
[4] Data does not allow for a calculation of the amount of funding for UK universities or to separate funding for research and innovation from funding for other activities.

[5] Available at: http://ec.europa.eu/programmes/erasmus-plus/projects/eplus-projects-compendium/ (Accessed 30 March 2017)

[6] The category 'EU government' includes funding from the European Commission but could also include funding from other sources, e.g. from other EU member state governments. See HESA's definitions in Appendix A.4.

research over the past few years: a decrease from £31.4m (54%) in 2006/07 to £15.8m (29%) in 2014/15 (see Appendix A.5).

Figure 1 Distribution of income from research grants and contracts from EU government and UK government income as a proportion of total funding from research grants and contracts to Educational research, 2006/07-2014/15



Source: Technopolis based on HESA Finance Record 2006/07 - 2014/15

Figure 2 presents the relative dependency of HEIs in relation to EU government funding as a proportion of total funding (vertical axis) and in relation to UK government funding as a proportion of total funding (horizontal axis). The symbols that are relatively larger represent the HEIs that receive more EU government funding in absolute terms. The figure is based on data for 82 HEIs which received UK government bodies income and/or EU government bodies income in 2014/15. In this year, 59 UK HEIs received funding from EU government bodies in relation to Educational research, out of which 15 HEIs received more than £100k of EU government funding[7]. The five largest recipients were University College London, The Open University, London Metropolitan University, The University of Cambridge, and Sheffield Hallam University. The figure shows that there is a wide range in the distribution of EU government and UK government funding to Educational research in relative terms, ranging from 0% to 100%.

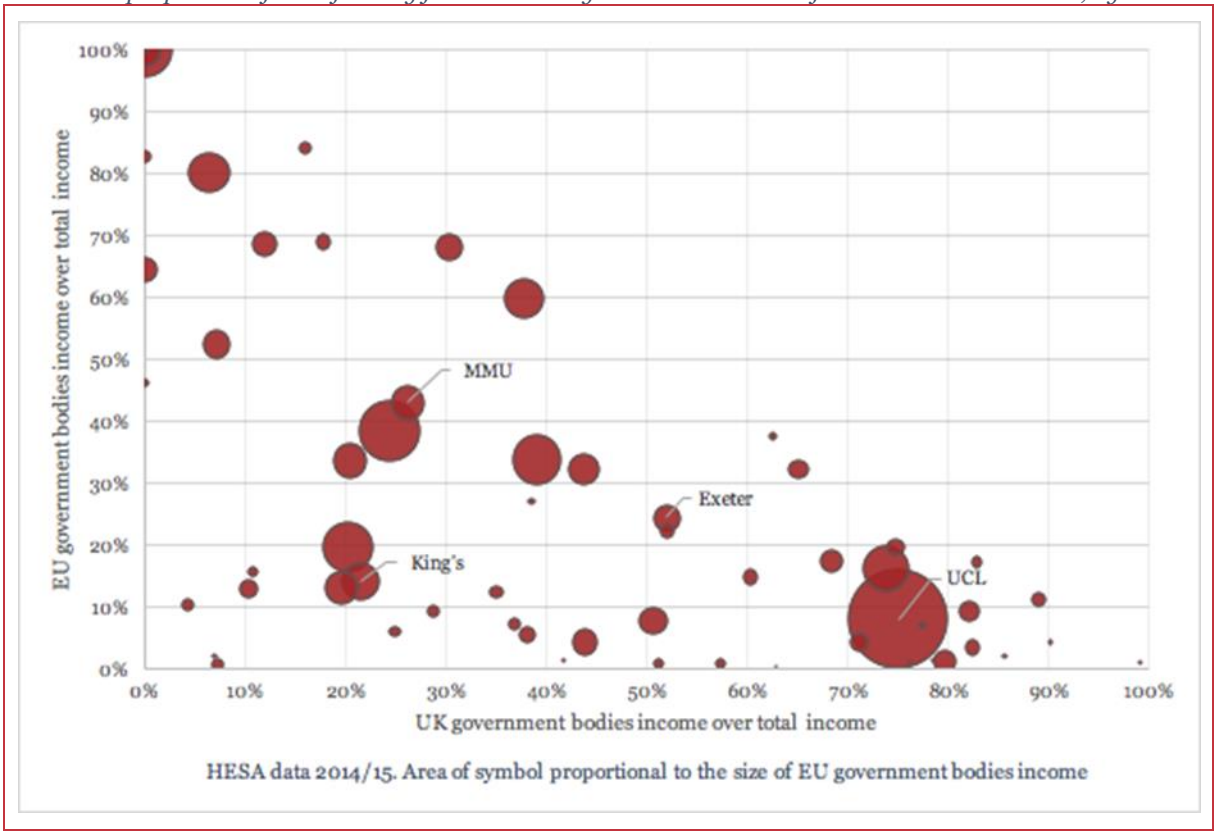
Analysis of the impact case studies submitted to the Research Excellence Framework (REF) 2014[8] reveals that 10 out of 250 (4%) case studies in the field of Educational research include a reference to the EU framework programmes (e.g. FP6 and FP7). This is an indication that the underlying research was (partially) funded by EU framework programmes and/or that the research enabled access to EU framework programme funding. At least one of the impact case studies was underpinned by research funded by grants from multiple EU framework programmes. The following HEIs submitted REF impact case studies in Educational research which contained references to EU programmes: Liverpool John

[7] HESA data from 2014/15 by cost centre

[8] Available at: http://impact.ref.ac.uk/CaseStudies/

Moores University, Manchester Metropolitan University, Nottingham Trent University, The Open University, University of Bolton, University of Brighton, University of Chester, University of Glasgow, University of Nottingham, and University of Oxford.

Figure 2 Distribution of income from research grants and contracts from EU government and UK government bodies as a proportion of total funding from research grants and contracts for Educational research, by HEI



Source: Technopolis based on HESA Finance Record 2014/15

3 Institutional profiles

This section presents profiles of three UK universities in relation to their Educational research activities. The three HEIs each have a relatively long track record in Educational research and have been successful in attracting EU research grants. They have been selected on the basis of the size of their departments and research quality as reported in the REF results (see the fact boxes at the beginning of each institutional profile). We wished to select institutions that could reflect the diversity of research power in Educational research in the UK. Therefore, we chose to include King's College London, a large research-intensive institution; the University of Exeter, a smaller research-intensive institution; and Manchester Metropolitan University, a relatively less research-intensive institution in our sample. The three profiles are largely based on qualitative interviews with research leaders and managers (for interviewee list refer to Appendix B), and self-reported data. Additionally, we have used funding data from HESA and REF 2014 to allow some degree of comparison between levels of EU funding for Educational research at the individual institutions.

3.1 King's College London

Factbox 1[9] Key figures from Research Excellence Framework 2014 (Education)

Number of full-time equivalent staff submitted (% eligible staff submitted)	% of world-leading (4*) research submitted	Research power	Departmental ranking (based on Grade Point Average)		
			Overall	For output	For impact
36 (66%)	65	124	2	3	4

3.1.1 Background

Educational research falls within the remit of the School of Education, Communication and Society (ECS henceforth) in the Faculty of Social Science and Public Policy at King's College London. Historically, its Educational research expertise lies in science and mathematics education[10], but since the late 1990s, linguistics and language education has also been a core strength. Other areas of particular interest are teaching and learning in formal and informal contexts; personal growth and development; teacher education and the enhancement of social, civic and professional capabilities and engagement. The School's disciplinary variety has also fostered interdisciplinary research. For instance, research exploring sociocultural aspects of teaching and learning as well as educational policy is being conducted at ECS.

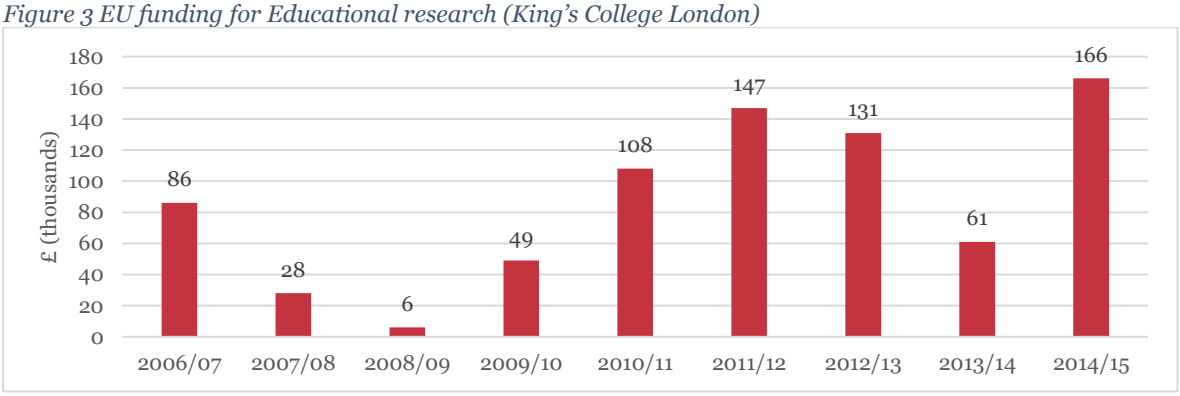
3.1.2 Funding for Educational research

3.1.2.1 Current funding

The School currently has £6.4 million in research funding encompassing 20 individual awards[11]. Funding from UK sources (Research Councils, National Academies, charities, government and industry) forms the bulk of the research funds – 70.9% (£4.5 million, 15 awards) of the total research funding. The European Commission (EC) and EU government funding accounts for 27.7% (£1.8 million, 3 awards) of the funding.

3.1.2.2 EU funding

Figure 3 EU funding for Educational research (King's College London)



[9] Data available at: https://www.timeshighereducation.com/sites/default/files/Attachments/2014/12/17/x/o/z/sub-14-01.pdf [accessed 31 March 2017]

[10] Available at: http://www.kcl.ac.uk/sspp/departments/education/about/index.aspx [accessed 30 March 2017]

[11] Available at: https://kclpure.kcl.ac.uk/portal/en/organisations/school-of-education-communication--society(efb810b9-b004-4ebf-a9b5-cc3e6957fb37)/projects.html?hesa=/dk/atira/pure/funding/hesa/eugovernment [accessed 30 March 2017]

Source: HESA data

In the last 10 years, the ECS has participated in 9 EU-funded projects (totalling £1.1 million for King's College London; some of these funds may be shared between ECS and other departments) focusing on topics such as science, technology and mathematics education, novel assessment strategies and informal learning. These were mainly funded through the framework programmes. However, it is important to note that there has been little activity related to acquiring Horizon 2020 and ERC grants. This has meant that the EU is no longer a significant funder for the School.

Some examples of EU-funded research projects are shown below:

Table 4 Examples of EU-funded Educational research conducted at King's College London

Project title	Value of award	Funding stream	Dates	Themes	Brief summary	Outputs[12]
Family Maths for Adult Learners (FAMA)	£37K	EC – Lifelong Learning Programme (Grundtvig subprogramme)	2009-2011	Maths education	A European network of good practices and resources was developed for family mathematics education in schools across Europe.	Resources: database of good practices, activities
Strategies for Assessment of Inquiry-based Learning in Science (SAILS)	£264K	EC – FP7 Science and Society (Funding scheme: Support Actions)	2012-2015	Supporting formal and informal science education in schools	The project demonstrated the use of inquiry approaches to teach science and trained science teachers across 12 EU countries.	Publications: 3 Resources: 19 Inquiry and assessment units, teacher education packs, frameworks for inquiry and assessment
ASSess Inquiry in Science, Technology and Mathematics Education (ASSIST-ME)	£395K	EC – FP7 Science and Society (Funding scheme: Small or medium-scale focused research project)	2013-2016	Research and coordination actions on new methods in science education	A new range of assessment methods were developed for inquiry-based teaching in science, technology and mathematics.	Resources: Manual for Teacher Expert Panels, Assessment Transformation Package with refined assessment methods and guidelines, teacher guidelines

Source: King's College London website; CORDIS website

Researchers are drawn to apply for EU research funding as it funds research over a longer term – 4 years in some cases – compared to most other grant schemes, which allows sufficient time for research to develop to a publishable stage. The opportunity to work with leading researchers from other countries and from other academic traditions, particularly in an area like science education where the UK research community is small, is another major factor. Such international collaborations do not normally happen with national level funding. Some EU funding calls offer an opportunity not only to engage with EU

[12] Information obtained from CORDIS and individual project websites

countries, but also with non-EU countries. Another important feature is that EU-funded projects allow sufficient time for teacher development as well as research, thus allowing one to inform the other. Besides, it is more difficult to get UK funders to fund more developmental or pedagogical research in Education.

It must be noted that EU funding goes towards both development of teaching materials as well as original research at ECS. Thus, the funding shown above does not exclusively represent Educational research funding.

Strategically, the University has focused less on acquiring non-FP EU/EC funding as this often only pays for 60-70% of the costs or a very low overhead, which creates a financial loss for the institution[13]. Marie Sklodowska-Curie Schemes are seen as a mobility tool to bring new researchers from overseas to the UK. Similarly, programmes like Erasmus Plus provide opportunities for mobility and building networks that can lead to joint proposals and projects for national, EU and non-EU funders.

3.1.3 Impact on policy and practice

EU projects involving teacher participation have resulted in teachers learning from the practices and experience of other countries. For example, the fact that the Danish use oral examinations in science is a revelation for many UK teachers[14]. The SAILS project (see Table 4) developed teacher education packs for inquiry-based assessment, empowering teachers to use inquiry approaches to teach scientific topics[15]. Several thousand of these were downloaded and 200 were printed and sent to schools. Over 2,700 teachers from 12 European countries were trained in the use of inquiry approaches in the classroom, with 100 teachers producing case studies on their experience of implementing these practices in the classroom.

3.1.4 Impact on institutions

3.1.4.1 At the individual level

EU funding offers many opportunities to individual researchers such as opportunities to fund one's research, collaborate internationally with the best international peers, build teams and work in multi-sectoral consortia with schools and industry. Often, one EU grant leads to another as researchers better understand what goes into a successful proposal and can demonstrate the ability to successfully deliver a project for the EU.

Long-term and wider professional networks are another outcome of working on EU projects. This can lead to further opportunities such as research collaborations and co-authoring books. It becomes easier to attend symposia or to be invited to seminars and meetings to present research. In October 2016, Dr Christine Harrison chaired a Royal Society Conference on "assessing experimental science"[16]. Her EU-funded research on this topic was instrumental in gaining her this recognition.

The opportunity to attend meetings attended by the leading science education researchers in Europe was beneficial for Dr Christine Harrison and her team. Dr Harrison also reported that participating in EU research projects helped to get her work known more widely in Europe. She also co-authored a paper with colleagues in France, Cyprus and Finland on a new method of coding dialogue data. In total, 3 papers have emerged from the SAILS project.

EU grants are considered prestigious and can help career progression. Participation in EU-funded projects allows early career researchers to build a profile and become more known in research circles. In addition, exposure to collaborations and the funding process is invaluable. Successfully bidding for

[13] Interview with Daniel Walker, 3 April 2017.

[14] Interview with Dr Christine Harrison, 21 March 2017.

[15] Available at: http://cordis.europa.eu/result/rcn/188646_en.html [accessed 30 March 2017]

[16] Available at: https://royalsociety.org/science-events-and-lectures/2016/10/international-assessment-conference/ [accessed 30 March 2017]

flagship grants such as Marie Sklodowska-Curie Training Fellowships and ERC starter grants can act as a springboard for individuals who want to establish research careers.

3.1.4.2 At the institutional and departmental levels

Working on EU projects adds to the institution's and department's reputation. Staff may be recruited to deliver a project, expanding the department. Other universities, nationally and internationally, become aware of the research activity in the university and department. The publications emerging from UK-EU collaborations contribute to the institution's research excellence through submission for research quality assessment exercises.

3.1.5 Potential impact of change of access to EU funding

Funding sources other than the EU are already being explored to maintain research capacity at ECS as recent EU research funding calls have not had a very strong educational focus. The UK's decision to leave the EU has created further uncertainty. Nevertheless, the strategy is to continue to apply for EU funding, while it is still possible to do so, in addition to diversifying funding more generally. Since the EU is a major source of research funding in the UK, an inability to access EU research funds is a loss of potential funding for ECS.

Loss of a funding source is not the main concern *per se*. An inability to engage with EU funding programmes would reduce opportunities to build international research collaborations with leading EU researchers. In turn, synergies gained from collaborations between the best international teams to address big questions, would be greatly decreased. There might also be an impact on the kind of research conducted. For example, qualitative research may not be funded through other sources. This would be worrying because research questions such as why particular interventions work would not be addressed concurrently with questions such as whether they work. Besides, it may become more difficult to build and maintain international research networks.

3.2 University of Exeter

Factbox 2[17] Key figures from Research Excellence Framework 2014 (Education)

Number of full-time equivalent staff submitted (% eligible staff submitted)	% of world-leading (4*) research submitted	Research power	Departmental ranking (based on Grade Point Average)		
			Overall	For output	For impact
26 (79%)	44	85	8	2	26

3.2.1 Background

At the University of Exeter, Educational research is conducted within the Graduate School of Education in the College of Social Sciences and International Studies. The School and its researchers are split into research centres focused on areas such as professional learning; science, maths and technology education; the role of metacognition and dialogue in learning; and creativity and different approaches to education. In addition, the School has three research networks which offer a flexible and less formal way for researchers to explore different research themes. Currently, there are three active research networks: The Education Theory Reading Network; the Language and Education Network; and the Religion, Spirituality and Education Network. Teacher training also forms a major part of the School's

[17] Data available at: https://www.timeshighereducation.com/sites/default/files/Attachments/2014/12/17/x/o/z/sub-14-01.pdf [accessed 31 March 2017]

activities[18]. Research strengths include novel approaches to education as well as religious education, music education and science education.

3.2.2 Funding for Educational research

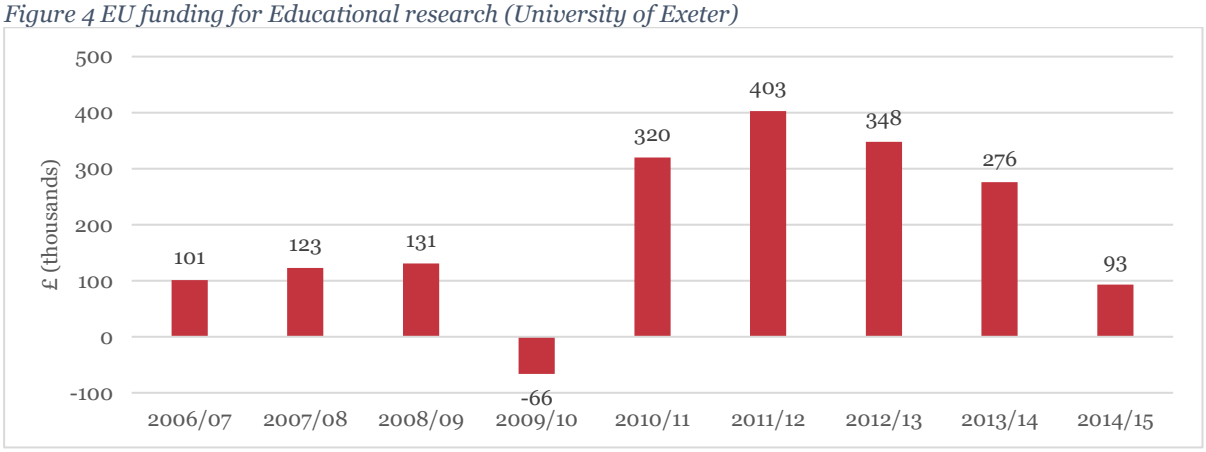
3.2.2.1 All funding

About 19% of the university's total research funding is from the EU. At the Graduate School of Education, the EU accounts for approximately 20% of funding. Other funders include the Research Councils (Economic and Social Research Council [ESRC] and Arts and Humanities Research Council [AHRC]), Leverhulme Trust, and Nuffield Foundation.

In recent years, the Graduate School of Education has found it increasingly difficult to win ESRC grants for Educational research – competition is stronger and funding is tighter. The view is that "Educational research fits within many UK Research Council agendas but is not solidly positioned in any of them". Consequently, the Graduate School of Education is trying to diversify its funding sources, and is increasingly targeting charities (e.g. Tony Blair Foundation, Education Endowment Foundation) and local businesses (e.g. Flybe) as alternative funding sources.

3.2.2.2 EU funding

Figure 4 EU funding for Educational research (University of Exeter)



Source: HESA data

In the last 7 years, the University of Exeter has received about £1.8 million (€2.2 million) in funds from the EU for 19 projects. Funding streams include the FPs (FP7 and Horizon 2020), Lifelong Learning Programme, Marie Sklodowska-Curie Training Network Grants and Erasmus plus (4 awards in the last 7 years). The School applies for funding under any call associated with education e.g. educational technology, vocational education, co-creativity, science education, and education and enterprise. EU funding is obtained for both original research as well as development activities such as teacher training and resource development. However, it is difficult to accurately determine the relative funding split for research versus development for several reasons. Firstly, many EU-funded projects closely integrate both types of activities and work packages are delivered in collaboration, so it can be difficult to attribute funding to a specific partner and activity. Secondly, teacher or resource development can be the focus of the research so distinguishing between the two activities can be difficult.

[18] Available at: http://socialsciences.exeter.ac.uk/education/

Table 5 Examples of EU-funded Educational research conducted at the University of Exeter

Project title	Value of award	Funding stream	Dates	Themes	Brief summary	Outputs[19]
Science Education for Diversity (SED)	£291K	EC – FP7 Science in Society (SiS) (Funding scheme: Small/medium-scale focused research project for cooperation actions dedicated to international cooperation partner countries)	2010-2012	Research and coordination actions on new methods in science education	The SED project sought to improve science education by researching and incorporating its connection to culture, gender, religion and teaching techniques. Six culturally diverse countries participated.	Publications: 2 Resources: Project handbook, curriculum framework, software
Developing an Engaging Science Classroom (CREATIONS)	£116K	EC – Horizon 2020 Science in and for Society (SEAC) (Funding scheme: Coordination and support action)	2015-2018	Innovative ways to make science education and scientific careers attractive to young people	This project aims to develop links between schools and research infrastructures to ignite young people's interest in science, demonstrate creative approaches to involve students and teachers in scientific research through art, and support policy making.	Publications: 1 in pipeline Resources: teaching toolkit, web portal
Means to RETAIN teachers in Schools	£53K	EC – Lifelong Learning Programme (Comenius subprogramme)	2013-2015	Teacher training and professional development	The project developed and tested a tool box that can assist school managers and teachers to create an inclusive and creative working environment.	Publications: 1 in pipeline Resources: toolbox containing training tools, methods, etc.
Learning to learn together: A visual language for social orchestration of educational activities (METAFORA)	£256K	EC – FP7 ICT (Funding scheme: Collaborative project)	2010-2013	Technology-Enhanced Learning	The project explored the potential of social learning for Science and Mathematics by providing a visual language to support online groups in designing their own learning together.	Publications: 13 Resources: teacher guide, open-source software

Source: University of Exeter; CORDIS website

[19] This information is based on self-reporting by the institution.

EU funding offers several key opportunities to researchers. Firstly, EU projects allow researchers to tackle subjects at scale across multi-national boundaries, which makes for greater insights. For instance, it is possible to look how a given approach fares in different national cultures and education systems. Secondly, researchers have the opportunity to tackle much larger and more fundamental topics, outside normal parochial interests. The perception is that the EU funds research that is more applied and in different areas compared to UK funders. Thirdly, EU grants are better structured for conducting large, multi-country collaborative projects with clear objectives, expectations and work packages, making it easier to identify how and when tasks need to be completed and by whom. Conversely, international collaborations can sometimes be more difficult to manage within other funding streams.

3.2.3 Impact on policy and practice

The SED project produced a curriculum framework that included inquiry- and context-based science education, and dialogic teaching[20]. Partners reported that these methods were successful in helping teachers switch from a factual to conceptual teaching style, which led to increased student participation and interest in science. The students also increasingly related what they learned to their everyday activities. In addition, a start-up company in Israel is further developing software that was created within the project[21].

In the Metafora project, the researchers' consortium developed tools and pedagogies that bring two strands of educational technology research: (a) computer-supported collaborative learning and (b) learning through engagement in domain-specific learning environments[22]. A software for providing pedagogical support for collaborative learning was also developed. This was used in Colombia with guerillas and police in peace initiatives[21].

Several schools in Exeter are interested in research-driven practice and economic growth through innovation. The University can engage with them because it is part of a large EU cluster of academics and teachers who work in these areas[23]. Ventures such as Innovation Exeter and Exeter City's Future Project have built upon research skills that have been developed initially through EU funding[23]. Thus, EU research funding has been instrumental in building an ecosystem of skills and competences that new research projects and initiatives can emerge from.

3.2.4 Impact on institutions

3.2.4.1 At the individual level

Participation in EU projects is beneficial to researchers' careers. It can provide a good research base to launch an independent academic career and accelerate career progression. This is because researchers can demonstrate that their research is competitive at the international level. Moreover, publications emerging from cross-EU collaborations are more likely to be cited highly as they are international and usually of high research quality.

Building networks is the "hidden curriculum" of EU research projects according to Professor Rupert Wegerif because one is forced to try to understand other cultural perspectives and Educational research traditions, which is valuable for future research and collaborations. These links survive beyond the life of the project and help to build a community for responding to future funding calls and European conferences. The opportunity to build networks across multiple European universities is also an added value of Marie Sklodowska-Curie Training Fellowships. Collaborations also expose researchers to different types of research systems internationally, allowing them to gain valuable experience by working with and managing these disparate systems.

[20] Available at: http://cordis.europa.eu/result/rcn/89822_en.html [accessed 30 March 2017]

[21] Interview with Professor Rupert Wegerif, 27 March 2017.

[22] Available at: http://www.metafora-project.org/index.php?option=com_content&view=article&id=12&Itemid=8 [accessed 30 March 2017]

[23] Interview with Professor Nick Talbot, 27 March 2017.

3.2.4.2 At the institutional and departmental levels

Participation in EU projects gives the institution the confidence that its research is internationally competitive, and that it is competing and collaborating effectively with other institutions. The university's and department's reputations and international profiles are also enhanced. More staff are invited to European conferences.

Networks built through participation in EU projects make it easier to recruit well-qualified academic and non-academic staff. The School's ability to grow early career researchers is also improved. For example, Marie Sklodowska-Curie Training Networks help to produce trained independent researchers with experience of working in a variety of international academic environments. This type of training cannot be replicated in a national scheme.

By providing research-led examples in their teaching, staff can impart a more international understanding of current research, theories and teaching practices to their students. In addition, through collaboration and reciprocal visits of academics from other EU countries, the research and the department both become more international and outward-facing.

3.2.5 Potential impact of change of access to EU funding

According to Professor Nick Talbot, Deputy Vice Chancellor for Research and Impact, "The potential impacts of having no access to EU funding are great". Loss of EU funding would leave a major gap in research income and the recruitment of research fellows. Researchers will have fewer sources of funding at their disposal, increasing competition and making it harder to win grants. Even if the EU funds were replaced by other sources, some of the benefits of EU funding would be lost. The vibrancy of the research culture and research basis of teaching would also be affected. It may become difficult to conduct research at the required scale (across multiple countries and education systems) on projects concerning broad pedagogical questions or comparisons of different educational practices. Staff interested in answering these broad questions may move elsewhere to continue their research, resulting in a reduction in research capacity. In addition, lack of access to EU funding might lead to rapid isolation from opinion-forming international research in education owing to an inability to maintain academic networks in the EU.

3.3 Manchester Metropolitan University

Factbox 3[24] Key figures from Research Excellence Framework 2014 (Education)

Number of full-time equivalent staff submitted (% eligible staff submitted)	% of world-leading (4*) research submitted	Research power	Departmental ranking (based on Grade Point Average)		
			Overall	For output	For impact
23 (16%)	23	65	26	32	20

3.3.1 Background

The Education and Social Research Institute (ESRI) at Manchester Metropolitan University is one of the leading UK centres for applied Educational research and evaluation. The Institute has strong expertise in Early Years, Children & Childhood; Youth and Community Studies; Maths and Science Education including ICT; Teacher Education, Leadership and Curriculum; and the Theory and Methodology of Educational and Social Research[25]. The Institute combines empirical research with advance of social research theory and methodology.

[24] Data available at: https://www.timeshighereducation.com/sites/default/files/Attachments/2014/12/17/x/0/z/sub-14-01.pdf [accessed 31 March 2017]

[25] Available at: http://www.esri.mmu.ac.uk [accessed 30 March 2017]

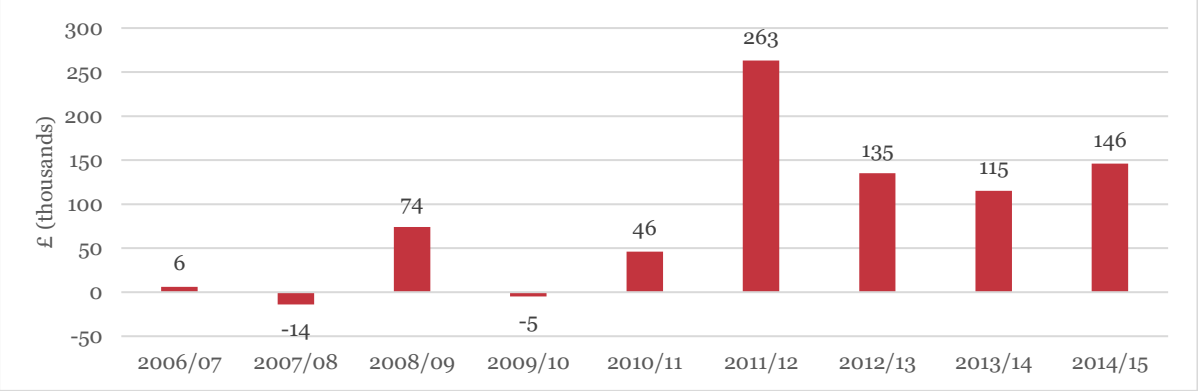
3.3.2 Funding for Educational research

3.3.2.1 All funding

Over the past 10 years, approximately 15% of total external funding secured by ESRI has come from (non-UK) EU sources. Other sources of funding accessed include national sources such as the Research Councils (ESRC and AHRC), charities (e.g. Education Endowment Foundation, Nuffield Foundation, Leverhulme Trust, Wellcome Trust), governments agencies and departments (e.g. Department for Education, National College for Teaching and Learning), and other commercial contracts.

3.3.2.2 EU funding

Figure 5 EU funding for Educational research (Manchester Metropolitan University)



Source: HESA data

Projects supported through EU funding sources such as Horizon 2020, FP7 and the Lifelong Learning Programme account for approximately 34% of research project funding in the last 10 years. Within FP7 and Horizon 2020, ESRI has targeted calls related to ICT and technology enhancement, Science and Society as well as Socio-economic Sciences and the Humanities streams such as youth and community, and civic society. Whilst the Lifelong Learning Programme is not a research funding stream as such, it has been a key stream for the ESRI historically. A third stream of funding, specialist evaluation contracts, has resulted from client relationships formed in previous EU projects. For instance, ESRI has developed a strong relationship with European Schoolnet[26], a network of 31 European Ministries of Education, through its work on the iTEC project (see *Table 6*). Subsequently, ESRI has secured a framework contract with European Schoolnet to provide evaluation services on projects led by this client.

The proportion of research funding from the three streams – framework programmes, Lifelong Learning Programme and specialist evaluation contracts – is roughly 65%, 28% and 7% respectively. In addition, funding goes towards both original research and development activities (e.g. teacher training, development of teaching resources). Demarcating the funding split between the two is difficult, but rough estimates for individual projects as shown in *Table 6* indicate that ESRI's EU-funded projects span the spectrum from 100% original research to 100% development.

Table 6 Examples of EU-funded Educational research conducted at Manchester Metropolitan University

Project title	Value of award	Funding stream	Dates	Themes	Brief summary	Outputs[27]

[26] Available at: http://www.eun.org [accessed 30 March 2017]

[27] This information is based on self-reporting by the institution.

	(Funding split[27])					
Spaces and Styles of Participation (PARTISPACE)	£160K (100% original research)	EC – Horizon 2020 Societal Challenge 6 (Funding scheme: Research and Innovation Action)	2015-2018	Societal and political engagement of young people and their perspectives on Europe	The study is investigating the different ways in which young people participate in European civic society.	Publications: anticipated in the future
brEaking New Ground IN the sciencE Education Realm (ENGINEER)	£200K (60% development of teaching materials, 40% teacher training)	EC – FP7 Science in Society (Funding scheme: Support Actions)	2011-2014	Supporting formal and informal science education in schools	To support widespread adoption of innovative methods of science teaching, the project developed teacher training activities and materials on inquiry-based methods for a European context.	Publications: 0 Resources: engineering challenge design units, educational activities and workshops for museums, unit plans for different topics, training handbooks
Innovative Technologies for Engaging Classrooms (iTEC)	£407K (100% original research)	EC – FP7 ICT (Funding scheme: Collaborative project)	2010-2014	Technology-Enhanced Learning	Led by European Schoolnet, the project brought together education ministries, technology providers and research organisations to transform the way technology is used in schools.	Publications: 8
Making Games in Collaboration for Learning (MAGICAL)	£77K (50% original research, 50% development of training materials)	EC – Lifelong Learning Programme (ICT subprogramme)	2012-2014	Use of technology in education, collaborative learning	MAGICAL investigated the feasibility of digital game making as an approach for fostering collaborative learning-by-doing in primary schools.	Publications: 6

Source: Manchester Metropolitan University; CORDIS website

Over the past few years, ESRI has increasingly targeted EU research funding as competition for UK funding has increased. The EU has been much more focused on Educational research targeted to the end-user and realising impact than some UK funders, which puts ESRI researchers with experience in applied research at an advantage. In this way, EU funding allows ESRI staff to pursue their research interests as well as conduct research that requires an international dimension.

Notably, EU funding accords researchers the freedom to pursue a research project over 2-4 years, unlike many other funding sources. Another benefit is that UK researchers are able get a European perspective on not only Educational research but also on schools, teaching and teacher training. For example, in Germany, teachers are trained for five years to Masters level, whereas in England, the policy has moved towards training teachers through apprenticeships in schools. Such insights can be very informative for research.

3.3.3 Impact on policy and practice

The iTEC project is influencing teacher practice in Europe. An evaluation of the iTEC project found "widespread signs of the uptake of the iTEC approach"[28]. The Future Classroom Toolkit, which can be used to introduce or scale up innovative use of ICT in schools; a scalable scenario-led design process for developing digital pedagogy; and an extensive library of Future Classroom Scenarios, Learning Activities and Learning Stories were developed through this project. These educational tools and resources were piloted in over 2,500 classrooms with over 50,000 students across 20 European countries[29]. The resources are also available on the European Schoolnet website and have fed into online teacher training[30]. Moreover, some European Ministries of Education have disseminated the tools among their teachers or incorporated the project findings in education policy. Teachers have stated that the iTEC approach has enhanced their pedagogy and digital competence. In addition, they started to use technology more frequently and collaborated more, both within and beyond their schools. Students felt that their level of attainment and skills including critical thinking, real world problem solving, communication and collaboration, and digital literacy improved.

The ENGINEER project developed teacher guides and teacher training programmes, and trained 1,400 teachers in inquiry-based methods[31]. It also raised awareness among local and national policymakers and European decision makers of the benefits of introducing engineering into the teaching of science in schools and museums.

3.3.4 Impact on institutions

3.3.4.1 At the individual level

For individual researchers, EU funding provides valuable resource to conduct research. Additionally, it gives them the opportunity to collaborate with academics with similar research interests, expand their personal network and strengthen their publication records. The collaborative research from EU projects often leads to co-authored conference papers, books or publications in internationally renowned journals. Besides, if these outputs are of high quality, they are widely cited, raising the profile of the research and the researcher. Publications are also used as a measure of personal performance and can be useful for career progression.

Participating on EU projects allows early career researchers to develop contacts with European researchers in their field in multiple organisations. The experience of collaborating with international

[28] Available at: http://fcl.eun.org/documents/10180/18061/iTEC+full+evaluation+report+March+16th+2015.pdf/77b815ac-035b-46c4-8a79-6444ccb02580 [accessed 30 March 2017]

[29] http://itec.eun.org/web/guest;jsessionid=7EBD0FA5F6062ADF4E32DD6DC95F033C [accessed 30 March 2017]

[30] Interview with Professor Cathy Lewin, 21 March 2017.

[31] Available at: http://cordis.europa.eu/result/rcn/170369_en.html [accessed 30 March 2017]

researchers on large-scale projects is a great training ground by which early career researchers can build their research portfolio, gain insights into the management of research projects and develop "soft" skills. Furthermore, involvement in EU projects is considered an asset when applying for leadership positions or promotions.

EU networks can also provide new opportunities. For example, Professor Maggie MacLure of ESRI was invited to be the keynote speaker at an inaugural conference on qualitative social research in Leuven, Belgium in February 2017. Professor Cathy Lewin commented that networks developed through the iTEC project led to further opportunities to collaborate on research proposals. She developed a wider academic network, which resulted in her research becoming more well known in Europe. In addition, she broadened her horizons, gaining more knowledge about the European educational context, including about teaching practices and education policy in different European countries.

3.3.4.2 At the institutional and departmental levels

Apart from providing money for research, EU funding has been a very useful vehicle for Manchester Metropolitan University to develop networks and expand collaborations. Across three projects – iTEC, ENGINEER and PARTISPACE – linkages to 60 organisations across 24 countries have been created. Furthermore, the university's and department's profile is raised.

Working at an international level gives a quality stamp to the research that is being undertaken. EU projects often lead to international publications which are highly valued as an indicator of research excellence in research quality assessment exercises such as the REF.

EU funding also enables an increase in research capacity and departmental expansion through the recruitment of new staff for delivering research projects. For example, one researcher who was recruited through the iTEC project has now become a permanent member of staff.

3.3.5 Potential impact of change of access to EU funding

Having participated in EU projects over several years, ESRI was planning to scale up its efforts to start leading projects and invest in relevant support and infrastructure, when the UK's decision to leave the EU put this plan into jeopardy.

As EU funding currently forms a significant part of ESRI's research portfolio, loss of access would create a significant gap in research income in the short term. In the short to medium term, retaining and recruiting staff might be a problem. In the medium to long term, these risks could be mitigated by pursuing other streams of funding, but this would be a challenge, especially because of more competition for national funding streams. As some of the ESRI's research strengths lie in applied research and novel and different methodologies, it may be challenging to package research interests to meet mainstream national funders' expectations.

Loss of EU funding may also impact on the scale of the research with fewer researchers conducting large-scale and Europe-wide studies. The nature and extent of researchers' engagement with their European networks could also be affected.

4 Synthesis and conclusions

4.1 Nature and extent of support derived from EU research programmes

UK Educational research has proved relevant across many parts of the EU framework programmes; it has received support for investigator-driven research (ERC grants), Marie Sklodowska-Curie Actions and collaborative research and innovation projects. In terms of funding calls, UK Educational researchers have been able to target their proposals to calls on topics such as ICT and educational technologies, science and society as well as social sciences and humanities. In addition, many UK

Educational research departments received funding from the EU's Lifelong Learning (2007-2013) and Erasmus plus (2014-2020) education programmes.

The HEIs consulted for the study highlighted several features that are specific to EU grants:

- EU grants tend to be longer (typically 2-4 years), which provides freedom for researchers to pursue a topic for a longer period and gives enough time to develop publications and to integrate teacher development alongside research.
- EU grants tend to be larger in scale and scope, which allows for the comparison of international practices and can have broader applicability.
- EU grants tend to focus on research targeted to the end-user and translating research to impact. Consequently, EU-funded projects in UK universities are not exclusively research-oriented, they may wholly or partly involve practice-oriented activities such as teacher training and teaching resource development.

UK Universities have become increasingly dependent on EU funding for educational research as EU funding has increased and UK government funding – especially from the sector departments – has receded. Since 2007, the funding from EU government sources has increased from approximately £2.5m annually to £5.5m in 2014/15. This represents an increase from less than 5% of income from research grants and contracts to more than 10% for the country as a whole. The three institutions described in this case study have all been successful in attracting multiple EU grants; EU funding represents 20-30% of their external research grant income.

4.2 Impact of EU funding on educational research

King's College London, the University of Exeter and Manchester Metropolitan University experienced a range of positive impacts of EU funding pertaining to the institutions as well as the individual researchers involved.

For individual researchers, the opportunity to collaborate and build long-term professional networks in Europe was seen as an important benefit that can open the door for further opportunities to attend events, collaborate and publish. For early career researchers, experience from EU projects can help to build their research profile and gain 'soft skills' on project management and international collaboration. The prestige, networks, publications and skills gained through participation in EU projects can help researchers accelerate their career progression.

Impacts were also reported at the institutional level. EU projects help improve the reputation of the institutions involved and raise awareness about their activities at home and abroad. International collaborations help institutions access networks and facilitate recruitment of well-qualified staff in addition to embedding a broader (international) perspective. Exposure to and learning from international practices can ultimately help improve and internationalise teaching and research at institutions. Publications emerging from EU projects benefit the institutions' submissions to the UK REF. Moreover, cross-EU collaborations give a "quality stamp" to the research being produced as it is seen to be internationally competitive.

4.3 Impact of EU-funded research on policy and practice

Representatives of institutions consulted for this study described examples of several types of impact of EU funded research on teaching practice, policy and the wider economy. Several projects have produced resources – e.g. 'teacher education packs' and curriculum frameworks – which have supported teacher training and adoption of new teaching styles based on inquiry-based learning in science education. Several projects have focussed on developing new technologies for the classroom, often underpinning conceptual changes in teaching methods. The institutions reported a large uptake of these new methods among teachers and students.

EU-funded Educational research has also helped inform policy. Generally, it was reported that EU projects have helped create awareness among policy-makers about the benefits of integrating new

technologies in teaching, resulting in policy changes in some European countries. Finally, examples of wider societal impacts were also provided. For example, the University of Exeter reported that EU-funded research has helped build an ecosystem of skills and competences which have allowed the university to engage in innovation initiatives in the city region.

4.4 Potential impact of a change in access to EU research funds

The potential change in access to EU funding was a concern for the three institutions consulted. In the first instance, the current situation has created uncertainty about funding opportunities and a funding gap could emerge. Some of those consulted are currently actively looking for alternative funding options.

Apart from the overall amount of funding available, there are also concerns that certain types of research might not be funded by UK funders to the same extent. For example, qualitative research and studies of policy interventions were seen as vulnerable areas. Also, current EU funding enables large-scale comparative research that tackles large and wide-ranging questions, and this type of research would be compromised by lack of access to international networks.

There were also wider concerns about maintaining the research culture at the institutions and the ability to retain and recruit staff who may be looking elsewhere as a result of current EU funding uncertainties.

Appendix A Data analysis

A.1 Data mining approach

Querying large data sources thematically at a level that is relevant to the topics of this study is only possible with the use of keyword searches or more advanced data classification techniques. In this case, we analyse data from both the 7th framework programme 2007-2014 and Horizon 2020 2014-2016 (ranging from blue-skies research funded by the European Research Council to feasibility studies from SME instrument grants or projects in the context of public-private partnerships in research).

We have run a semantic text analysis of the titles and abstracts of each project/activity within the database in order to extract the concepts mentioned in each project/activity, which are in turn structured in concept categories. From an initial sample of projects that we know belong to the relevant topic of interest, we have selected a list of concepts identified by the semantic analysis that would potentially flag that the project belongs to the topic in question (Educational research). Then, we ran a search on the rest of the database using this list, which yielded a longer list of projects that may/may not be in scope. This allowed us to focus on a relevant subset of a much larger dataset of projects.

Any research activity contained in the datasets was deemed to be relevant to a topic if any of the categories or concepts of said topic were found within its title or abstract, although this approach is likely to yield some 'false positives'. We further improved this list with manual cleaning.

A.2 Topics of EU projects

Table 7 UK participation in EU Framework Programmes (FP7 and Horizon 2020) Educational Research projects, according to EU programme, Activity and Area/Topic.

Programme	Activity	Area / Topic [1]	UK Participations	EU contribution to UK (€)
FP7 - IDEAS: European Research Council	Frontier research grants	ERC Starting Grant	2	3,071,172
FP7 - PEOPLE: Marie Curie Actions	Activity 2: Life-long Training and Career Development	Marie Curie Action: Intra-European Fellowships for Career Development (IEF)	4	917,989
		Marie Curie Action: Career Integration Grants (CIG)	1	87,500
	Activity 4: International Dimension [2008] / World Fellowships [2011-12]	Marie Curie Action: International Outgoing Fellowships for Career Development (IOF)	1	283,568
		International Research Staff Exchange Scheme" (IRSES)	3	79,600
FP7-COOPERATION: Information and Communication Technologies (ICT)	Challenge 1: Pervasive and Trusted Network and Service Infrastructures	Future Internet Research Experimentation	1	586,223
	Challenge 4: Digital Libraries and Content [2007] / Technologies for Digital Content and Languages [2011]	Digital libraries and technology-enhanced learning	17	5,479,013
		Technology-Enhanced Learning	19	6,704,521
		Language Technologies	2	197,000
		Intelligent Information Management	2	279,942
	Challenge 5: Towards sustainable and personalised healthcare.	ICT for smart and personalised inclusion	4	830,430
	Challenge 8: ICT for Learning and Access to Cultural Resources [2011] / ICT for Creativity and Learning [2013]	Technology-enhanced learning	24	5,553,872
		Technologies and scientific foundations in the field of creativity	1	467,354
	Future and Emerging Technologies (FET)	FET-Open: Challenging Current Thinking	1	337,082
FP7-COOPERATION: Socio-economic Sciences and Humanities (SSH)	Activity 8.1: Growth, employment and competitiveness in a knowledge society	Area 8.1.1 Changing role of knowledge throughout the economy	4	861,092
		Area 8.3.2. Societal trends and lifestyles	3	953,557

Programme	Activity	Area / Topic [1]	UK Participations	EU contribution to UK (€)
	Activity 8.3: Major trends in society and their implications	Area 8.3.3. Cultural interactions in an international perspective	1	150,297
	Activity 8.6: Socio-economic and scientific indicators	Area 8.6.4 Development of methods for the evaluation of research policies and programmes	4	41,371
FP7-CAPACITIES: Infrastructures	-	INFRA-2011-3.4: Coordination actions, conferences and studies supporting policy development, including international cooperation, for e-Infrastructures	5	274,857
FP7-CAPACITIES: Science in Society	[5.1 - First Action Line – A more dynamic governance of the science and society relationship]	Mobilisation and Mutual Learning Actions	3	1,329,152
	Activity 5.2.1 Gender and research	Area 5.2.1.2 Gender dimension of research	3	415,280
	Activity 5.2.2 Young People and science	Area 5.2.2.1 Supporting formal and informal science education in schools as well as through science centres and museums and other relevant means	31	5,663,291
		Area 5.2.2.2 Reinforcing links between science education and science careers	3	215,279
		Area 5.2.2.3 Research and coordination actions on new methods in science education	14	3,296,650
Horizon 2020-Pillar I: European Research Council	Frontier research grants	Consolidator Grant	1	1,400,214
Horizon 2020-Pillar I: Marie Skłodowska-Curie Actions	Marie Skłodowska-Curie Individual Fellowships (IF)	MSCA-IF-EF-ST Standard European Fellowships	2	378,910
		MSCA-IF-GF Global Fellowships	1	251,858
Horizon 2020-Pillar II: INDUSTRIAL LEADERSHIP – LEIT - Information and Communication Technologies (ICT)	Content technologies and information management	Technologies for better human learning and teaching	9	4,733,169
	ICT Cross-Cutting Activities	Human-centric Digital Age	1	92,733
Horizon 2020-Pillar III: SOCIETAL CHALLENGES - Europe In a Changing World - Inclusive, Innovative And Reflective Societies	The Young Generation in an Innovative, Inclusive and Sustainable Europe	Lifelong learning for young adults: better policies for growth and inclusion in Europe	4	1,902,375
		Societal and political engagement of young people and their perspectives on Europe	2	363,624

Programme	Activity	Area / Topic [1]	UK Participations	EU contribution to UK (€)
	Reversing Inequalities and Promoting Fairness	Tackling inequalities at their roots: new policies for fairness in education from early age	1	742,569
Horizon 2020 - Science with and for Society	Making Science Education and Careers Attractive for Young People	Innovative ways to make science education and scientific careers attractive to young people	3	315,313

Source: Technopolis adapted from eCORDA, Cordis website and European Commission FP7 and Horizon 2020 Work Programmes
[1] The structure and terminology (e.g. 'Activity', 'Area', 'Challenge' etc.) differ between programmes and between annual work programmes, adaptations have been made to accommodate these. For presentational reasons, for FP7 COOPERATION-SSH and FP7 CAPACITIES-SiS, the column 'Area/Topic' contains the title of the 'Area' and not the more granular 'Topics'.

A.3 EU funding instruments

Table 8 UK participation in Educational research projects by type of funding scheme (FP7 and Horizon 2020)

Funding instrument	UK Participations	EC contribution to UK
FP7 - Collaborative project (CP) [3]	59	17,630,219
FP7 - Coordination & support action (CSA) [4]	20	2,296,813
FP7 - Coordination (or networking) actions (CSA-CA) [4]	1	80,684
FP7 - ERC Starting Grant [1]	2	3,071,172
FP7 - International Outgoing Fellowships (MC-IOF) [2]	1	283,568
FP7 - International research staff exchange scheme (MC-IRSES) [2]	3	79,600
FP7 - Intra-European Fellowships (MC-IEF) [2]	4	917,989
FP7 - Network of Excellence (NoE) [3]	3	1,513,855
FP7 - Small or medium-scale focused research project (CP-FP) [3]	21	3,886,073
FP7 - Small/medium-scale focused research project for specific cooperation actions dedicated to international cooperation partner countries (CP-FP-SICA) [3]	2	466,675
FP7 - Support actions (CSA-SA) [4]	39	8,077,257
FP7 - Support for training and career development of researcher (MC-CIG) [2]	1	87,500
Horizon 2020 - Consolidator Grant (ERC-COG) [1]	1	1,400,214
Horizon 2020 - Global Fellowships (MSCA-IF-GF) [2]	1	251,858
Horizon 2020 - Innovation Action (IA) [3]	8	4,159,104
Horizon 2020 - Research and Innovation action (RIA) [3]	9	3,675,366
Horizon 2020 - Standard EF (MSCA-IF-EF-ST) [2]	2	378,910
Total	177	48,256,856

Source: eCORDA
Notes [1]-[4]: For the purpose of the overview table in section 2.1, the instruments were grouped as follows: [1] Individual research projects (ERC); [2] Researcher training and career development (Marie Curie Actions); [3] Collaborative research and innovation projects; [4] Coordination and support actions

A.4 HESA Definitions

The analysis is based on data from the Higher Education Statistics Agency (HESA), the UK agency responsible for the collection, analysis and dissemination of quantitative information about higher education in the UK, to which UK HEIs report on research income according to the academic cost centre and source of income. For this study, data from the HESA Finance Record for the period from 2006/07 to 2014/15 has been used.

The current HESA classification contains 45 subject-based cost centres which broadly correspond to academic departments or groupings of departments depending on organisational structures and types of activities within the institutions. [32] For the purpose of this study, it is worth noting that cost centres

[32] https://www.hesa.ac.uk/support/documentation/cost-centres/2012-13-onwards

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are defined, to a large extent, according to teaching requirements and may not always accurately reflect the research activities in a given field.[33]

As for the source of income, HESA uses the following classification of income for research grants and contracts[34]:

- Income from EU government bodies, which includes all research grants and contracts income from all government bodies operating in the EU, which includes the European Commission, but excludes bodies in the UK.
- BEIS Research Councils, the Royal Society, British Academy and The Royal Society of Edinburgh, which includes all research grants and contracts income from Research Councils sponsored by the Department for Business, Energy and Industrial Strategy (BEIS), The Royal Society, British Academy and The Royal Society of Edinburgh, returned to HESA under the following categories:
  - Biotechnology and Biological Sciences Research Council (BBSRC)
  - Medical Research Council (MRC)
  - Natural Environment Research Council (NERC)
  - Engineering and Physical Sciences Research Council (EPSRC)
  - Economic and Social Research Council (ESRC)
  - Arts and Humanities Research Council (AHRC)
  - Science and Technology Facilities Council (STFC)
  - Other (i.e. sponsored research grants and contracts income not included above).
- UK central government bodies, local authorities, health and hospital authorities, which includes all research grants and contract income from UK central government bodies, UK local authorities and UK health and hospital authorities, except Research Councils and UK public corporations. This includes government departments and other organisations (including registered charities) financed from central government funds. Research grants and contracts from non-departmental public bodies (NDPBs) such as the British Council are also included in this source of income.

Additionally, income is classified under UK-based charities, UK central government tax credits for research and development expenditure, UK industry, commerce and public corporations, other EU and international sources, and other sources.

The category 'income from EU government bodies' best captures the flows of funding to UK HEIs from the EU framework programmes. These flows of funding are compared to income from 'UK government bodies' under which we include income from BEIS Research Councils, the Royal Society, British Academy and UK central government bodies, local authorities, health and hospital authorities, as described above.

[33] The criteria for grouping departments into HESA cost centres can be found here: https://www.hesa.ac.uk/collection/c16041/coverage

[34] https://www.hesa.ac.uk/support/definitions/finances

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A.5 Income for Educational research

Table 9 Income from research grants and contracts for Educational research at UK HEIs. In £ thousands

	EU government bodies	BIS Research Councils, Royal Society, British Academy and The Royal Society of Edinburgh*	UK central government bodies, local authorities, health and hospital authorities	Total	EU government bodies /Total	UK government bodies /Total
2006/07	£2,522	£12,304	£31,407	£57,873	4%	76%
2007/08	£2,892	£14,926	£30,132	£64,422	4%	70%
2008/09	£3,347	£17,013	£33,524	£68,638	5%	74%
2009/10	£3,330	£14,074	£28,871	£64,012	5%	67%
2010/11	£3,899	£11,180	£22,812	£53,235	7%	64%
2011/12	£4,493	£9,921	£18,317	£45,782	10%	62%
2012/13	£5,346	£11,207	£16,870	£49,152	11%	57%
2013/14	£5,242	£12,394	£16,076	£50,992	10%	56%
2014/15	£5,575	£13,970	£15,818	£54,682	10%	54%

HESA data, *2006/07-2007/08 DIUS Research Councils

Appendix B Higher Education Institutions

Table 10 Interviewee list

Institution	**Interviewees and their roles**
King's College London	Daniel Walker, Head of EU Research Funding Office Professor Viv Ellis, Chair, Research Committee, School of Education, Communication and Society Dr Christine Harrison, Senior Lecturer in Science Education, School of Education, Communication and Society
University of Exeter	Professor Nicholas J Talbot FRS, Deputy Vice Chancellor for Research and Impact Professor Vivienne Baumfield, Director of Research, Graduate School of Education Professor Rupert Wegerif, Graduate School of Education
Manchester Metropolitan University	Dr Margaret Eastcott, European Funding Manager Professor Harry Torrance, Director, Education and Social Research Institute Professor Cathy Lewin, Professorial Research Fellow, Education and Social Research Institute

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