Harnessing educational research

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Foreword

Education is key to improving lives. It inspires active citizens who are able to participate in shaping the future, and provides them with the tools to do so. In this changing world in which we live and learn we must continually adapt where, how and what we learn in order to respond to new work patterns, lifestyles, technologies and knowledge. Advances in a wide range of research fields contribute to our understanding of education, and research can improve the outcomes of education. Broader collaborations across these fields, using a wider range of research methodologies are proving fertile. New technologies also enable greater use of education-related data. All this coupled with advances in research mean we can now address new research questions and revisit questions that could not be answered before.

In this report, we set out an ambitious vision for educational research. To do this we have examined the capacity of the research, policy and teaching ecosystem to set the research agenda, undertake research to answer the questions which will help improve outcomes for children and to make use of the findings of that research. We have described how to harness this capacity to improve coordination, collaboration and communication across the educational research ecosystem. This has been an exciting and interesting process of evidence-gathering and analysis and we have uncovered challenges and opportunities that others have identified previously. We hope and believe that our ecosystem approach offers the potential of new solutions. The disciplines of our academies – the arts, humanities, sciences and social sciences – are intrinsic to both education and research into education. I believe that this collaboration between the British Academy and the Royal Society has brought a fresh perspective to research in and on education. We have produced practical ideas designed to greatly enhance the contribution the UK makes to research in education, and ultimately to education itself.

Sir Alan Wilson FBA FRS

Image
Sir Alan Wilson FBA FRS.

Executive summary

Young people need the best possible education if they are to thrive in a rapidly changing world. A good education should equip people to lead flourishing lives, and give them the tools to help others flourish as well. Yet as the world changes, so too does the nature of education itself. For instance, technology has revolutionised people's access to information, reshaping the routes to public knowledge.

Meanwhile, governments across the world spend billions on education, making countless crucial decisions about how to deploy those resources. Getting it right matters. That is why educational policy and practice should be informed by the best available research evidence.

This report assesses the current state of educational research about formal education in schools and colleges up to the age of 18 in the UK and its roles within the broader education ecosystem. In particular, it considers the flows of people, funding and information through the ecosystem. This analysis highlights areas where flows are missing or need to be strengthened; uncovers tensions or barriers between the actors in the ecosystem that need to be addressed; and identifies facilitators that would enable improvements in the ecosystem. Building on that ecosystem approach, this report sets out some necessary actions that will enable research to better inform the evolution of the education ecosystem.

Several factors make this report timely. The recent creation of UK Research and Innovation (UKRI) provides opportunities for changes in the ways that excellent research is identified and funded, including educational research that cuts across disciplinary boundaries.

More generally, there is increasing recognition of the need for the teaching profession to be research-informed. However, there is also growing evidence that the pipeline of educational researchers is at risk.

To address these challenges and opportunities, we offer 8 recommendations to the governments of the UK's 4 nations, UKRI and its constituent bodies, universities and other higher education institutions, and education organisations such as learned societies, regulators, and professional bodies.

Connecting supply and demand

Many of the building blocks for harnessing educational research are already in place. In the Research Excellence Framework (REF) in 2014, two-thirds of the UK's education research outputs were assessed as world leading or internationally excellent.

However, our conversations with researchers, practitioners and policymakers have shown that they do not have shared priorities, although there are areas of common concern or interest. This causes disconnects between supply and demand, and contributes to a lack of sustained research effort.

To identify and address these mismatches, we need a new organisational structure with an Office for Education Research at its heart. This Office would bring together governments, governmental organisations, researchers, teachers and other funders. This structure must enable the actors to discuss and debate together their research priorities, and to co-develop research strategies for addressing these priorities. (In health, this has been achieved through the Office for Strategic Coordination of Health Research (OSCHR), which provides one possible model.)

RECOMMENDATION 1

Connecting supply and demand

Governments of the 4 UK nations should instigate a process to develop a new organisational structure for educational research, working with UKRI, teaching bodies and other funders. The structure should have at its heart an Office for Educational Research to identify and seek to address mismatches in supply and demand. This Office will need to bring together representatives from government, key public and private research funders, teachers and researchers. This representation may include:

- A programme board that reviews opportunities for educational research opportunities across the UKRI councils.
- The chief scientific advisers of the 4 nations' government education departments to explore where there are shared priorities across the UK.
- Umbrella organisations for teachers (eg Chartered College of Teaching) to ensure practitioner voices are heard.
- Learned societies and subject associations, to ensure researchers are fully engaged.
- A forum for all funders of educational research, such as charities as well as UKRI, to identify opportunities for coordination on the direction of funding.
- Employer and skills bodies (eg Federation of Small Businesses, Confederation of British Industry) to ensure needs for the future workforce are taken into account.

Where research takes place

There is also an uneven geographical distribution of educational research activity in the UK. Much of the research capacity is concentrated in London and the south-east, along with a pocket of strength in the north-east of England. When researchers are situated close to practitioners, it can improve the quality of both research and its use in practice, including within teacher training, for example.

RECOMMENDATION 2

The geography of the ecosystem

The Office for Educational Research should carry out a review of the distribution of educational research capacity across the UK. It should use its coordinating role to facilitate collaborations that enable researchers, practitioners, policymakers and other stakeholders to work together. These collaborations may be regional or thematic.

Interdisciplinary approaches

Interdisciplinary expertise is often needed to provide the insight and evidence to answer educational questions posed by researchers, policymakers and teachers. Addressing these questions requires teams or individuals to understand social, economic, political, environmental and cultural processes, drawing on knowledge and skills from multiple disciplines.

Yet there are significant barriers to effective interdisciplinary research. These include structural and operational barriers within universities, and funding systems that can allow applications for interdisciplinary research to fall between different review panels.

There is an opportunity to put in place mechanisms that support both intra-institution collaboration, facilitating interdisciplinary research, and inter-institutional networks that draw together different areas of expertise. This will help create a critical mass of researchers able to tackle the common priorities in educational research and to support research being undertaken in schools and colleges.

RECOMMENDATION 3

Improving collaboration

Interdisciplinary educational research will be needed to respond to the big strategic questions in educational research. UK governments and their agencies, including UKRI and other funders of educational research, and HEIs and other research organisations, should invest in interdisciplinary, cross-departmental and cross-institutional collaboration.

UKRI's strategic priorities fund creates an opportunity for focused funding of interdisciplinary educational research. Its scope should be informed by evidence from policymakers, teachers and researchers (as set out in Recommendation 1).

The pipeline of researchers

The supply of future educational researchers is declining, while the age profile of existing research staff is dominated by those over the age of 50. This risks hindering the long-term health of educational research in the UK. Researchers also need high-quality training and continuing development to ensure that researchers, practitioners and policymakers can harness the results of educational research.

A significant proportion of new researchers in this field are mature students from a broad range of backgrounds, including teaching. HEIs and funders therefore need to ensure that training for postgraduate researchers supports their students' diverse characteristics.

RECOMMENDATION 4

Secure the base of the pipeline

UKRI, other funders, and HEIs, supported by learned societies, must:

- Ensure the training of educational research postgraduate students meets the needs of mature learners – often teachers, with part-time studentships.
- Enable all educational research postgraduate students to benefit from training in the full range of social science methods.
- Foster better links between research students and policy and teaching communities.

This could be achieved by:

- Growing the use of the collaborative studentship (CASE) infrastructure to encourage and enable government and other relevant bodies, including independent research organisations, to support postgraduate research students in educational research.
- Reviewing the guidance for DTPs about flexible approaches to funding and supporting mature students.
- HEIs and funders requiring all postgraduate research students in education to have a supervisory team which recognises the interdisciplinary nature of educational research

QR funding

Funding for educational research should reflect the importance of the role of education within society and to the economy. There should be an appropriate balance between the support for strategically directed research, for innovative 'blue skies' research, and for knowledge mobilization activities.

RECOMMENDATION 5

QR funding of educational research

Research England and the equivalent bodies in the devolved nations need to ensure that QR funding remains a strong part of the funding portfolio. This funding secures the underlying research infrastructure and enables HEIs to make decisions about what research is important, independent of the immediate priorities of government and funders.

HEIs should ensure that they continue to use QR funding to support blue skies research, interdisciplinary activity and maintaining the pipeline of researchers, which are vital to maintaining educational research as a healthy discipline.

Research-informed teaching

There is increasing recognition in the UK of the need for teaching to be a research-literate profession. However, teachers repeatedly indicate that their working conditions do not enable them to spend time reading research to improve their understanding or to determine how to use it to adapt their practice. These activities must fit around the day-to-day practice of teaching, without taking teachers away from their principal role of nurturing their pupils' development. Factors such as repeated curriculum changes, demanding systems of accountability and shortages of experienced teachers, also limit the amount of time that teachers can spare for research-related activities.

In schools and colleges, senior leaders are crucial to creating an environment where teachers have time and motivation to engage with, or participate in, research and other professional development activities. Increasing the number of opportunities to involve teachers and schools in research provides greater capacity to test out hypotheses in real-life conditions, as well as ensuring the questions investigated have a direct application to teachers' current practice. This can also provide practitioners with opportunities to improve their own knowledge of and skills in research, and learn new ideas and practices to improve their teaching.

RECOMMENDATION 6

Support the use of research to inform teaching

Teachers need more support to use evidence and insights from research to develop their practice and understanding. This could be addressed by:

- The Department for Education and its devolved equivalents making clear their expectation that teachers should be informed by and engaged in research. They can achieve this by recognising the importance of research-informed practice within the professional standards for teachers, in the requirements for initial teacher education, the induction period and the professional development framework.
- The Chartered College of Teaching in England, the General Teaching Councils of Northern Ireland and Scotland and the Education Workforce Council in Wales using research about effective knowledge mobilization practice to identify examples where teachers have used evidence to change practice and working to embed such practice more widely.
- The Department for Education and its devolved equivalents building on initiatives like the Research Schools Network, ensuring that all schools and colleges are closely connected to research hub institutions.
- Ofsted, and the equivalent inspectorates in the devolved administrations, ensuring that frameworks are in place that encourage school and college leadership to develop a culture of critical evaluation and research-informed practice.

The needs of policymakers

Policy is stronger, more strategic and most likely to achieve its intended aims when policymakers use relevant and reliable evidence to inform policy development and implementation. Research provides an evidence base on which policymakers can base their decisions, ensuring that policies stand the tests of public scrutiny. Research can help policymakers to develop policy that can be implemented more effectively, delivering value for money to the taxpayer and maximising impact. It also reduces the risk of policy failure resulting from insufficient understanding of the consequences of decisions.

This report identifies a range of cultural and practical barriers to the use of research in education policymaking. For example, navigating the corridors of government is challenging for those outside the policy profession. Moreover, it can be difficult to match up the short-term nature of policymaking (and political cycles that require fast decisions) with the longer-term nature of some research, where it may take years to get reliable and meaningful evidence. One way to break down the practical and cultural barriers between policymakers and the research community is to increase their opportunities for interaction.

RECOMMENDATION 7

Facilitating the needs of policymakers

Practical and cultural barriers, along with political and ideological resistance, inhibit flows of information and ideas between researchers and policymakers. To enable policy professionals to meet the Civil Service standards for analysis and use of evidence, these barriers could be reduced by building on existing schemes, including:

- Government, UKRI and other bodies increasing the scale and improving the sustainability of placements for researchers within government departments.
- Governments seconding policymakers into research teams.
- Governments, UKRI, universities and other research organisations creating opportunities for researchers to make connections with policymakers and learn how to navigate government and its agencies, for example through research seminars or work shadowing.
- The national academies of the UK and other facilitating bodies convening high-level forums to explore solutions to policy challenges.

Evidence synthesis

Policymakers need to assess research for its validity, applicability, significance and reliability. Politicians, their advisers, and civil servants may well have strong academic backgrounds; they may understand research methods; and they may have connections with researchers. In most cases, however, their knowledge and experience of research in the specific field in which they are working will be limited.

Ultimately, policymakers need direct or mediated access to research. Yet evidence syntheses for policymakers are few and far between, and there are limited drivers in the research environment for researchers to produce such syntheses.

To encourage this activity, researchers should get more recognition for the expertise needed to create high-quality syntheses, for example through measures such as the REF. Researchers themselves may also require training on evidence synthesis to promote timely and effective knowledge exchange.

RECOMMENDATION 8

Support the production and use of evidence synthesis

Evidence synthesis can provide valuable insights to researchers, teachers and policymakers but is currently underused. Increased production and use of evidence synthesis could be achieved by:

- Through the Office for Educational Research, governments and teachers working with the research community to identify research areas requiring synthesis.
- Governments and their agencies, researchers and teachers adopting common approaches to evidence synthesis which focus on ensuring the findings have practical application in policy and practice.
- Publishers and educational research bodies, such as the College of Teaching and BERA, providing guidance to authors on evidence-synthesis methods.
- Research England ensuring evidence synthesis is valued in research accountability frameworks such as the REF.

Chapter one
Vision and challenges

Vision and challenges

1.1 Why is research on education important?

Young people need the best possible education if they are to thrive in a rapidly changing world[1]. Among other things, education enables societies to systematically pass knowledge from one generation to the next. This knowledge is about how the world works in the broadest sense: it helps us understand the sorts of beings we are, the way we fit into our environment, and our place in the universe. A good education empowers individuals and prepares them to deal with complexity, diversity, and change.

Education should equip people to lead flourishing lives, and give them the tools to help others flourish as well. It is about personal wellbeing and good citizenship, both in the ways that we treat others and also in our ability to take an intelligent and critical stance toward government. Education should enable us to be active citizens.

As the world changes, so too does the nature of education itself. For instance, technology has revolutionised people's access to information, reshaping the routes to public knowledge. That store of information is also growing rapidly, and what is deemed to be reliable knowledge is less stable than ever before. Citizens therefore need to acquire new skills to judge the reliability of this information.

Meanwhile, governments across the world spend billions on education, making countless crucial decisions about how to deploy those resources. Getting it right matters. That is why educational policy and practice should be informed by the best available research evidence.

1.2 Educational outcomes

In popular discourse, and in many policy contexts, education is often narrowly defined in terms of standards; it is formed and produced by its measurement. But a successful education is not just about the academic standards that students achieve. Education is successful if it contributes towards enabling people to meet basic needs: being healthy; developing strong and transferable intellectual and practical skills; dealing with complexity, diversity, and change; developing personal qualities, such as fortitude and good judgement; and being active citizens. A narrow focus on measuring only those factors that can be measured distorts how we understand the benefits that education delivers.

1.3 Challenges

Education underpins all aspects of society, so it is hardly surprising that learning and teaching are part of a complex ecosystem. One dimension of this complexity is the competing political and ideological viewpoints about: the goal of education; the outcomes that education seeks to produce; and how best to achieve these goals. There are many different actors within this ecosystem – including practitioners, researchers, policymakers, parents and employers, and the organisations in which they come together – who often have different priorities.

The interdependencies between education and other social issues add further complications. For example, reducing the long tail of underperformance among pupils requires an alignment between education, welfare, health and employment policies. The economic, political, social and technological

1. The Royal Society. Consultation response: Purpose and quality of education in England. See https://royalsociety.org/topics-policy/publications/2016/purpose-and-quality-of-education-in-england/ (accessed 29 June 2018).

environment in which education sits is also subject to short and long-term changes. Socio-demographic changes and global flows of migration raise additional issues about intercultural understanding, the value and meaning of differing epistemological traditions, and equity and fairness.

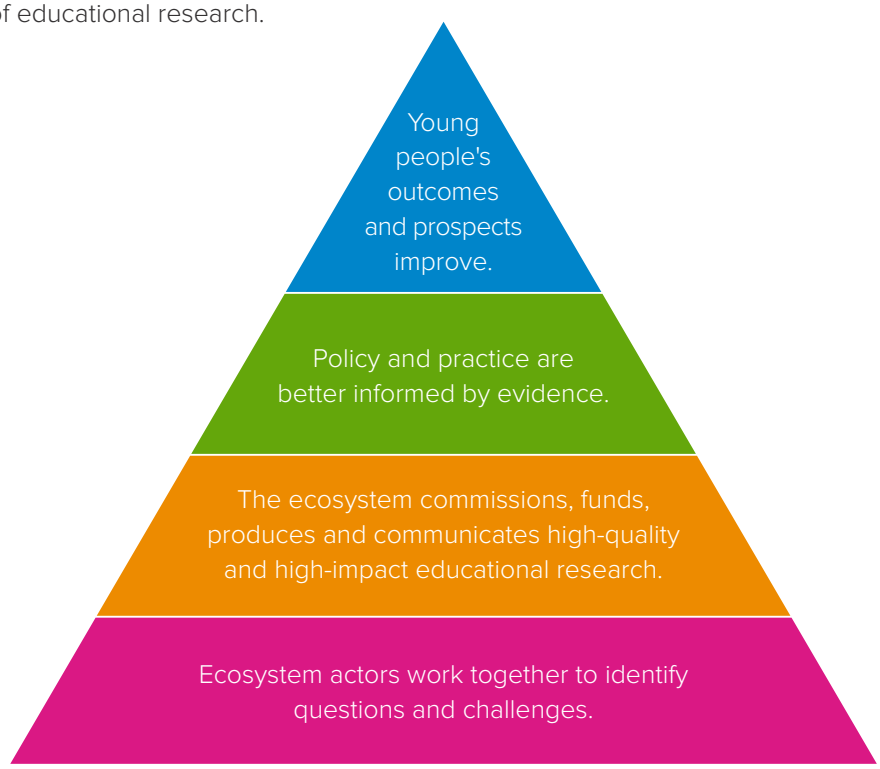
The education system in the UK has been moulded by the wider historical context within which it evolved. It is a devolved responsibility, leading to different approaches between and within each of the home nations. For instance, there is a wide diversity of school and college structures and associated governance and funding mechanisms, and a number of different teacher training routes.

1.4 What can research contribute?

Educational research can generate reliable and valid answers to well-defined questions, providing evidence to inform changes to policy or practice. Such research can also offer important insights, whether providing conceptual clarity about what it means to be educated, or identifying potential outcomes (intended or otherwise) of specific courses of action. The ultimate goal of educational research is to enable an improved life experience and educational outcomes for young people (see Figure 1). However, the implications of the evidence and insights generated by educational research will always depend on the contexts of the education ecosystem in which they are applied.

FIGURE 1

The role of educational research.



1.5 This report

One of the most enduring values of our society is that everyone can benefit from education – indeed, that they have a fundamental right to it – and that we provide special resources for the education of children and young people. Yet how we do this in practice is subject to change, and can be hotly contested.

Viewing education as a complex, living ecosystem helps us to articulate the ways in which research and education intersect. By demonstrating the complexity of these interactions, it challenges simplistic assumptions about how research can be harnessed to improve the health and functioning of the ecosystem. It enables us to understand various flows between the actors in the research-relevant aspects of the ecosystem. We can explore whether flows are missing or need to be strengthened; uncover tensions or barriers that need to be addressed; or identify facilitators that could enable the ecosystem to evolve.

This ecosystem approach has provided the framework for this project's work. We have focused on 3 core actors: researchers (anyone who produces research, including teachers), practitioners (teachers and those who support teaching) and policymakers. We have also studied the flows of people, funding and information through the education ecosystem.

This report sets out some necessary actions that might enable research to better inform the effective evolution of the education ecosystem. It focuses on formal education in schools and colleges up to the age of 18, but many of the lessons are translatable to other sectors and contexts for education.

A number of factors make this report particularly timely. The recent creation of UK Research and Innovation (UKRI) has brought together the 7 disciplinary research councils, along with Research England and Innovate UK. This creates opportunities for changes in the ways that excellent research is identified and funded, including research that cuts across disciplinary boundaries (see sections 3.2 to 3.6). There is growing evidence that the pipeline of educational researchers is at risk (see sections 3.7 to 3.11). There is also an emerging move in the teaching profession towards research-informed practice and understanding.

In the following chapters we explore: the nature of the education ecosystem and how it can work to identify priorities for educational research (Chapter 2); the capacity for educational research within the academic community (Chapter 3); and the role of educational research within teaching (Chapter 4) and within policymaking (Chapter 5). Chapter 6 sets out our conclusions and a summary of the actions that need to be taken to improve how the education ecosystem functions[2].

2. Further information about how the report has been produced can be found in Appendix 1.

Chapter two
Research and the education ecosystem

Research and the education ecosystem

2.1 Research, challenges, and the education ecosystem

Research on education does not exist in a vacuum. It is part of a wider education ecosystem, involving a range of actors undertaking different activities. The actors include, at an institutional level, schools and colleges, higher education institutions (HEIs), independent research organisations, publishers, funding bodies, and governments and their agencies. Many of the activities taking place in the ecosystem can be informed by, or generate, research (see 'The Teaching and Learning Research Programme' in the box below). Research-relevant activities include teaching, the training of teachers and researchers, collecting data, undertaking research, and publishing, although the definition of what counts as research is itself a matter of debate.

The research-related activities in the ecosystem depend on healthy flows of inputs and outputs of people, funding and information:

- Skilled, trained people use and undertake research.
- Financial resources are needed to train researchers; support and publish research; and then translate that research into practice or policy.
- Evidence and insights move between actors in the ecosystem to inform their activities.

These flows are subject to political, economic and other environmental changes, conditions that are beyond the control of any single actor. The strength of the flows, which depend on the allocation of resources, determines how effective the actors are at undertaking their activities. This chapter describes the place of research in the education ecosystem and explores how the actors within it can work together to identify priorities.

BOX 1

The Teaching and Learning Research Programme

The Teaching and Learning Research Programme (2000 to 2011) was the UK's largest ever programme of research into pedagogy. It was funded by the Higher Education Funding Council for England (HEFCE) and managed by the Economic and Social Research Council (ESRC). In addition to producing research of high quality and value, it aimed to engage users in its work; design projects for impact on practice and policy; and enhance research capacity, including through training on research skills.

The success of the Teaching and Learning Research Programme depended on collaboration across the ecosystem, to enable it to extend its impact beyond the interests of any individual actor[3]. However, the evaluation of the programme found that the achievements of individual projects were variable and not all opportunities were fully exploited.

3. (i) Baker EL *et al*. Teaching and Learning Research Programme (TLRP) Scientific Quality and Academic Impact Evaluation. See https://esrc.ukri.org/files/research/research-and-impact-evaluation/teaching-and-learning-research-programme-tlrp/ (accessed 29 June 2018); (ii) Parsons DJ and Burkey S. 2011 Evaluation of the Teaching and Learning Research Programme (Second Phase) Final Report of the Second Phase Review for the Economic and Social Research Council. See https://esrc.ukri.org/files/research/research-and-impact-evaluation/teaching-and-learning-research-programme/ (accessed 29 June 2018).

2.2 Research-relevant activities in the education ecosystem

The actors in the research-relevant aspects of the education ecosystem can be grouped into nine relatively broad types based on their functions. These are shown as nodes in Figure 2, which also includes examples of the actors that fulfil these functions (rather than representing each individual and organisation separately). Some organisations and individuals will be actors within multiple nodes. For example, the Wellcome Trust and the Nuffield Foundation are funding bodies, research mediators and independent research organisations.

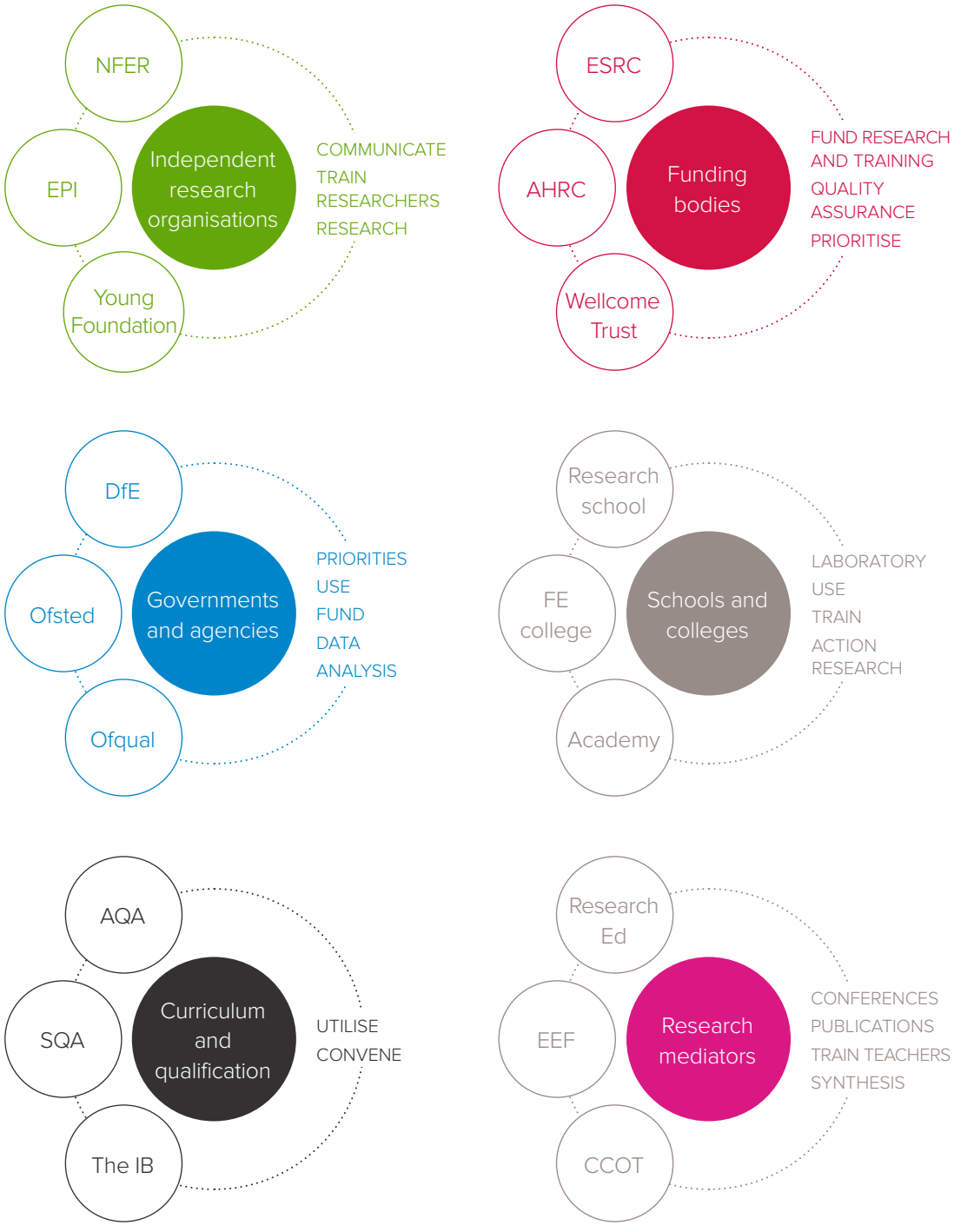
2.3 The complexity of devolution

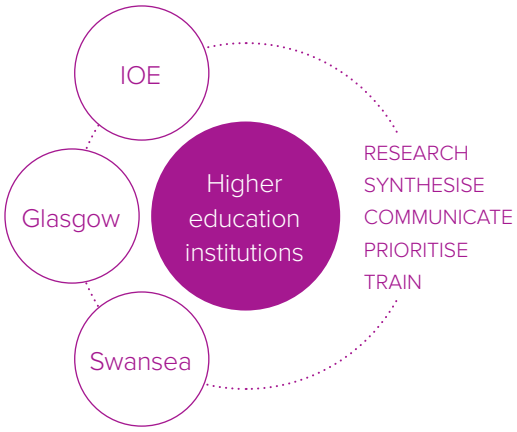
In the UK, education is a devolved responsibility. Consequently, while the categories of actors remain the same across the 4 UK nations, the organisations and individuals within each node may be different. The nature of the flows between these actors, and in particular the mechanisms by which they take place, will also vary. We recognise the need to be sensitive to this context – we cannot expect a 'one size fits all' approach to be effective in improving the operation of the ecosystem. On the other hand, it may be possible to take examples of practice from one nation and adapt them for application elsewhere.

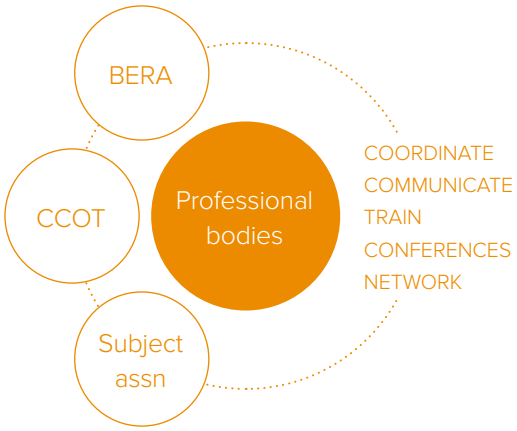
Figure 3 highlights key differences in the nature and activities of the actors in the 4 UK nations.

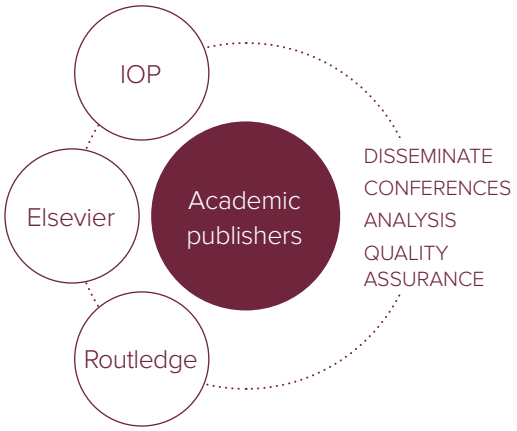
FIGURE 2

Nodes in the educational research system.




IOE
Glasgow
Higher education institutions
Swansea
RESEARCH
SYNTHESISE
COMMUNICATE
PRIORITISE
TRAIN


BERA
CCOT
Professional bodies
Subject assn
COORDINATE
COMMUNICATE
TRAIN
CONFERENCES
NETWORK

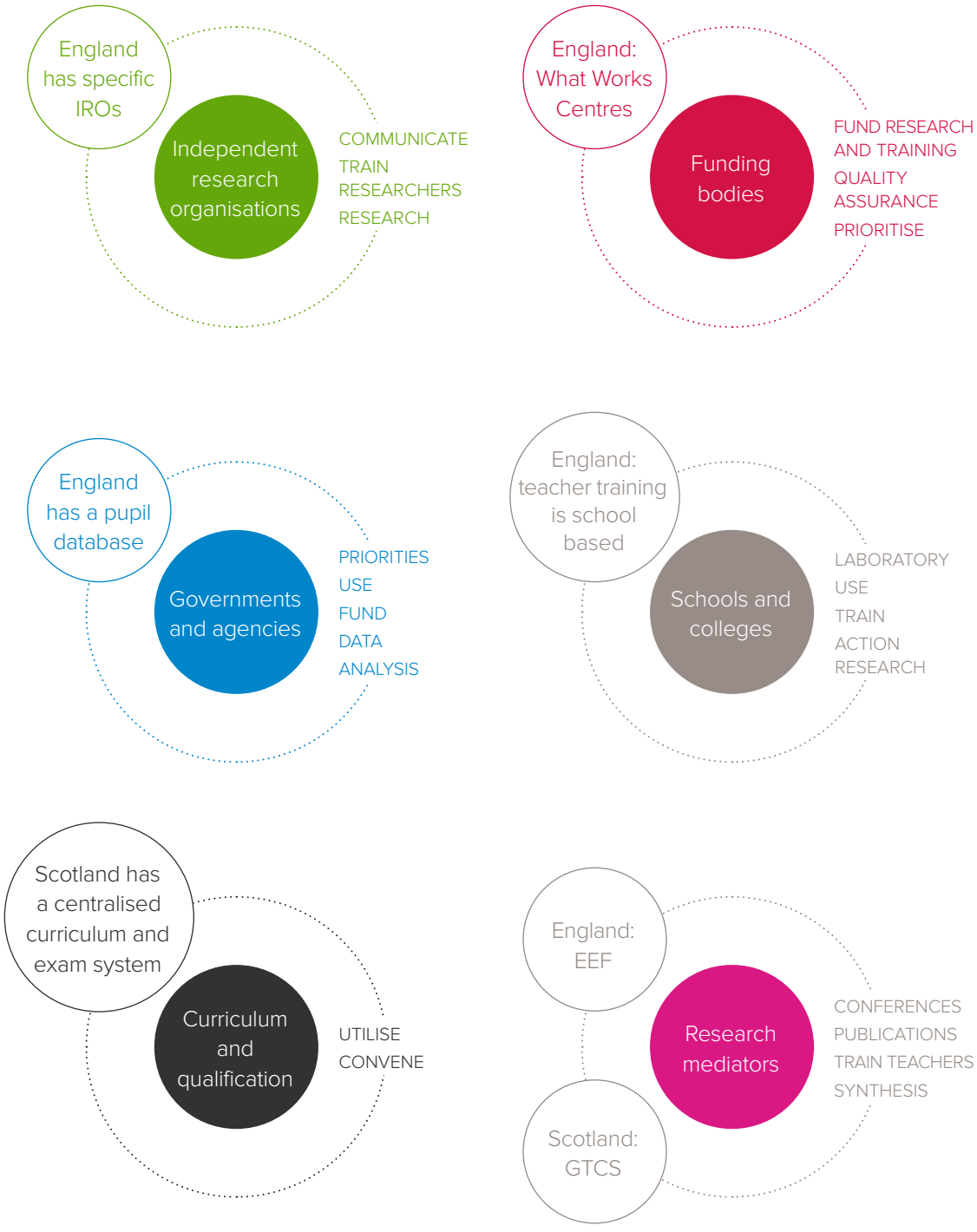

IOP
Elsevier
Academic publishers
Routledge
DISSEMINATE
CONFERENCES
ANALYSIS
QUALITY ASSURANCE

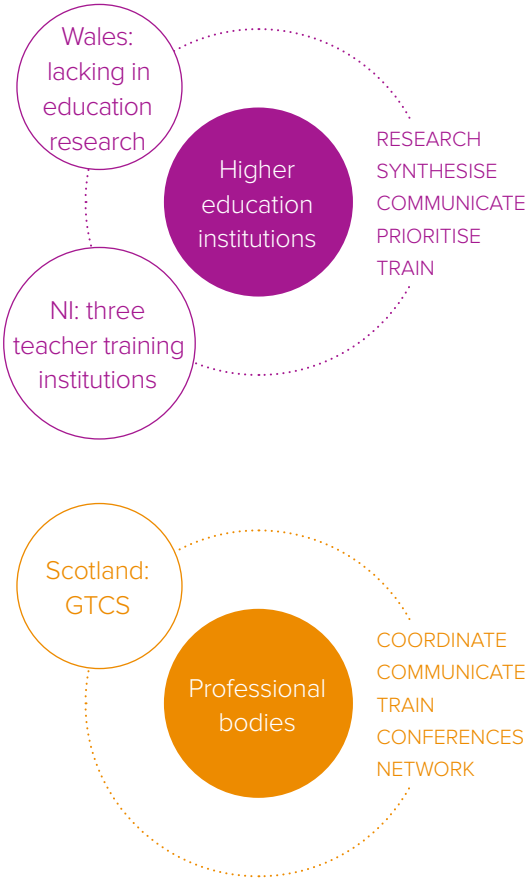
KEY


Example organisation

FIGURE 3

Different education actors across the UK's nations.





KEY

Differences between actors in UK nations

2.4 Diversity in educational research

This report takes a pragmatic, pluralist and inclusive stance on what constitutes educational research. Education is multidimensional, and addressing its challenges effectively requires cross-disciplinary approaches involving a range of qualitative and quantitative methodologies in structured exploratory and participatory research designs. Core dimensions of this diversity are:

- **Diversity of purpose**
  The purposes of educational research extend well beyond research to inform teaching and learning. Some research methodologies set out to clarify and develop our understanding of the purposes of education or to establish links between specific policies or approaches in education and their impact on different social groups (such as social exclusion and marginalisation). Research on education policy looks at its effectiveness and its fitness for purpose; this includes research that identifies problems through analysis and evaluation, research that proposes and designs solutions, and research that challenges accepted beliefs and assumptions. In all cases, impact is usually indirect and difficult to measure.
- **Diversity of focus**
  There are well-established educational research traditions focusing on different substantive areas including (but not limited to) curriculum; assessment and pedagogy; training and continuing professional development of teachers; structures and systems; organisation, governance, management and leadership of schools; psychology, including how children learn; autism and disability; and equality and social justice. While some educational research focuses on specific disciplines (such as science, mathematics, engineering or language), other educational research is more generic and is applicable to any discipline.
- **Diversity of actors, participants and stakeholders**
  The people involved in the conduct of educational research work in a variety of environments and with different motivations and expertise. Many individuals straddle multiple worlds. Many researchers are based in HEIs, but charities, schools and colleges also employ researchers. Teachers work in schools and colleges and may also teach, study or do research in HEIs, work as examiners and write for pupils or teachers. Government bodies, think tanks and independent companies are often involved in research, and they employ researchers, teachers and policy professionals.
- **Diversity of funding**
  Funding for educational research comes from various sources including government ministries, government-funded independent research councils, companies, schools and colleges, and charities and foundations.

2.5 International perspective

Educational research is a global endeavour, and many of the questions that it seeks to tackle are universal, adding further complexity to the ecosystem. This report focuses on the research capacity of the UK, and on research that has a direct relevance to policy and practice in the UK. Moreover, many UK-based researchers are tackling questions focused on education systems in the developing world, but which may nevertheless have lessons that can be applied closer to home, albeit within different educational structures. International researchers conduct research within the UK. Research carried out beyond the UK also has the potential to be relevant for UK policy and practice. However, this report has not considered international aspects of the ecosystem, or how policymakers and practitioners can tap into this evidence base (and pool of researchers) more effectively.

2.6 The value of research in the education ecosystem

Educational research can have an impact on both policy and practice (see 'Examples of excellent research impact'). However, research evidence rarely provides definitive, categorical, answers for decisions about educational policy and practice because of variations in context, individuals and values. It is quite rare for things to be 'proved' by educational research, but evidence and insights from good educational research, particularly where a body of research has built up over time, can certainly inform decisions: evidence can be clear that a given practice is likely to have better or worse outcomes than another.

BOX 2

Examples of excellent research impact as assessed in REF 2014[4]

Early years learning. 'The Effective Provision of Pre-School Education' study, led by Kathy Sylva and Pam Sammons at the University of Oxford, has had considerable impact on the landscape of early years education. Key policy initiatives based on the study's findings include: the 3-to-4-year-olds' education entitlement; free early years education for disadvantaged 2 year olds; the Early Years Foundation Stage Curriculum; and major funding (such as the £305 million Graduate Leader Fund) for upgrading the professional qualifications of early years staff.

Assessment for learning. The work of Paul Black, Dylan Wiliam and colleagues at King's College London has led to the adoption of formative assessment as a central feature of the interactions between teachers and learners in UK classrooms and overseas. Formative assessment provides feedback on pupils' performance and does not contribute to a final mark or grade. The research has informed initial teacher training standards and is widely used in initial teacher education and professional development practice in the UK.

Mathematics teaching. A research programme in mathematics education that used an iterative approach to develop and refine tools, which was led by Malcolm Swan at the University of Nottingham, was adopted by the Bill and Melinda Gates Foundation and the US National Council of Supervisors of Mathematics as part of their strategy to improve the quality of mathematics teaching and learning in US secondary schools.

Research on school performance. The performance monitoring systems developed by the Centre for Evaluation and Monitoring at Durham University are used by 6,000 schools and local authorities across the UK in assessing 750,000 pupils per year. Research based on these systems has led to impacts on policy, on the education system and on other performance monitoring systems via satellite centres in Australia, New Zealand and Hong Kong.

Further education. Recommendations arising from work led by Gareth Parry at the University of Sheffield (2001 to 2012) were adopted by HEFCE in 2006 as sector policy. Parry's work contributed to changing the national funding and reporting arrangements where higher education is delivered in further education colleges, informing institutional strategy and institutional capacity building, and developing guidance for professional practice.

4. Further examples can be found in: Academy of Social Sciences. 2016 Making the Case for the Social Sciences: Education. See https://www.acss.org.uk/mtc-12-education/ (accessed on 29 June 2018).

2.7 Characteristics of good educational research

Good educational research engages with the issues and possibilities of education in its fullest sense and across its broad purpose. To engage with this wide variety of problems, educational research draws upon diverse methodological and conceptual frameworks from the arts, humanities, social and natural sciences.

Educational research is about supporting social equity and justice, diversity and positive learning experiences, as much as it is about raising standards of academic attainment. It should be both critical and constructive, challenging existing orthodoxies and providing practitioners and policymakers with tools that enable them to think better about what they do. Good research should be independent, with outcomes not influenced by funders and policymakers.

2.8 Barriers to good educational research

HEIs and independent research organisations educate and train researchers. They are also responsible for providing a supportive research culture that enables high quality research. If these institutions fail to meet their responsibilities, it may introduce barriers that prevent researchers from undertaking good research. These barriers can include:

- Research questions not sufficiently informed by the needs of practitioners or policymakers.
- Preconceived notions going unchallenged.
- Researchers having limited skills.
- Poor research design and practice leading to lack of rigour.
- Poorly directed or inadequate resources.

Other barriers in the ecosystem may stop researchers undertaking research that is useful to future researchers, practitioners or policymakers. Funders' priorities may or may not align with those of users of research in practice or policy. The volume of funding available can result in one-off studies rather than research at scale, which may result in findings that cannot be generalised to other contexts. Accountability frameworks like the Research Excellence Framework (REF) or promotion criteria do not value evidence synthesis. This can result in researchers being reluctant to spend time producing evidence syntheses or replicating someone else's work, because these activities do not attract as much recognition as other forms of research[5].

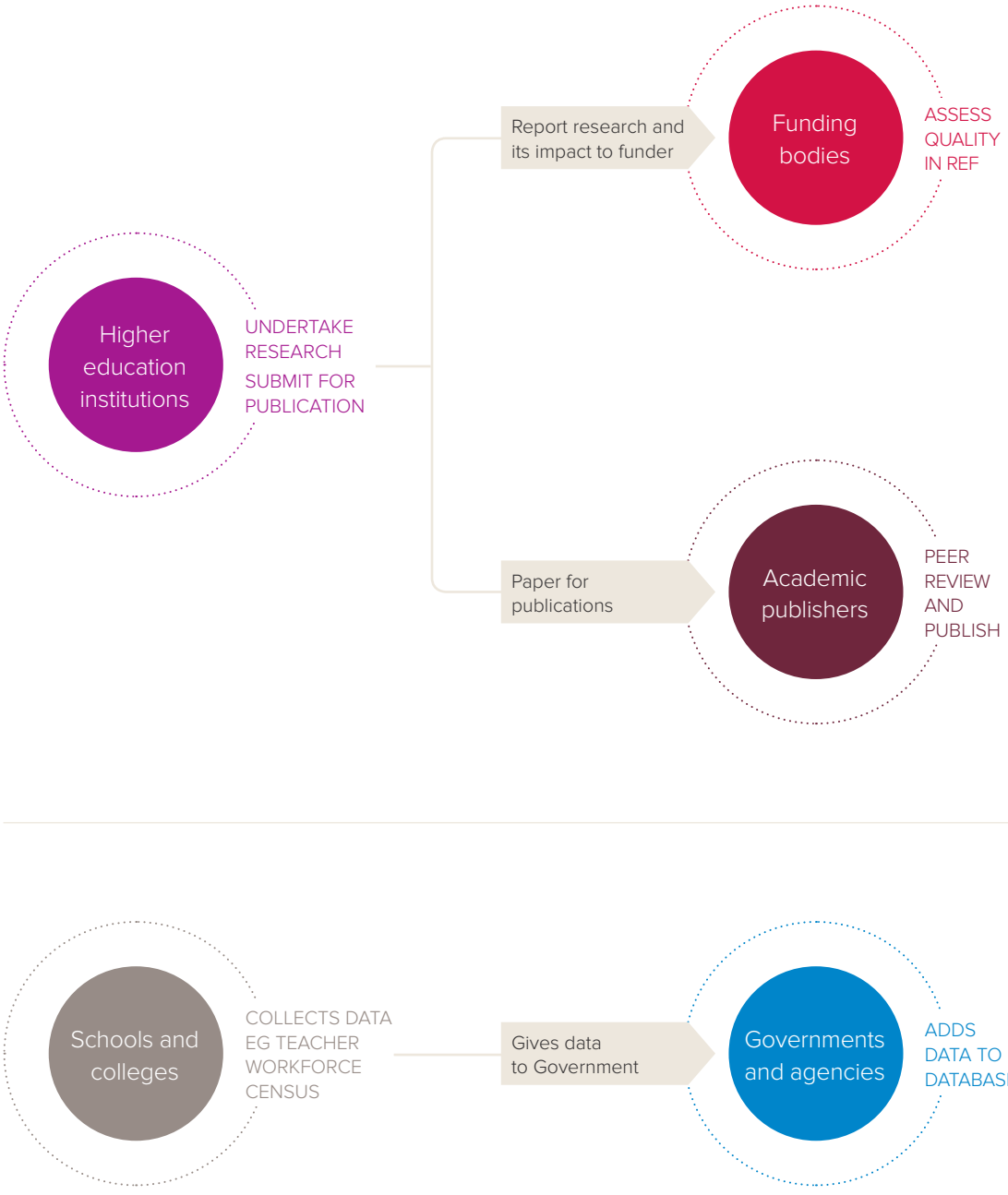
5. The Royal Society and the Academy of Medical Sciences. 2018 Evidence synthesis for policy. See https://royalsociety.org/~/media/policy/projects/evidence-synthesis/evidence-synthesis-statement-principles.pdf (accessed 27 July 2018).

2.9 Supply and demand

There is a wide range of educational research taking place in the UK, and the research outputs filter through the ecosystem in various ways (see Figure 4 for some examples of these flows). Researchers may seek to publish their work in peer-reviewed journals and books. Other evidence and insights come from studies directly commissioned and funded by government, charities and other bodies. Schools are increasingly becoming important suppliers of evidence: for example, the ARK Academy Chain has an established research arm. Some research produced outside HEIs is published in journals, but it also appears in independent reports or is reported informally in blog posts and other media. It is hard to assess the scale and impact of these independent reports. In the following sections, we focus on the supply of peer-reviewed research produced within HEIs. We consider whether the supply of research evidence matches the stated needs of practitioners and policymakers.

FIGURE 4

Two examples of the flow of evidence and insights through the ecosystem.



KEY

Description of evidence and insights that are moving through the ecosystem

2.10 Priorities in the supply of academic research

UK researchers in education are contributing work which makes a demonstrable difference to practice and policy. Over three-quarters of the impact case studies submitted to the REF 2014 by HEIs were judged to be world leading (4*) or internationally excellent (3*)[6]. Based on the REF 2014 case studies that the education sub-panel rated as having high impact (see 'Example case studies submitted to REF 2014'), we have developed a list of broad categories that illustrates the range of this research being undertaken on the supply side:

- Accountability and governance
- Assessment
- Curriculum development and pedagogy
- Early childhood
- Education policy
- Higher education
- Inequalities and social justice
- International development
- IT/Digital
- Literacy or numeracy
- Primary education
- Research methods
- Special needs or learning disabilities
- Science, technology, engineering and mathematics (STEM) education
- Student voice and engagement
- Supporting learners and families
- Supporting teachers and schools
- Vocational education and training

HEIs presented an additional 150 impact case studies relevant to education to other REF panels.

6. Research Excellence Framework 2014. See http://www.ref.ac.uk/2014/ (accessed 29 June 2018).

Example case studies submitted to REF 2014

CASE STUDY 1

Unit of Assessment: Education
Subject area: Education policy
Title: Education plc: new philanthropy and old inequalities

Stephen Ball at UCL Institute of Education has produced a series of highly provocative analyses of English education policy and the neoliberal education concepts and practices that have taken root in an increasing number of countries. He has also raised awareness of the growing significance of international 'edu-businesses' and philanthropists. His work has proved valuable not only to national and global teachers' organisations but also to pressure groups and thinktanks seeking to protect the state education system. Teachers have also derived comfort and insight from Ball's research, because it allows them to gain a better understanding of the mundane but powerful managerial and market forces that influence how they work and relate to themselves.

CASE STUDY 2

Unit of Assessment: Education
Subject area: Inequalities and social justice
Title: Campaigning for equal opportunities in learning outside the classroom

Research undertaken at Cardiff University has generated important evidence about unequal access to Learning Outside the Classroom (LOtC) between social groups, as well as providing the foundation for equal-opportunities campaigning in this area. LOtC covers activities that children undertake beyond the confines of the school walls, ranging from international residential trips to short visits to local museums and parks. These kinds of activities are widely recognised as being beneficial for children's emotional, cognitive and social development.

The impact of this research can be traced through collaborations with voluntary sector organisations and the UK government; in evidence given to various House of Commons Select Committee enquiries; the raising of a debate in Parliament through an Early Day Motion; and its support for the establishment of the Council for Learning Outside the Classroom, which links LOtC organisations and professionals.

CASE STUDY 3

Unit of assessment: Computer science and informatics
Subject area: Computer science
Title: Enhancing the effectiveness of educational games and learning tools

The use of technology to enhance student learning is known to have a significant impact on achievement in all subject areas and across all stages of schooling and learning. Educational computer games and online tools help engage students, making learning enjoyable and therefore more effective.

Computer scientists at the University of Leicester used their expertise in the analysis of online learning tools and educational games to evaluate whether and why such games or tools work and, most importantly, how they can be improved. The research has been used by:

- The software industry to develop new products for the e-learning and games markets.
- Schools and HEIs to create tailored e-learning tools which enable better learning experiences and improved outcomes for students.
- Industry to design and improve effective e-learning modules for employee training.

2.11 Demand from policymakers

The UK government recently published a collection of documents that outline the Areas of Research Interest (ARI)[7] of more than a dozen departments. Those areas relating to education apply specifically to England, and they neatly summarise the education-related policy demands in that nation. The Department for Education (DfE), Department for Work and Pensions (DWP) and the Department for Business, Energy and Industrial Strategy (BEIS) all articulate related research needs. DWP's focus is on the labour market and supporting disadvantaged families. BEIS and DfE both cover decision-making linked to skills. The DfE's research needs are the most wide-ranging and are designed to indicate where the research community can readily contribute to the evidence base. The department has highlighted the need for research regarding pressing policy issues, including teacher supply and school funding. Social mobility, wellbeing and place-based research are themes within the ARI (see 'Department for Education's Areas of Research Interest 2018'). Evidence about pedagogy in primary and secondary schools is noticeably absent, but this is unsurprising as the department has avoided directly engaging in research in this area, believing it to be more appropriately handled by teachers, schools and independent research organisations.

The Scottish Government's educational research strategy[8] articulates specific research needs in Scotland. It focuses on delivering the priorities set out in the National Improvement Framework and Improvement Plan: improving attainment, closing the attainment gap between the most and least disadvantaged children, improving children's health and wellbeing, and improving employability skills.

BOX 3

Department for Education's Areas of Research Interest 2018

The DfE's Areas of Research Interest for schools and early years covers:

- **Effective approaches** in different early years settings, and for pupils with different SEND (special educational needs and disability) conditions, based on insights from cognitive science and neuroscience.
- **Transition** between early years and primary, particularly for disadvantaged pupils.
- **Improving equity** by understanding geographic differences and predicting which schools might improve or deteriorate.
- **Parental engagement**, specifically the barriers and drivers to parental engagement in education in the home.
- **Organising schools** to become more financially efficient, and using technology to reduce staff workload.
- **Improving staff recruitment and retention**, especially in shortage subjects.
- **Wellbeing** of pupils and teachers, including the school's role in improving pupil mental health.

7. Government Office for Science and Cabinet Office. Areas of Research Interest. See https://www.gov.uk/government/collections/areas-of-research-interest (accessed 29 June 2018).
8. Scottish Government. 2017 A Research Strategy for Scottish Education. See http://www.gov.scot/Resource/0051/00512276.pdf (accessed 29 June 2018).

The Welsh Government is currently developing a research strategy for education[9]. In Northern Ireland, the Department for the Economy Analytical Services Unit (ASU) co-ordinates the department's Analytical Work Programme (AWP). Annually, the department reviews the relevant evidence to support key policy priorities, objectives and targets, and considers if there are any areas where additional research or analysis may be required. A prioritised list of potential AWP projects is drawn up and considered with a view to agreeing what projects can be taken forward in the coming year with the resources available.

2.12 Demand from practitioners

In researching this report, it proved difficult to find reliable information about the evidence and insights that teachers, schools and colleges value. We therefore consulted this community through a series of focus group sessions that involved researchers and policymakers (see Appendix), and also reviewed the Education Endowment Foundation's (EEF) School Themes, which are co-determined with teachers (see 'Practitioners' research priorities')[10].

BOX 4

Practitioners' research priorities

- **Behaviour:** improving pupil engagement and minimising disruptive behaviour.
- **Character and essential skills:** building attitudes, skills and behaviours that support children's learning and personal development.
- **Developing effective learners:** supporting pupils to become effective and self-motivated learners.
- **Enrichment:** extending learning beyond traditional academic priorities, including careers education, and participation in the arts and sports.
- **Feedback and monitoring pupil progress:** using assessment to understand pupils' strengths, weaknesses and progress, and addressing these through feedback.
- **Language and literacy:** evidence on literacy from the EEF's Teaching and Learning Toolkit (which summarises international evidence on teaching) alongside the findings from recent EEF projects.
- **Mathematics:** improving the teaching and learning of mathematics.
- **Organising your school:** addressing school-level structural and organisational issues, such as timetabling, class size, the built environment, and digital technology.
- **Parental engagement:** helping parents to support their children's learning.
- **Science:** improving the teaching and learning of science.
- **Staff deployment and development:** improving the quality of teaching through staff deployment and continuing professional development.

9. von Ahlefeld H. 2017 Developing an agenda for research and education in Wales. 13 April 2017. See http://oecdeducationtoday.blogspot.co.uk/2017/04/developing-agenda-for-research-and.html (accessed 29 June 2018).

10. Based on evidence document 15.

2.13 Finding shared priorities

Researchers, practitioners and policymakers do not have shared priorities, although there are areas of common concern or interest. This results in an inevitable mismatch between the supply and demand of research and contributes to a lack of sustained research effort. There is some obvious overlap between the research priorities of the governments of the UK's 4 nations and those of practitioners, but there are also some themes that are wider-ranging, and others that are more specific. These include research on certain curriculum subjects or particular aspects of school improvement. The volume of published research is high and wide-ranging, but we question whether the coverage and quality of the evidence base addresses all the priorities identified by practitioners or policymakers (discussed further in section 3.3).

An intervention in the ecosystem is needed to identify critical mismatches in the supply and demand of educational research, and to determine ways to address gaps which require large scale studies. There have been a number of previous attempts to address this challenge, but we can use the clarity provided by the publication of government ARIs related to education, and the creation of UKRI, to improve collaboration and understanding[11].

We need a new organisational structure that brings together governments, governmental organisations, researchers, teachers and other funders. This structure must enable the actors to discuss and debate their research priorities together, and to co-develop research strategies for addressing these priorities. In health this has been achieved through the Office for Strategic Coordination of Health Research (OSCHR), which provides one possible model[12]. OSCHR brings together the Department of Health and Social Care, the Medical Research Council and the Wellcome Trust. There are other possible models elsewhere across the world, such as the US National Center for Education Research[13]. The precise nature of this new organisational structure for education may vary by UK nation, but we would expect it to be jointly owned by government and UKRI, involve philanthropic funders, and ensure the voices of all stakeholders can be heard. Its remit would extend across education, beyond the limited scope we have considered in this report.

11. See evidence document 2.
12. Office for Strategic Coordination of Health Research. See https://mrc.ukri.org/about/what-we-do/spending-accountability/oschr/ (accessed 12 July 2018).
13. National Center for Education Research. See https://ies.ed.gov/ncer/ (accessed 27 July 2018).

RECOMMENDATION 1

Connecting supply and demand

Governments of the 4 UK nations should instigate a process to develop a new organisational structure for educational research, working with UKRI, teaching bodies and other funders. The structure should have at its heart an Office for Educational Research to identify and seek to address mismatches in supply and demand. This Office will need to bring together representatives from government, key public and private research funders, teachers and researchers. This representation may include:

- A programme board that reviews opportunities for educational research opportunities across the UKRI councils.
- The chief scientific advisers of the 4 nations' government education departments to explore where there are shared priorities across the UK.
- Umbrella organisations for teachers (eg Chartered College of Teaching) to ensure practitioner voices are heard.
- Learned societies and subject associations, to ensure researchers are fully engaged.
- A forum for all funders of educational research, such as charities as well as UKRI, to identify opportunities for coordination on the direction of funding.
- Employer and skills bodies (eg Federation of Small Businesses, Confederation of British Industry) to ensure needs for the future workforce are taken into account.

Chapter three
The current state of educational research

The current state of educational research

3.1 Distribution of research capacity

The inherent interdisciplinarity of the educational research space means that it is difficult to assess the make-up and scale of the research base (see 'The number of educational researchers'). Higher education data sources have a single category for 'education' that covers research on all phases of education, including early years and higher and adult education, as well as general education for 5-to-19-year-olds in schools and colleges. Moreover, educational research outputs and those who produce them are reported within many different disciplines (eg economics, geography, business and social policy). In this chapter we focus on researchers located within HEIs and our data is drawn solely from the 'education' classification in the sources, which means it does not include researchers working in other university departments. Moreover, many more researchers work within independent research organisations but there is no central source of data which captures these. Nevertheless, they provide vital research capacity which can also be harnessed within the overall ecosystem[14].

BOX 5

The number of educational researchers

According to the Higher Education Statistics Agency (HESA), 113 universities in the UK recorded employing staff in 'education' in 2016 to 2017[14]. But in REF 2014, only 76 HEIs made submissions to the 'Unit of Assessment 25: Education' category. These submissions involved a total of 1,442 full-time equivalent staff, equating to 1,606 individuals, around one-third of the eligible workforce. However, education-related research was also submitted to other Units of Assessment, including health, psychology, computer sciences, geography, business, sociology, social work, sports sciences, history, art and design, music and drama.

Over the last 20 years, the number of institutions making submissions in 'education', and the number of individuals involved, to the Research Assessment Exercise and its successor, REF, has shown a gradual decline.

The membership of the British Education Research Association (BERA) stood at 1,585 in 2015.

14. HESA Staff Record 2016/17, accessed under license via HeidiPlus. Copyright Higher Education Statistics Agency Limited. Neither the Higher Education Statistics Agency Limited nor HESA Services Limited can accept responsibility for any inferences or conclusions derived by third parties from data or other information obtained from Heidi Plus. Note: All figures exclude atypical staff and staff working in non-academic roles. HESA rounding methodology has been applied.

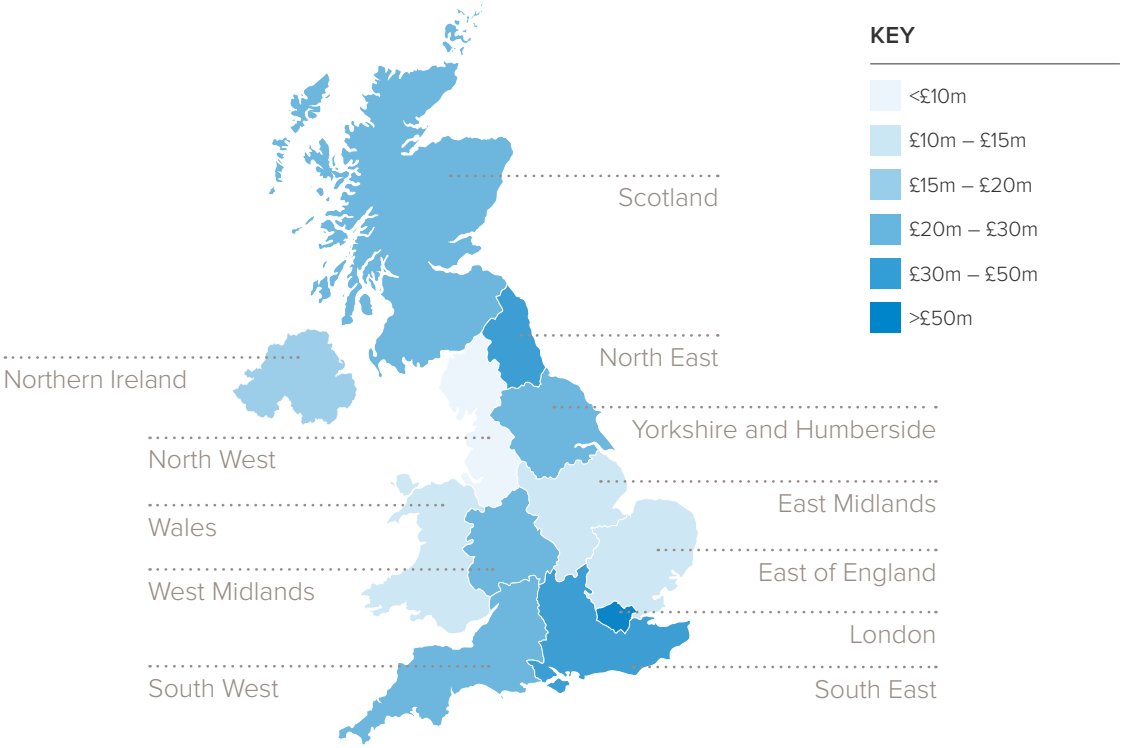
3.2 Variations in capacity

In terms of location, much of the UK's educational research capacity in HEIs is concentrated in London and the south-east. There is also a pocket of strength in the north-east of England. Overall, there is an uneven geographical distribution of educational research activity[15] (see Figure 5) and a related uneven distribution of research quality (see section 3.3). A distinctive feature of the education ecosystem is that to be effective, it requires researchers to be situated close to practitioners in order to undertake some of their research by engaging directly with schools, and to ensure that teachers and school leaders can engage most effectively with research and researchers. Teacher training and supply models also benefit from having ready access to centres of research.

Notably, institutions in the devolved nations tend to have small academic populations within the educational research field. There is a severe lack of educational research in Wales. Given the context-specific nature of many research questions in education, this lack of capacity in the devolved nations is a barrier to the use of evidence and insights for practitioners and policymakers in these nations.

FIGURE 5

Total research income for education departments in HEIs 2013 to 2016.



Source: HESA Finance Record.

15. HESA Finance Record, accessed under license via HeidiPlus. Copyright Higher Education Statistics Agency Limited. Neither the Higher Education Statistics Agency Limited nor HESA Services Limited can accept responsibility for any inferences or conclusions derived by third parties from data or other information obtained from Heidi Plus. Note: All figures exclude atypical staff and staff working in non-academic roles. HESA rounding methodology has been applied.

RECOMMENDATION 2

The geography of the ecosystem

The Office for Educational Research should carry out a review of the distribution of educational research capacity across the UK. It should use its coordinating role to facilitate collaborations that enable researchers, practitioners, policymakers and other stakeholders to work together. These collaborations may be regional or thematic.

3.3 Research quality

UK researchers are clearly contributing work of quality to the international research effort in education. Some 66% of REF 2014 submissions were 'world leading' or 'internationally excellent' overall. The distribution of grades for education was on a par with those for other major social sciences. However, there is a 'long tail' of institutions that only submitted very small numbers of educational research staff for REF 2014. Of the 113 HEIs with staff in education in 2016 – 17, this includes 5 institutions with over 250 academic staff in education, and 21 with fewer than 25 academic staff in the subject. While researchers in these institutions may be undertaking valuable work within the educational research landscape, the departments may not have the capacity to investigate major research questions requiring large research teams, or may be primarily teaching focused.

Analysis of REF 2014 institutional statements on impact and environment indicates that when educational research does have an impact, there are typically strong structures in place for research management and leadership at those institutions. There is also coherence between the institution's research priorities and its strategy for achieving impact. These institutions implement their strategies operationally, for example by making impact a consideration within annual planning; providing dedicated funding, training and allocated staff time; and support for communication methods such as open access journals. These institutions tailor their strategic direction to their aims and strengths, with an understanding of user needs. They foster links between actors in the ecosystem, for example by providing opportunities for visiting staff from schools, colleges or policy environments. They also nurture wider relationships with other organisations, such as government research teams and independent research organisations.

3.4 Research breadth

The REF 2014 education sub-panel report contains an overview of the strengths and weaknesses of the field. Compared with previous Research Assessment Exercises, more submissions were based on quantitative data, including large-scale datasets and longitudinal cohort studies, and many of these submissions were strong, though there was scope for more exploitation of secondary datasets such as the National Pupil Database. We considered how some of the research areas discussed by the REF sub-panel compare with practitioner and policymakers' priorities.

- **Science, maths and languages in secondary schools.** The sub-panel found good coverage of a broad range of curriculum areas at secondary level, though for some subjects they reported that research expertise was very concentrated. High quality research on STEM curriculum areas was characterised by rigorous methodological design, and the use or development of theory to address significant policy or practice questions. The research related to languages and literacy was rich and diverse, with interdisciplinary approaches common.

- **Equity**. Research relating to equity supports a number of priorities for practitioners and policymakers, including developing effective learners, transition and parental engagement. The panel found that research on student identities, including gender, race, social class and sexuality, was often world leading, contributing to cutting-edge theory. A large number of outputs focused on participation, rights and equity issues, many of which were internationally excellent and world leading.
- **Developing effective learners.** The panel identified philosophy and theory of pedagogy as a strength.
- **Feedback and monitoring pupil progress.** Assessment was another strength highlighted by the sub-panel.

The panel also identified school choice research as a strength. Although this doesn't appear directly in the stated practitioner and policymaker priorities, we can speculate that it would be a priority for parents. This illustrates the complexity of the education ecosystem and the number of actors who have a stake in it, extending beyond the scope of this report. Theoretical work in sociology and social theory was also judged to be very strong and often innovative, with sociological work combining qualitative and quantitative evidence tending to be of very high quality.

A number of research areas linked to priorities showed signs of promise, but the panel felt that research in these areas could be strengthened.

- **Vocational education and training.** The sub-panel judged that the research on further, adult and vocational education was of comparable excellence to work on other education sectors, but they noted the lower than expected volume of submitted outputs in these areas.
- **Staff development and school organisation.** The value of interdisciplinary approaches was evident in research on school leadership and management, but the panel noted that many research projects used highly selective or small samples.

The sub-panel also identified a number of areas where HEIs did not submit research for assessment, or where the examples were weak. These included curriculum, pedagogy and assessment at primary level, where the sub-panel suggested the education ecosystem might benefit from more research investigating the consequences of changing structures of provision.

3.5 Interdisciplinary approaches

Interdisciplinary expertise is often needed to provide the insight and evidence to answer the full breadth of educational questions posed by researchers, policymakers and teachers[16]. Addressing these questions requires teams or individuals to understand social, economic, political, environmental and cultural processes and hence draw on knowledge and skills from multiple disciplines. As a result, we anticipate more emphasis on collaborative structures and interdisciplinary work in the future, building on existing trends.

16. British Academy. 2016 Crossing Paths: Interdisciplinary institutions, careers, education and applications. See https://www.britac.ac.uk/sites/default/files/Crossing%20Paths%20-%20Full%20Report_2.pdf (accessed on 29 June 2018).

Within HEIs, educational research takes place in a wide variety of departments. An analysis using the Scimago Shape of Science interface revealed that UK-based education research is published in a variety of academic journals across many disciplines. While there is a major influence of education research across social science, arts and humanities disciplines, there is a large and growing spread of education research in psychology and neuroscience, and strong pockets elsewhere within the decision sciences, engineering, and health sciences[17].

3.6 Deepening the pool

There is huge untapped capacity in the research body beyond educational research that could – and is needed to – contribute to the research challenges in education. For example, the REF 2014 sub-panel noted its surprise at the lack of research submitted that exploited the interdisciplinary potential of work bridging education, neuroscience and psychology. The barriers to effective interdisciplinary research are well known and they include structural and operational barriers within universities. Within the education ecosystem, the role of funders in supporting research at the interface between disciplines is crucial to avoid funding applications for interdisciplinary research falling between different panels.

There is an opportunity to put in place mechanisms that support both intra-institution collaboration, facilitating interdisciplinary research, and inter-institutional networks that draw together different areas of expertise. This will help create a critical mass of researchers able to tackle the common priorities in educational research and to support research being undertaken in schools and colleges.

RECOMMENDATION 3

Improving collaboration

Interdisciplinary educational research will be needed to respond to the big strategic questions in educational research. UK governments and their agencies, including UKRI and other funders of educational research, and HEIs and other research organisations, should invest in interdisciplinary, cross-departmental and cross-institutional collaboration.

UKRI's strategic priorities fund creates an opportunity for focused funding of interdisciplinary educational research. Its scope should be informed by evidence from policymakers, teachers and researchers (as set out in Recommendation 1).

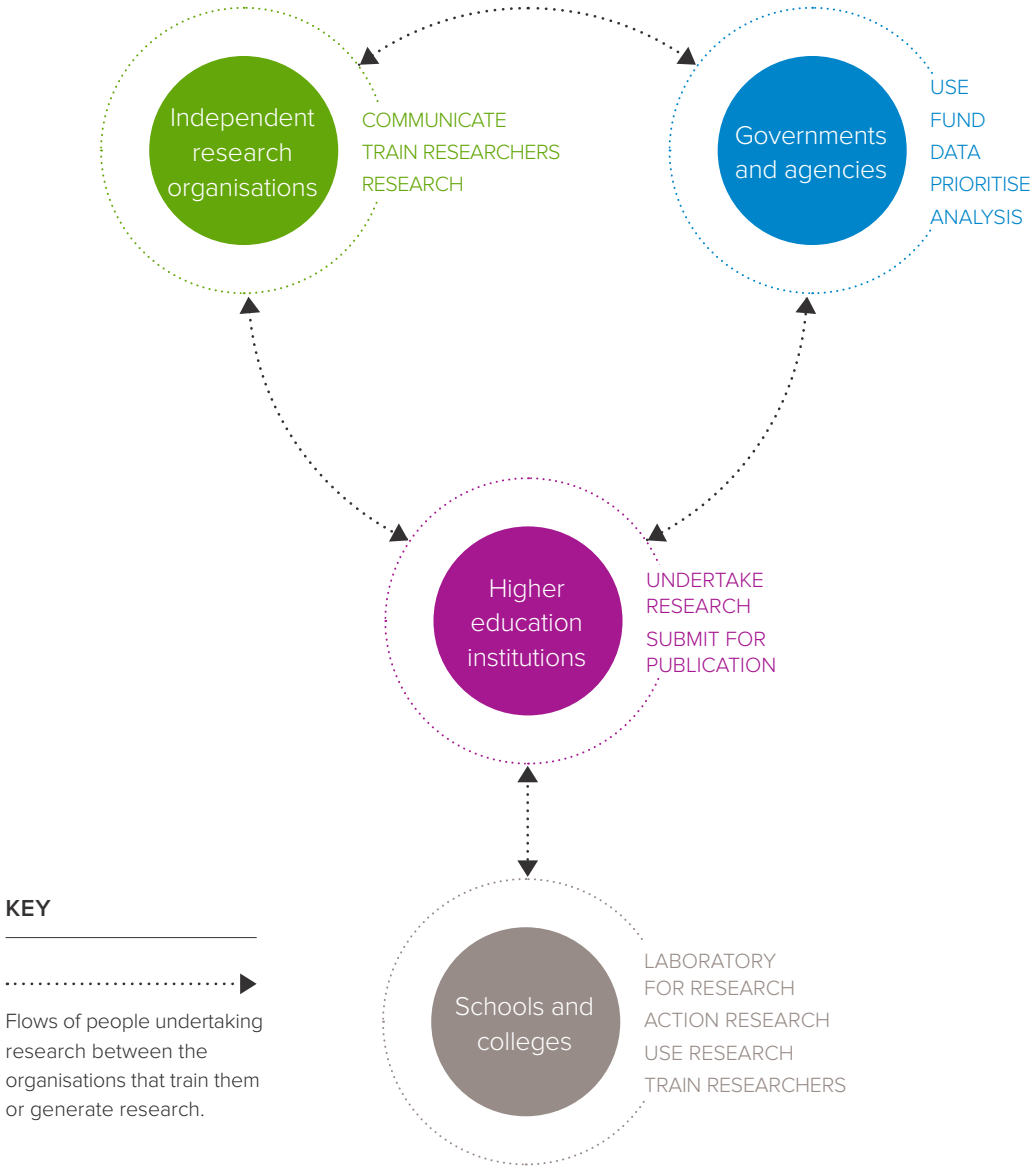
17. Scimago Shape of Science. See https://www.scimagojr.com/shapeofscience/ (accessed 27 July 2018).

3.7 The pipeline of researchers

Researchers generally move between 4 of the ecosystem nodes (see Figure 6). They may start their research careers in schools and colleges, and formalise their training in HEIs. They may also start their research careers in independent research organisations and move into government or HEIs. Researchers are also drawn into educational research from outside the education ecosystem (not shown in Figure 6).

FIGURE 6

The flow of researchers.



3.8 The changing supply of research talent

The supply of future educational researchers is declining. That risks hindering the long-term health of educational research in the UK. Data from HESA show that the age profile of research staff studying education is highly unusual, with more than one-half of the total staff aged over 50 and more than one-third over 55 years of age (see Box 5)[18].

In 2016 to 2017, 4950 academic staff were on part-time contracts, equating to 1615 FTE (excluding atypical staff). Part-time teaching-only staff (who are not required to undertake research under the terms of their contract) make up 28% of all academic staff in education departments[19]. The number of staff on academic contracts not requiring individuals to undertake research has grown in the past 10 years. These staff members are very likely to be practitioners employed in roles connected to teacher education. The proportion of the workforce on part-time contracts also reflects this.

3.9 Reductions in postgraduate research

In the period 2011 to 2016, around 6% of doctoral studentships awarded by the ESRC were education-related, totalling about 48 per year[20]. However, in total, fewer students are studying postgraduate research degrees in educational research each year, which poses a risk to the sustainability of the workforce (although as with staff numbers, postgraduate research students may be carrying out education-related research within other disciplines). Since reaching a peak in 2011, the total number of postgraduate research students in educational research has declined, a trend affecting UK, EU and international students (see Figure 7).

3.10 An unusual pool of researchers

Research capacity in education is unusual in that a significant proportion of new researchers in this field are mature students from a broad range of backgrounds. Even those who enter postgraduate study direct from undergraduate degrees come from across the disciplinary spectrum. Postgraduate training providers need to differentiate their training and support to support this breadth of backgrounds. For example, these students may not have had a strong grounding in the full range of social science research methods. Analysis of the profiles of a sample of the academics submitted to the REF 2014 found that around one-quarter had a background in school teaching[20]. This means that a close connection between higher education and practice is built into the nature of the workforce. This is a significant opportunity for research in the education ecosystem that is taken up by many researchers, as long students are able to access suitable training and financial support.

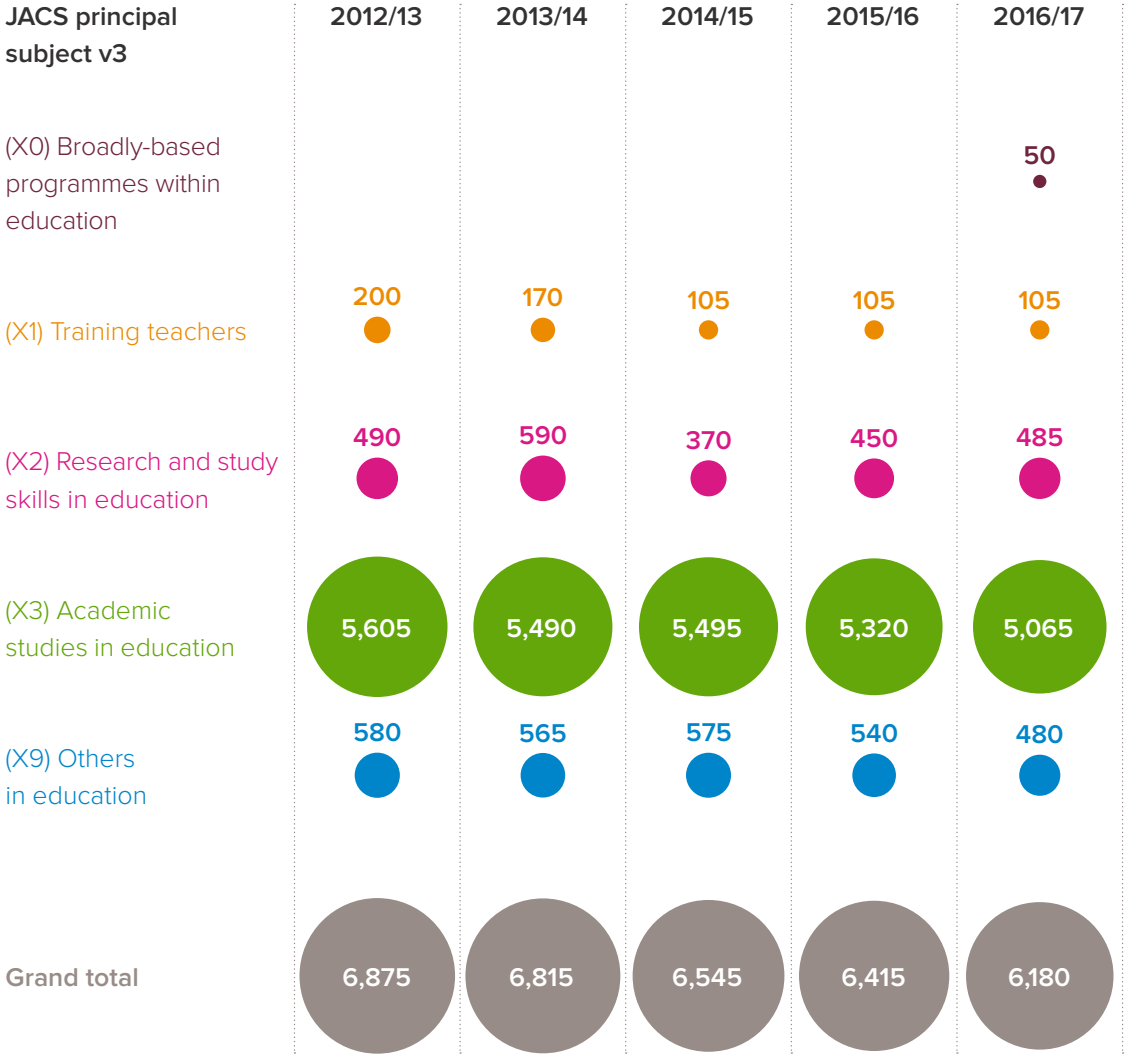
18. See evidence document 3, p. 13, table 5a.

19. HESA Staff Record 2016/17, accessed under license via HeidiPlus. Copyright Higher Education Statistics Agency Limited. Neither the Higher Education Statistics Agency Limited nor HESA Services Limited can accept responsibility for any inferences or conclusions derived by third parties from data or other information obtained from Heidi Plus. Note: All figures exclude atypical staff and staff working in non-academic roles. HESA rounding methodology has been applied.

20. See evidence document 3, p. 20.

FIGURE 7

Changes in PhD student numbers over time.



Source: HESA Student Record, accessed under license via HeidiPlus. Copyright Higher Education Statistics Agency Limited. Neither the Higher Education Statistics Agency Limited nor HESA Services Limited can accept responsibility for any inferences or conclusions derived by third parties from data or other information obtained from Heidi Plus. Note: All figures exclude atypical staff and staff working in non-academic roles. HESA rounding methodology has been applied.

3.11 Researcher training

If researcher training and continuing development is not of high quality, the ability of researchers, practitioners and policymakers to harness educational research suffers. The REF 2014 sub-panel for education noted that weak research was characterised by lack of a conceptual foundation, or insufficient description of the methods used, which meant that it was impossible to assess its rigour.

In October 2017, the ESRC established 14 interdisciplinary social science doctoral training partnerships (DTPs), a welcome development in providing a rigorous grounding in research training in an interdisciplinary context. However, there is clearly opportunity for greater provision, particularly as only 55 of the 98 HEIs which have postgraduate students in education are part of the DTP network. This requires a supply of suitable academic staff to act as research supervisors, and for learned societies for educational research to support these new supervisors, building on existing models such as that operated by the British Educational Research Association (BERA).

RECOMMENDATION 4

Secure the base of the pipeline

UKRI, other funders, and HEIs, supported by learned societies, must:

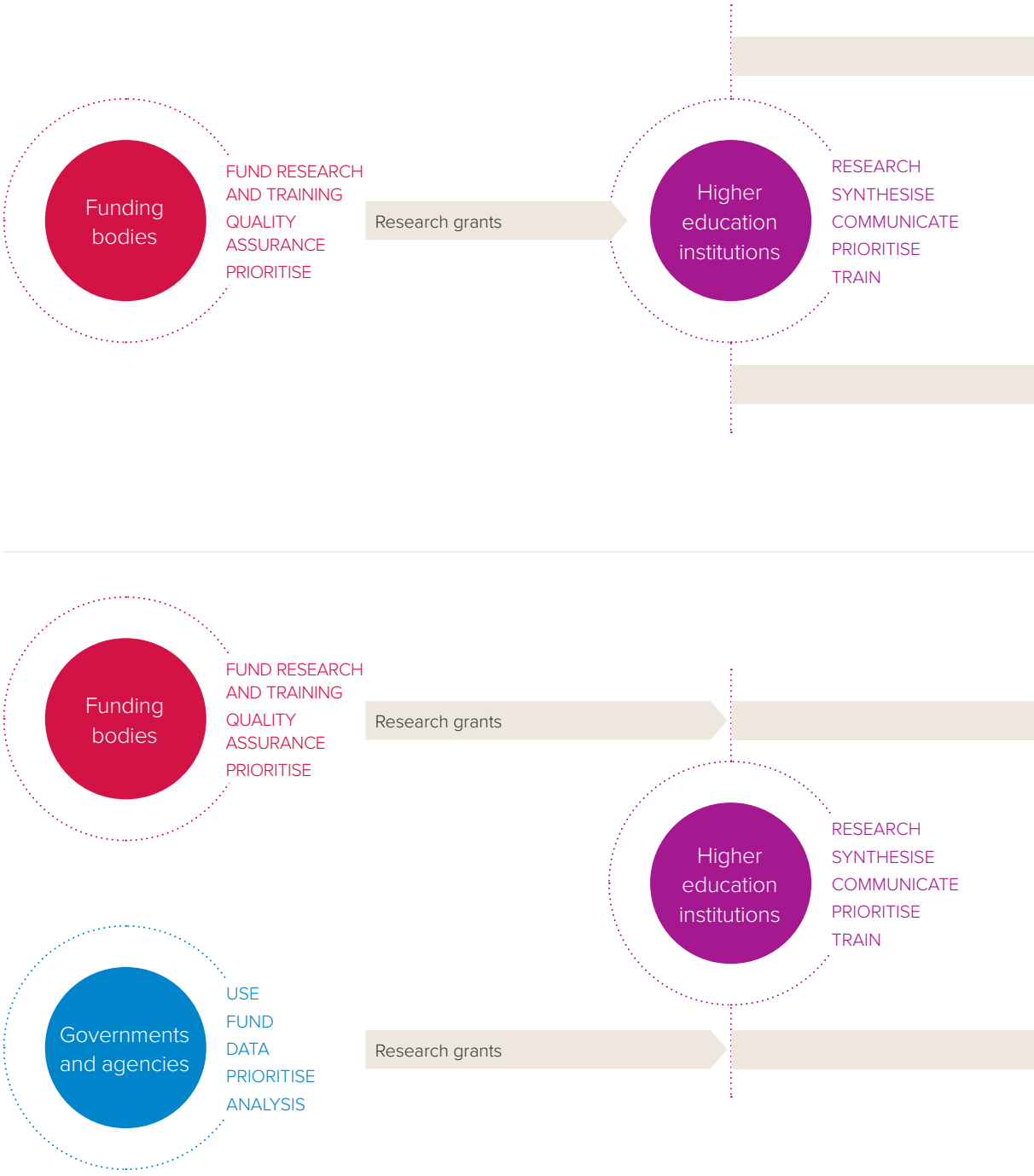
- Ensure the training of educational research postgraduate students meets the needs of mature learners – often teachers, with part-time studentships.
- Enable all educational research postgraduate students to benefit from training in the full range of social science methods.
- Foster better links between research students and policy and teaching communities.

This could be achieved by:

- Growing the use of the collaborative studentship (CASE) infrastructure to encourage and enable government and other relevant bodies, including independent research organisations, to support postgraduate research students in educational research.
- Reviewing the guidance for DTPs about flexible approaches to funding and supporting mature students.
- HEIs and funders requiring all postgraduate research students in education to have a supervisory team which recognises the interdisciplinary nature of educational research.

FIGURE 8

Two examples of the flow of funding for generating or using educational research.




Membership fees
Professional bodies
COORDINATE
COMMUNICATE
TRAIN
CONFERENCES
NETWORK
Publication and access fees
Academic publishers
QUALITY ASSURANCE
DISSEMINATE
CONFERENCES
ANALYSIS
Membership fees
Professional bodies
COORDINATE
COMMUNICATE
TRAIN
CONFERENCES
NETWORK
Publication and access fees
Academic publishers
QUALITY ASSURANCE
DISSEMINATE
CONFERENCES
ANALYSIS
KEY
Use of funding

3.12 Funding research and knowledge mobilisation

The research endeavour covers a wide range of activities, from 'blue skies' to strategically directed research to knowledge transfer. Different mechanisms and organisations fund and receive research-related funding from different parts of this spectrum (see Figure 8 for examples). Challenge-led funding is important, as is the funding of long-term studies. However, it is equally important to ensure that the blue skies, open-ended research endeavour remains healthy in the ecosystem.

Up-to-date figures on research funding are hard to come by and not straightforward to interpret, but 2 things are clear:

- Most sources of funding for educational research have declined considerably in recent years.
- The balance between funding sources is changing.

3.13 Research funding appears to be declining

Research funding for educational research has declined since 1997 (see Box 6). This decline in funding coincides with the ending of the Teaching and Learning Research Programme (TLRP), a substantial investment in educational research. This was one of the very few big educational research projects funded by the UK government over the past 3 decades.

3.14 Changing pillars of support

The balance between funding sources, and the priorities of these funders, are also changing. The government has reduced its direct investment in educational research, and government funding has become more narrowly targeted to focus on a smaller number of priorities. This targeting helps government to address its strategic questions, but does not help support the wider research base. Funding from various other sources (including charities and the EEF) has risen in importance.

In recent years, EU funding has contributed about 10% of the total funding of educational research in the UK. This source has provided a total of €48 million (£42.3 million) from Framework Programme 7, Horizon 2020 and the European Research Council. This funding has often enabled translation of research into practice, or funded research into why particular pedagogical approaches do or don't work.

In the next few years, UKRI will introduce new interdisciplinary funding models that will influence the system[21].

Some organisations have key roles in commissioning research, and these organisations can significantly influence the overall portfolio of research which is undertaken across the education ecosystem (see Box 8). Overall, the EEF has increased the proportion of quantitative educational research focused on the 'what works' approach, which had previously been identified as a gap in the evidence base. The organisation's independence, yet its very close proximity to government, has also been an advantage. Funding for educational research should reflect the importance of the role of education within society and to the economy. There should be an appropriate balance between the support for strategically directed research, for innovative 'blue skies' research, and for knowledge mobilization activities.

21. Strategic Prospectus: Building the UKRI Strategy. See https://www.ukri.org/files/about/ukri-strategy-document-pdf/?pdf=Strategic-Prospectus (accessed 10 October 2018).

RECOMMENDATION 5

QR funding of educational research

Research England and the equivalent bodies in the devolved nations need to ensure that QR funding remains a strong part of the funding portfolio. This funding secures the underlying research infrastructure and enables HEIs to make decisions about what research is important, independent of the immediate priorities of government and funders.

HEIs need to ensure that QR funding is allocated to educational research, which should include support for blue skies research, interdisciplinary activity and maintaining the pipeline of researchers.

If Britain's departure from the EU prevents UK researchers from accessing EU funding streams, this is likely to have a serious impact on knowledge transfer in educational research. This area of research is a necessary precursor to wider scaling up of interventions, so this area of educational research should be given due attention in the allocation of alternative sources of funding.

BOX 6

Summary of key funding changes for educational research over time

Over the period 1997 to 2009, between 40% and 50% of funding for educational research in university departments of education came from UK government departments, with a further 25% or so from the research councils. This report has not quantified the funding other university departments or independent research organisations received in this time period.

In 2006, UK government departments and research councils provided £43.7 million for educational research.

In 2014 to 2015, UK government departments and research councils provided £29.8 million for educational research, a 25% drop from 2006 levels (not corrected for inflation).

Quality related (QR) funding from the UK higher education funding councils also fell, from £30 million in 1998 to £20 million in 2016.

In 2011, the Department for Education made a founding investment of £125 million in the Education Endowment Foundation.

Chapter four
Translating research into practice

Translating research into practice

4.1 The benefits of a research-literate teaching profession

Teachers have to make daily decisions about how best to teach while taking into account emotional, behavioural and social factors that impact their pupils' ability and motivation to learn. They do this using a combination of experience, judgement and knowledge[22]. Teachers build their knowledge through a range of professional development activities that connect teachers with other parts of the ecosystem.

High-performing education systems emphasise evidence-informed teacher self-improvement. These systems encourage teachers to use, and take part in, educational research[23]. Being research-informed gives teachers the capacity and capability to innovate and overcome barriers in progression and attainment. Carrying out research or enquiry within a practice-based context also provides opportunities to work collectively to solve problems and to develop and share good practices that benefit students. Research also needs to be informed by teaching, which (as discussed in sections 3.1 and 3.2) has implications for the distribution of centres of research across the UK.

This chapter explores how the actors in the education ecosystem support evidence-informed teaching. We examine, from a teacher's perspective, the drivers and barriers that enhance or inhibit evidence flowing around the ecosystem. We also consider how teachers are able to gain research experience and share their insights with researchers.

4.2 The direction of travel

There is growing recognition in the UK of the importance of teaching being a research-literate profession. Government and teaching bodies share a common goal: teachers should belong to a self-improving, professional community[24]. Governments and teaching bodies recognise that connecting research and teaching is key to achieving this goal, though the UK nations are taking different approaches to achieving it. For example, the DfE provided seed capital for England's new independent Chartered College of Teaching, one core function of which is providing access to a wealth of knowledge so that "the teaching profession claims ownership of translating research findings into practice rather than allowing those outside the classroom to do so on their behalf"[25]. The college has joined other professional bodies (including the Royal Medical Colleges and the College of Policing) in signing an Evidence Declaration committing it and its members "to take full account of evidence and evidence informed guidance in [its] daily decisions and advice to individuals and organisations … and support rigorous evaluation".

22. Ozga J. 2004 From research to policy and practice: some issues in knowledge transfer. CES briefing no. 31. See www.ces.ed.ac.uk/PDF%20Files/Brief031.pdf (accessed 29 June 2018).

23. (i) British Educational Research Association. 2014 Research and the teaching profession. Building capacity for a self-improving education system. Final report of the BERA–RSA inquiry into the role of research in teacher education. London: BERA; (ii) Judkins M, Stacey O, McCrone T, Inniss M. 2014 Teachers' use of research evidence. A case study of United Learning schools. Slough: NFER; (iii) European Commission. 2014 The Teaching and Learning International Survey (TALIS) 2013. Main findings from the survey and implications for education and training policies in Europe. See http://ec.europa.eu/dgs/education_culture/repository/education/library/reports/2014/talis_en.pdf (accessed 29 June 2018); (iv) GTCE/CUREE/LSIS. 2010 Report of professional practitioner use of research review: practitioner engagement in and/or with research. See http://www.curee.co.uk/files/publication/1297423037/Practitioner%20Use%20of%20Research%20Review.pdf (accessed 29 June 2018).

24. Cruddas L. 2015 Leading the way: blueprint for a self-improving system. Leicester: ASCL. See https://www.ascl.org.uk/download.E75C72C0-1D05-4C8B-9F4CA40CE09B8D8B.html (accessed 29 June 2018).

25. Chartered College of Teaching. Access to research. See https://chartered.college/research-access (accessed 29 June 2018).

To support the implementation of a new transformative curriculum in Wales, the Welsh Government has developed a national approach to career-long professional learning that is "embedded in evidence-based research and effective collaboration"[26]. New professional teaching and leadership standards aim at developing a research-engaged and well-informed profession, with increased university-school engagement both in and beyond initial teacher training.

In Scotland, the General Teaching Council for Scotland (GTCS) supports teachers in their professional learning, "to stimulate their thinking and professional knowledge and to ensure that their practice is critically informed and up-to-date"[27]. There is a commitment to practitioner enquiry in the GTCS Standards, with the aim of making teachers more engaged with research to support their own learning and ultimately enhance pupil experiences.

4.3 Access to primary research

There have been significant financial and logistical barriers that prevented teachers accessing primary research. But in recent years, publishers and teacher membership bodies have worked together to remove prohibitive journal paywalls. Teachers across most of the UK now have ready access to research journals and other research material online. Members of the Chartered College of Teaching can gain access to more than 2,000 educational journals and e-books. Teachers in Scotland gain free online access to journals via obligatory membership of the General Teaching Council for Scotland and their counterparts. Similarly, in Wales, where it is mandatory for teachers to register with the Education Workforce Council, teachers are able to freely access educational research journals and other publications online via the information service provider EBSCO. Members of the General Teaching Council for Northern Ireland (GTCNI) do not presently have access to EBSCO, but the GTCNI is now exploring this option[28]. As technology continues to develop, there is potential for the development of new mechanisms such as online applications which enable teachers to access research directly.

26. Welsh Government. 2017 Education in Wales: Our national mission. See https://gov.wales/docs/dcells/publications/170926-education-in-wales-en.pdf (accessed 29 June 2018).

27. The General Teaching Council for Scotland. What is professional learning? See http://www.gtcs.org.uk/professional-update/what-is-professional-learning.aspx# (accessed 29 June 2018).

28. Gerard Devlin, Senior Education Officer, GTCNI, personal communication, 27 September 2017.

4.4 Research mediators in the ecosystem

The number of sources, and the sheer quantity of educational research published, is enormous, and its usefulness and quality will inevitably vary. Research mediators play a key role in the ecosystem, by monitoring, reviewing and synthesising available evidence for teachers and senior leaders. Mediators include individuals, the UK's teaching bodies, subject associations, research funders, charitable bodies and a number of 'grassroots' initiatives, driven by teachers for teachers (see Box 7).

4.5 The roles of research mediators

Research mediators undertake a range of activities that enable teachers to consider evidence and insights within relevant contexts and in digestible formats. Some mediators provide written digests in journals or email updates. A growing number of actors produce mediated material that is available via the internet, including expert blogs, professional development webinars and discussion forums. The nature of these materials means that the process of mediation may be invisible, with references to the underpinning research source

BOX 7

Examples of grassroots initiatives

MESH (http://www.meshguides.org/) is an online international voluntary network of educators that seeks to promote and develop research-informed classroom practice by translating research into updateable, practical guides known as MESHGuides, which teachers can use to gain new knowledge or adapt their pedagogy.

ResearchED (http://researched.org.uk/), established in 2013, is a teacher-led movement (inspired by a single tweet) that seeks to enhance teachers' research literacy, in particular by bringing together teachers with educational researchers. In a short time, ResearchED has grown into a series of conferences within and outside the UK, including some that have specialist themes.

The Learning and Skills Research Network (https://lsrn.wordpress.com/about/) aims to engage practitioners and policymakers in research and development in further education. It aims to build research capacity, to synthesise evidence and to identify and fill research gaps.

The **Coalition for Evidence-Based Education** (https://www.cebenetwork.org/) was founded in 2009 by a group of like-minded individual policymakers, researchers and practitioners in order to enhance access to and the usage of educational research. CEBE followed more formal initiatives such as the National Educational Research Forum and the Strategic Forum for Research in Education. In contrast, CEBE has provided a more informal forum for encouraging collaboration that through the goodwill of its volunteers has resulted in a number of ongoing initiatives. For example, the Education Media Centre, which is funded by the Bowland Trust, Cambridge Assessment and a number of academic institutions, provides expert comment and advice to journalists. Meanwhile, its Evidence for the Frontline scheme is a brokerage service that enables teachers to obtain evidence-informed expert advice about issues they encounter in their daily practice.

removed. Therefore, these mediators should ensure their written materials are robust and consider how to incorporate best practice in evidence synthesis when producing materials[29]. Research mediators also need to recognise the turnover within the teaching profession and regularly refresh written materials.

Research mediators do more than produce materials. Some grassroots organisations run educational research conferences for teachers, as do commercial companies. Subject-specific teacher conferences may include strands on the latest educational research, or even be co-located within educational research conferences. For instance, the quadrennial British Congress of Mathematics Education (BCME) conference brings together mathematics teachers with researchers and publishers in order to promote mathematics and enhance its teaching.

4.6 Applying research to bring about change

There is, of course, a distinction between how effectively research insights flow through the ecosystem and whether this flow results in improved educational outcomes and life experiences for students. Achieving the latter represents a particular challenge: passive approaches which provide access to evidence are not effective on their own. Changes to teaching practice depend on an interplay between opportunity (for change), motivation (to change) and capability (for change)[30]. Building trust in research is crucial; so too is building capability, by improving teachers' comfort with translating research findings into practice, and their motivation and opportunities for doing so[31].

Recent independent evaluation of one of the largest randomised controlled trials conducted in education has exposed just how challenging it is to achieve large-scale change. Funded by the EEF, the Literacy Octopus project involved more than 13,000 schools testing whether making research-based resources available to teachers had any impact on improving their pupils' English literacy[32]. An evaluation by the NFER concluded that, without exception, these strategies failed to have an impact on pupil attainment or affect teachers' usage of research to inform their practice.

Fundamentally, teachers need time to undertake continuing professional development to apply research and bring about change (see section 4.13).

BOX 8

The Education Endowment Foundation (EEF) toolkit

The widely publicised systematic meta-analyses of research published by the EEF have created a rich teaching and learning 'toolkit' that presents plain summaries of academic research findings on education for 5-to-16-year-olds. These aim to provide comprehensible and reliable guides about which educational strategies work, based on trials the EEF has conducted and other evidence. A survey conducted by the National Foundation for Educational Research (NFER) suggested that in 2016, 60% of secondary school teachers and 45% of primary school teachers in England are using the toolkit. This compares with just 11% of both primary and secondary teachers in 2012.

29. The Royal Society, Academy of Medical Sciences. 2018 Evidence synthesis. See https://royalsociety.org/topics-policy/projects/evidence-synthesis/ (accessed on 29 June 2018).
30. Langer L, Tripney J, Gough D. 2016 The science of using science. Researching the use of research evidence in decision-making. London: UCL Institute of Education EPPI Centre.
31. British Academy–Royal Society round table on 'Creating a research-engaged teaching workforce across the UK'
32. Education Endowment Foundation. The Literacy Octopus: Communicating and Engaging with Research. See https://educationendowmentfoundation.org.uk/projects-and-evaluation/projects/the-literacy-octopus-communicating-and-engaging-with-research/ (accessed 29 June 2018).

4.7 Close to practice research

Teachers and researchers are increasingly collaborating on cutting-edge research projects and engaging in active dialogue on pedagogical issues[33]. Increasing the number of opportunities to involve teachers and schools in research provides greater capacity to test out hypotheses in real-life conditions, as well as ensuring the questions investigated have a direct application to teachers' current practice. They also provide practitioners with opportunities to improve their own knowledge of research and skills in enquiry, and potentially learn new ideas and practices to improve their teaching. Initiatives like the Research Schools Network, the ETC Teaching School Alliance in Hampshire, and the GwE School Effectiveness and Improvement Service in Wales, bring researchers and teachers together to work on questions which have immediate application within practice (see Box 9). At present these networks are limited in their reach, and there is scope for the projects to expand so that all schools are able to participate in such networks.

4.8 The school as research laboratory

When researchers want to work directly in school or college environments, they must overcome various barriers. Researchers must work around the day-to-day practice of teaching, without overburdening teachers or taking them away from their principal role of nurturing their pupils' development. Researchers must be able to clearly identify the benefits to teachers and schools of taking part in a particular piece of research, otherwise any time and resource expended on research is a high risk[34].

BOX 9

Initiatives bringing teachers and researchers together

The Research Schools Network

Established by the Education Endowment Foundation and the Institute for Effective Education at the University of York, the Research Schools Network (http://researchschool.org.uk/) consists of 11 – soon to be 22 – schools across England that will act as local hubs to champion the use of evidence to improve educational practice. These schools' remit includes communicating research findings accessibly, offering training on various aspects of practice based on the evidence of what works for professional development, and offering other schools their support in undertaking research designed to improve pedagogical practices. Being itself experimental, the Research Schools Network will be evaluated over the next 3 years in order to understand how, and the extent to which, research can benefit school improvement.

GwE

GwE is the School Effectiveness and Improvement Service for North Wales, a consortium providing support and challenge to 28% of maintained schools in Wales[35]. Its vision is to create a self-improving educational system through collaborative approaches involving GwE staff, university researchers and schools. For example, a partnership between GwE, Bangor University, local education authorities, the University of Warwick, and the Future Generations Commissioner's Office for Wales has established the Collaborative Institute for Education Research, Evidence and Impact (CIEREI), a bilingual, multi-disciplinary institute which aims to improve children's learning and well-being through new research.

33. See evidence document 6.

34. See https://www.bera.ac.uk/project/close-to-practice-research-project (Accessed 30 September 2018).

35. 33 See evidence document 10.

4.9 Research skills for early career teachers

Knowing where to look for research findings, and having the skills to make judgements on their quality and applicability, are key skills for any experienced teacher. Teachers should develop these skills early in their careers.

Early career teachers should gain understanding of:

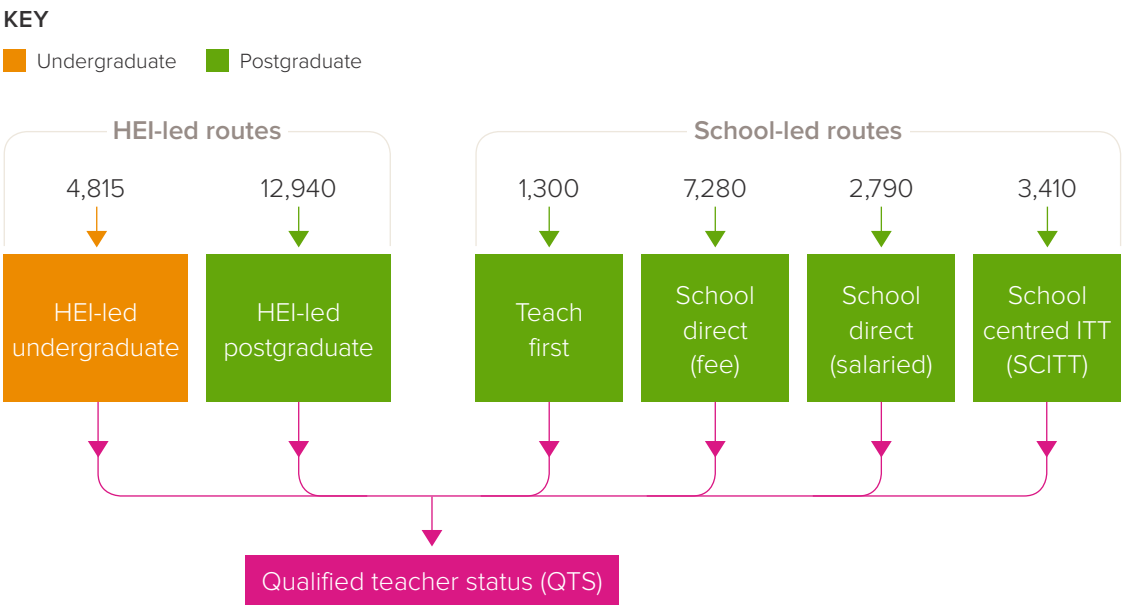
- The nature of research; the different things it may be trying to achieve (including sociological analysis of educational processes, forms and modalities of educational policy and practice, psychological research on student learning and cognitive development, and more instrumental issues of effectiveness); and the strategies used to do this.
- How such research may be relevant to and used to inform teachers' own work through self-reflection of the nature of educational endeavour; carry out enquiry or case studies of one's own work; administrative data; and external research on research practice.

4.10 The role of initial teacher education

HEIs and schools provide teacher education in the UK (see Figure 9). Education courses are generally short (one year) and focus on developing essential general pedagogy and classroom management skills. However, if teachers are to be able to practice as research-informed professionals, their early education also needs to instil an ethos of evidence-informed practice[36]. Where possible, teacher educators should introduce new teachers to pedagogies grounded in a firm evidence base.

FIGURE 9

Initial Teacher Training routes in England.



Source of data: SFR 68/2017 (numbers relate to entrants on ITT courses in 2017–18). Data are provisional.

36. (i) Carter A. 2015 Carter review of initial teacher training (ITT). London: Department for Education. (ii) The Royal Society. 2014 Vision for science and mathematics education. London: Royal Society. (iii) Advisory Committee on Mathematics Education. 2016 Professional learning for all teachers of mathematics: Principles for teachers, senior leaders and those who commission and provide professional learning. London: ACME.

4.11 The role of school-based trainers and mentors

Teachers on all training routes need support to find sources of evidence, and develop the skills needed to make judgements on the validity and reliability of the research. The presence of well-equipped school leaders and trained mentors is vital. For example, BERA has expressed concerns that school-centred providers are ill equipped to make their courses research-informed[37].

4.12 Research skills in further education

Gaining research skills is particularly difficult for teachers within the diverse further education (FE) and skills sector. The dual professionalism of many teachers (who identify first with the vocational specialism they originally trained in) means that they are frequently unengaged with educational research, and encouragement may be lacking as many senior staff within the sector lack research experience[38].

4.13 Continuing professional development

The knowledge that a teacher acquires at the beginning of their career – knowledge about how students learn, and about their subject – will grow and change over time. Keeping up to date with this evolving evidence base is essential, so the organisations that provide teacher professional development play a key role in the education ecosystem. Providers such as learned societies, subject associations, HEIs and bespoke training companies have a responsibility to ensure that they offer research-informed training. The ETC Teaching School Alliance, CamSTAR Network and the nascent Research Schools network, all of which have a similar model of expert-led partnership, point the way ahead.

4.14 Culture and leadership

For both schools and colleges, the ethos set by senior staff makes a significant difference to the willingness of teachers to invest time in accessing and using evidence and insights[39]. A recent report from the DfE concluded that "school leaders' support for engagement with research is the most important driver of evidence-informed practice"[40]. The National College for Teaching and Leadership provides head teachers with synthesised evidence on school improvement and effectiveness in its training modules[41]. However, teachers repeatedly indicate that their working conditions do not enable them to spend time reading research or determining how to use it to adapt their practice[42].

37. Research and the teaching profession. See https://www.bera.ac.uk/wp-content/uploads/2013/12/BERA-RSA-Research-Teaching-Profession-FULL-REPORT-for-web.pdf?noredirect=1 (accessed 3 September 2018)
38. British Academy–Royal Society round table on 'Challenges to the further education and skills sector in becoming more research engaged'.
39. (i) House of Commons Education Committee. 2017 Recruitment and retention of teachers. Fifth report of session 2016–17. HC 199. (ii) OECD. 2016 School leadership for learning: insights from TALIS 2013. See http://www.keepeek.com/Digital-Asset-Management/oecd/education/school-leadership-for-learning_9789264258341-en#.Wc5eT3kUmUk#page3 (accessed 29 June 2018).
40. Coldwell M, Greany T, Higgins S, Brown C, Maxwell B, Stiell B, Stoll L, Willis B, Burns H. 2017 Evidence-informed teaching: an evaluation of progress in England. Research report. London: Department for Education. See https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/625007/Evidence-informed_teaching_-_an_evaluation_of_progress_in_England.pdf (accessed 29 June 2018).
41. National College for Teaching & Leadership. Research into school improvement and school effectiveness. See https://www.nationalcollege.org.uk/transfer/open/dsbm-phase-4-module-1-understanding-school-improvement/dsbm-p4m1-s3/dsbm-p4m1-s3-t2.html (accessed 27 July 2018).
42. See evidence document 2.

Factors not considered in this report – such as repeated curriculum changes, demanding systems of accountability and shortages of experienced teachers – all contribute to making working conditions challenging. When these factors combine, time for teachers' own self-improvement is often lost. In colleges, other factors such as term-time-only contracts also restrict teachers' time to focus on research findings. Senior leaders should have the resources to free-up time for teachers to engage with, or participate in, research and other professional development activities. This will be critical to the development of a recognisably research-engaged culture within teaching.

RECOMMENDATION 6

Support the use of research to inform teaching

Teachers need more support to use evidence and insights from research to develop their practice and understanding. This could be addressed by:

- The Department for Education and its devolved equivalents making clear their expectation that teachers should be informed by and engaged in research. They can achieve this by recognising the importance of research-informed practice within the professional standards for teachers, the requirements for initial teacher education, the induction period and in the professional development framework.
- The Chartered College of Teaching in England, the General Teaching Councils of Northern Ireland and Scotland and the Education Workforce Council in Wales using research about effective knowledge mobilization practice to identify examples where teachers have used evidence to change practice and working to embed such practice more widely.
- The Department for Education and its devolved equivalents building on initiatives like the Research Schools Network, ensuring that all schools and colleges are closely connected to research hub institutions.
- Ofsted, and the equivalent inspectorates in the devolved administrations, ensuring that frameworks are in place that encourage school and college leadership to develop a culture of critical evaluation and research-informed practice.

Chapter five
Translating research into policy

Translating research into policy

5.1 The roles of evidence in informing policymaking

Policy is stronger, more strategic and most likely to achieve its intended aims when policymakers use relevant and reliable evidence to inform policy development and implementation[43]. Research also provides an evidence base on which policymakers can base their decisions, ensuring that policies stand the tests of public scrutiny. Evidence may include research, statistics and data analysis, while expert knowledge, advice and pilot testing may provide further insights.

Policymaking begins with the identification and selection of problems that policies are intended to address. This is a political process, involving political contestation and tension between competing interests and agendas, which may ignore or marginalise some issues. Evidence from research contributes by identifying some issues as pressing problems for society, as well as informing policy solutions.

Research can also help policymakers to develop policy that can be implemented more effectively, delivering value for money to the taxpayer and maximising impact (see Box 10). It also reduces the risk of policy failure resulting from lack of understanding of the possible consequences of a decision.

This chapter identifies a range of cultural and practical barriers to the use of research in education policy-making and suggests potential solutions.

BOX 10

Research and policymaking in Finland

Research has been, and continues to be, an essential part of education policymaking in Finland[44]. For example, the Finnish government benefitted from an effective research strategy during the development of a new work-based learning strategy. In its attempt to find the most effective forms of work placement for students, the government supported a number of evaluative studies, including a major pilot scheme involving 60 providers, nearly 3,000 students, 2,000 teachers and 1,000 businesses. This research has significantly contributed to the development and success of vocational education and training in Finland since the 1990s.

5.2 Cultural differences

Researchers and policymakers perceive themselves as acting in the best interests of education. They make decisions about research and policy with the aim of making a contribution to the general improvement of education. Despite these shared goals, policymakers and researchers have both accused each other of being too ideologically driven. In reality, policymakers, researchers and teachers are all influenced by underlying personal beliefs about what education ought to be about and how it fits into a wider worldview[45]. It would be naïve to suggest that the relationship between research and policy is either straightforwardly pragmatic or unaffected by party political preferences and prejudices.

43. Simons A, & Voβ J, 2017 Policy instrument constituencies. Handbook of Policy Formulation ed. Howlett M, *et al*. Handbooks of Research on Public Policy.

44. See evidence document 9.

45. Bridges D, Watts M. 2008 Educational Research and Policy: Epistemological Considerations. Journal of Philosophy of Education 42(s1): 41-62.

5.3 The policymaker's perspective

Research and evidence will never be the sole basis for making policy. Policymakers consider legal, political and social positions. They make policy within the context of existing structures, legal processes and conventions, and may sometimes fail to fully take into account the interests, views and likely reactions of various stakeholders. When confronted with policy failures, particularly those that generate public attention, policymakers seek swift changes to remedy the problem. In those situations, some evidence and insight is better than no specific evidence at all. However, policymakers appreciate that the there is a continuum: some insights may be formative while other evidence may be more robust.

Often, policymakers are willing to seek input from external experts, but finding people who want to engage can be hard[46]. Policymakers have to use their skill and judgement to take all these factors into account. Politicians, their advisers, and civil servants may well have strong academic backgrounds; they may understand research methods; and they may have connections with researchers. They are supported by teams of researchers and analysts based within government departments. In most cases, however, their knowledge and experience of research in the specific field in which they are working will be limited. Ultimately, policymakers need direct or mediated access to research, and changing or improving flows within the ecosystem, particularly of people or information, may be able to help achieve this.

5.4 The researcher's perspective

Navigating the corridors of government is not straightforward, especially for someone from outside the policy profession. It is difficult for them to work out which officials, in which department or governmental body, might be interested in their area of research. Moreover, the high levels of mobility within the civil service and the temporary tenure of politicians means that it can be challenging to build long-term relationships.

Once a researcher has found the right contact, the principles that guide academic endeavour can make it hard to provide the level of clarity that policymakers appear to be seeking. This is partly because research can be a perpetual process of critical assessment and refinement rather than attempting to provide a definitive answer[47]. In addition, many of the questions that concern policymakers aren't tractable research problems. Researchers and policymakers may need to spend time together breaking down big issues into smaller, tractable questions.

Researchers can also find it challenging when the nature of politics and policymaking leads to the use of evidence for confirmation of pre-existing beliefs and aims rather than stress testing them[48]. In other cases, researchers can find policymakers treat their evidence with scepticism when confronted with evidence that challenges the merits of a policy. This is sometimes for political reasons, but also because the critiques offer little in the way of alternatives or solutions for policymakers to adopt.

As well as the cultural barriers between these communities, there are several other practical challenges that impact on the flow of evidence between researchers and policymakers.

46. Rutter J (Institute for Government). Evidence and Evaluation in Policy Making: A problem of supply or demand? See https://www.instituteforgovernment.org.uk/sites/default/files/publications/evidence%20and%20evaluation%20in%20template_final_0.pdf (accessed 29 June 2018).
47. Linguard B. 2013 The impact of research on education policy in an era of evidence-based policy. Critical Studies in Education 54(2), 113-131.
48. Head BW. 2015 Policy analysis: evidence based policy-making, 281-287. In Wright JD (ed.) International Encyclopedia of the Social and Behavioral Sciences. Amsterdam, The Netherlands: Elsevier.

5.5 Timing

It can be difficult to match up the short-term nature of policymaking (and political cycles that require fast decisions) with the longer-term nature of some research, where it may take years to get reliable and meaningful evidence, such as in the evaluation of experimental practices being tested in schools. Policymakers can try to overcome this challenge by piloting policy interventions in order to fully evaluate their effectiveness. This takes time and resources and the nature of the education ecosystem makes it difficult to achieve reliability and reproducibility because there is so much variation in context. A senior civil servant attending an Institute for Government workshop articulated this challenge from a policymaker's perspective: "We spent billions on research... we got really high quality papers but it was always felt they were answering yesterday's question tomorrow"[49]. Policymakers have a responsibility to use the best evidence and insights available at the time, while researchers need to be prepared to offer their best insights based on whatever evidence available when a policy question is raised.

5.6 Methods

The methods used in educational research are changing, partly driven by funding priorities. While much educational research is qualitative and small-scale in nature, there is now greater demand from policymakers for quantitative and larger-scale research. Policymakers may not always know which methods are most appropriate and can believe that large-scale studies automatically have greater relevance, scope and repeatability[50]. However, many educational issues cannot be sensibly addressed by quantitative methods alone, and it is important that the right method is chosen to address the research question.

5.7 Creative collisions: improving collaboration

One way to break down the practical and cultural barriers between policymakers and the research community is to increase their opportunities for interaction (see Box 11). This can be achieved through interventions that help these actors to develop relationships over a longer period. Opportunities for researchers to undertake placements or secondments within government departments already exist, but these are inevitably limited in number and created to focus on specific policy challenges. So-called 'creative collisions' – innovative and largely spontaneous interactions between professionals working at the interface between different fields – can improve connections more widely. Greater interaction allows parties to understand the scope and the limitations of what evidence is available and achievable as well as deconstructing the cultural norms that act as barriers to cooperation. Loosely facilitating creative collisions within conferences and workshops, as well as digitally through blogs and online hubs, helps professionals from different communities to share ideas, bridge divides, and build stronger and wider connections[51].

49. Rutter J (Institute for Government). Evidence and Evaluation in Policy Making: A problem of supply or demand? See https://www.instituteforgovernment.org.uk/sites/default/files/publications/evidence%20and%20evaluation%20in%20template_final_0.pdf (accessed 29 June 2018).

50. Levin B. 2004 Making research matter more. Education Policy Analysis Archives 12(56).

51. Walter I, Nutley S and Davies H. 2003a Developing a taxonomy of interventions used to increase the impact of research. Research Unit For Research Utilisation (RURU), University of St Andrews.

BOX 11

A close relationship

In Canada, the province of Ontario has become widely recognised for its high-performing education system. Its performance can, in part, be attributed to the Ontario Ministry of Education's commitment to research-informed education policies[52]. The ministry set out a clear Research and Evaluation Strategy that not only aims to ensure the delivery of policy which is research-informed, but also works internally to help departmental staff to "access, understand, commission and apply research and evaluation to inform policy and program decisions".

The ministry set up the Ontario Education Research Panel to work with "educators, researchers and other key partners… connecting research to policy, programs and practice". Several other external networks were set up to create direct links between policymakers and researchers. While it may be too early to fully evaluate the impact of these collaborations on educational outcomes, it is clear that there has been an increase in interaction between researchers, policymakers and practitioners within the overarching context of a continually improving and high-performing provincial education system.

5.8 Open access

For policymakers, tight timeframes and finite budgets mean that they often make a trade-off between using the most valuable, reliable research, and simply settling for the most accessible research. Advances in digital technologies, and the move towards a more open-access research culture, are helping to avoid this trade-off. But challenges remain: some educational research journals are published in countries that do not yet have such widespread open-access policies, for example, and it is not widely understood that policymakers do not have access to the resources of academic libraries. Some studies have also shown that while policymakers consider academic research a useful resource, it is valued less than internal information sources from colleagues or from other departments[53]. Internal information is also much easier to access, which further limits the likelihood that policymakers will seek out other sources.

5.9 Policy relevance

It is not surprising that in a busy policy environment with competing pressures, policymakers are not always aware of research that is most relevant to their policy agenda. Selecting the most relevant research requires research outputs to be attributable to policy aims and intended outcomes. Consequently, research needs to express its impact in policy terms, which can often require a clear and quantifiable understanding of costs and benefits. This ultimately depends on the interest and willingness of policymakers to engage with research, supported by the ease with which they are able to access it. Analysts and researchers within government play a key role in identifying, synthesising and signposting relevant research.

52. See evidence document 7.

53. (i) Cherney *et al*. 2015 Use of academic social research by public officials: exploring preferences and constraints that impact on research use. Evidence & Policy: A Journal of Research, Debate and Practice 11(2); (ii) Jennings & Hall. 2012 Evidence-Based Practice and the Use of Information in State Agency Decision-Making. Journal of Public Administration Research and Theory 22(1).

5.10 Inherent selection biases

Policymakers often use 'snowballing' to find research results. This involves relying on a small number of contacts initially to speak to their own limited networks; each member of these networks then involves their own contacts, with each participant funnelling the required information back along the chain to the policymaker. This can be an efficient approach to gathering information, but it may lead to a relatively small and partial research base. In a similar way, policymakers may place greater emphasis on research evidence from thinktanks and interest groups that have an 'insider status' with government, perhaps because these organisations more frequently cross the government's radar. Research from thinktanks and other non-governmental organisations is often of high quality. However, unless these organisations use a rigorous independent peer-review process, their reports may distort the evidence, because such organisations frequently have their own long-term policy agendas.

RECOMMENDATION 7

Facilitating the needs of policymakers

Practical and cultural barriers, along with political and ideological resistance, inhibit flows of information and ideas between researchers and policymakers. To enable policy professionals to meet the Civil Service standards for analysis and use of evidence, these barriers could be reduced by building on existing schemes, including:

- Government, UKRI and other bodies increasing the scale and improving the sustainability of placements for researchers within government departments.
- Governments seconding policymakers into research teams.
- Governments, UKRI, universities and other research organisations creating opportunities for researchers to make connections with policymakers and learn how to navigate government and its agencies, for example through research seminars or work shadowing.
- The national academies of the UK and other facilitating bodies convening high-level forums to explore solutions to policy challenges.

5.11 Assessing evidence

Policymakers need to assess research for its validity, applicability, significance and reliability (see Box 12). To an untrained eye, it can be easy to mistake a popular, well-written piece of pseudo-science as a groundbreaking piece of research, and overlook the significant findings of another study that is buried in an academic journal. Moreover, the implications of research findings about education can be complicated. Many factors affect performance, and the findings of one or even several pieces of well-conducted research are contestable and contingent on particular contexts that may not exist across the whole ecosystem.

BOX 12

A policymaker's primer

In the United States, the Education Commission of the States (ECS) teamed up with education consultants McREL to produce 'A policymaker's primer on education research', with the aim of helping policymakers understand, evaluate and use research[54]. Now widely cited, it has helped policymakers to evaluate the usefulness of research, providing guidance on how to distinguish empirically rigorous and valid studies from those which are unreliable or irrelevant. It also provided information about where to access research, although this is an area that would require frequent updating as sources change.

5.12 The role of evidence synthesis

Evidence syntheses for policymakers are few and far between, and there are limited drivers in the research environment for researchers to produce such syntheses. Evidence synthesis refers to the process of bringing together information and knowledge from a range of sources and disciplines to inform debates and decisions on specific issues, using techniques designed to minimise bias. Policymakers carry out evidence synthesis as part of their day to day activities, and gain training in the skills needed through resources and courses. Alternatively, they need the wherewithal to commission syntheses internally or externally.

Evidence syntheses should provide unbiased information in a format that is better suited to policymakers' needs. However, the research capacity in the ecosystem needs to be large enough, skilled enough and flexible enough to undertake these syntheses in the timeframes needed for policy. One way in which capacity could be created is by giving researchers recognition for the expertise needed to produce high-quality syntheses, for example through measures such as the impact dimension of the REF.

54. Lauer PA (McREL). 2004 A policymaker's primer on education research: How to understand, evaluate and use it. See https://files.eric.ed.gov/fulltext/ED518626.pdf (accessed 29 June 2018).

5.13 Improving the availability of evidence synthesis

Researchers require training on evidence synthesis to promote timely and effective knowledge exchange. The Royal Society, together with the Academy of Medical Sciences, has explored existing models of evidence synthesis and developed a set of principles stating that it should be inclusive, rigorous, transparent and accessible[55]. If research is communicated to policymakers in a synthesised way, by a trusted body that has already undertaken the painstaking exercise of trawling through numerous studies with differing and often contradictory findings, it can be used most effectively.

Evidence syntheses have been a key part of the work of the Evidence for Policy and Practice Information and Coordinating Centre at the UCL Institute of Education, which specialises in providing systematic reviews with clear methodologies and explanations of how the evidence can inform policy and practice. The EEF also provide similar analyses of studies which aim to raise attainment, but there is scope for more activity in this area.

RECOMMENDATION 8

Support the production and use of evidence synthesis

Evidence synthesis can provide valuable insights to researchers, teachers and policymakers but is currently underused. Increased production and use of evidence synthesis could be achieved by:

- Through the Office for Educational Research, governments and teachers working with the research community to identify research areas requiring synthesis.
- Governments and their agencies, researchers and teachers adopting common approaches to evidence synthesis which focus on ensuring the findings have practical application in policy and practice.
- Publishers and educational research bodies, such as the College of Teaching and BERA, providing guidance to authors on evidence-synthesis methods.
- Research England ensuring evidence synthesis is valued in research accountability frameworks such as the REF.

55. The Royal Society. Evidence synthesis. See https://royalsociety.org/topics-policy/projects/evidence-synthesis/ (accessed 15 July 2018).

Chapter six
The way forward

The way forward

Research already flows through the education ecosystem in many ways. In this report we have identified places where flows are weak or do not currently exist. Strengthening these areas to achieve a fully effective ecosystem requires action from different actors.

Governments and their agencies across the 4 nations should instigate a process to develop a new organisational structure for educational research. Its goal should be to improve collaboration on research within the ecosystem (Recommendation 1), and to ensure that there is an appropriate distribution of educational research capacity across the UK (Recommendation 2). In order to respond to the big strategic questions in educational research, they need to invest in interdisciplinary, cross-departmental and cross-institutional collaboration (Recommendation 3). Initiatives like the Research Schools Network should be expanded, to ensure that all schools and colleges are closely connected to research hub institutions (Recommendation 6). Moreover, governments and their agencies must recognise the importance of research-informed practice within the professional standards for teachers, the requirements for initial teacher education and their induction period, and in teachers' professional-development framework (Recommendation 6).

Governments could increase the scale and improve the sustainability of placements for researchers within government departments, and enable the secondment of policymakers into research teams, creating opportunities for researchers to make connections with policymakers and learn how to navigate government and its agencies (Recommendation 7). It is also important for governments to work with the research community to identify research areas requiring synthesis, and to adopt common approaches to evidence synthesis that ensure findings have practical applications in policy and teaching practice (Recommendation 8).

UKRI and its constituent bodies should include in the strategic priorities fund a strand or challenge on interdisciplinary educational research (Recommendation 3). They should ensure that the training of postgraduate research students in educational research accounts for their distinctive routes into research, and that their courses include training in social science methods (Recommendation 4). They can also help to foster better links between research students and policy and teaching communities (Recommendation 4).

UKRI (along with Research England and the equivalent bodies in the devolved nations) must ensure that QR funding remains a strong part of the funding portfolio for HEIs (Recommendation 5). To help researchers better understand the needs of policymakers, the UKRI and its constituent bodies could increase the number and quality of placements for researchers within government departments (Recommendation 7). UKRI can also create opportunities for researchers to make connections with policymakers, so that researchers learn how to navigate government and its agencies (Recommendation 7). Finally, UKRI must ensure that evidence synthesis is valued in research accountability frameworks such as the REF (Recommendation 8).

Meanwhile, **universities and other HEIs** also have a key role to play in broadening and scaling up the training of research students in educational research, while forging better links between research students and policy and teaching communities (Recommendation 4). They can make sure that QR funding is allocated to educational research (Recommendation 5), and assist their researchers in making connections with policymakers (Recommendation 7).

Education organisations such as learned societies, regulators, and professional bodies should identify examples where teachers have used evidence to change practice, and work to embed such practice more widely (Recommendation 6). They can also work with the research community to identify research areas requiring synthesis, adopt common approaches to evidence synthesis to ensure the findings have practical application in policy and teaching practice, and provide guidance to authors on evidence synthesis methods (Recommendation 8).

When the actors in the education ecosystem invest in these actions, building on the good practice that already exists, teachers, policymakers and researchers will be able to harness research evidence and insights more effectively. Some of these actions can be undertaken quickly and relatively easily, and should be implemented immediately. Other actions will take more time, requiring a long-term investment of effort and money. This strategic approach is essential to delivering the ultimate prize: a vibrant and thriving education system that prepares young people for the challenges of the future.

Appendix
About this project

About this project

Appendix 1: Terms of reference

- Analyse evidence on the structure, status and funding of educational research in the sciences, social sciences, arts and humanities.
- Provide advice on ways in which educational research in the UK can be strengthened in order to ensure that education policy and practice become better informed by evidence.

Appendix 2: Scope

Education takes place in many different contexts: nurseries, the home, primary and secondary schools, sixth-form and further education colleges, universities, the workplace, training providers, and adult or continuing education centres. It may be formal or informal, compulsory or voluntary, undertaken for a specific purpose or simply for the love of learning. This report deliberately focuses on formal education in schools and colleges up to the age of 18, because every individual passes through this part of the education system in one way or another.

Appendix 3: Acknowledgements

Working group	
Professor Sir Alan Wilson FBA FRS	The Alan Turing Institute (chair)
Professor Stephen Ball FBA	Distinguished Service Professor of Sociology of Education at UCL Institute of Education
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Appendix 4: Evidence

This report is underpinned by a portfolio of evidence, all of which is available in full on both the British Academy website and Royal Society websites. This includes:

1. **A call for evidence** opened between August and October 2016. We received 47 responses from individual researchers, directors of research centres, learned societies, institutes of education, headteachers, funders and government agencies from across the humanities, social, physical and natural sciences.

2. **A synthesis and analysis of existing evidence on educational research capacity and impact in the UK**. This included:

   - An analysis of HESA and REF data, career trajectory data and doctoral thesis data to analyse current educational research capacity within UK universities.
   - An analysis of a sample of 2014 Education REF environment templates, impact statements and impact case studies to understand how and when educational research has impact, and how these impacts are reported.
   - A desk-based review, supplemented with expert interviews, of the types of educational research and analysis conducted in non-university research organisations.

3. A set of **local, regional, national and international case studies** that show where educational research is being or has been successfully applied to influence policy and practice; how the relationships between parts of the education system have led to the effective application of educational research to policy or practice; and how this could be replicated. Examples include Scotland, Japan, Finland, Australia and Hampshire.

4. **A thought piece on the history of UK initiatives** that sought to improve the linkages between research, policy and practice.

5. **A series of 9 focus groups** with key stakeholders from research, policy and practice. These were held across the UK (Coventry, Manchester, two in London, York, Sheffield, Cardiff, Glasgow and Edinburgh) with a total of 58 participants. Discussions focussed on the strategic foci of UK-focused educational research over the next 20 years.

6. **A series of roundtables** with: (i) teachers, teaching organisations and representatives from research mediators; (ii) heads of departments of education in UK universities; (iii) representatives from the further education sector and further education colleges.

Appendix 5: List of evidence documents

Working group	
Ev. 1	Call for views
Ev. 2	History of national initiatives with personal reflections (Dr Andrew Morris, UCL)
Ev. 3	'The capacity and impact of education research in the UK'. Report to the Royal Society and British Academy joint enquiry on educational research (Professor Alis Oancea, Professor David Mills and Dr James Robson)
Ev. 4	Case study on the contribution of EU funding to UK educational research (Technopolis)
Ev. 5	Case study on the 'New Basics' Project in Queensland (Professor Catherine Doherty)
Ev. 6	Case study on the ETC Teaching School Alliance, Hampshire (Professor Chris Brown)
Ev. 7	Case study on Ontario, Canada (Professor Chris Brown)
Ev. 8	Case study on 'The challenges of education research in Japan in a changing global landscape: an investigation focusing on access to higher education' (Professor Akiyoshi Yonezawa)
Ev. 9	Case study on 'Research rich reform: the introduction of vocational course work placements in Finland' (Association of Colleges)
Ev. 10	Case study on 'Developing regional research capacity and impact in North Wales' (Emily J Tyler, Richard C Watkins, Sarah E Roberts, Marguerite Hoerger, Richard P Hastings and J Carl Hughes – Bangor University, GwE, and University of Warwick)
Ev. 11	Case study on data science (including machine learning) and education (Peter Donaldson, University of Glasgow)
Ev. 12	Round table discussion with university heads of education departments
Ev. 13	Round table discussion on creating a research engaged teaching workforce
Ev. 14	Round table discussion on challenges to the further education and skills sector in becoming more research-engaged
Ev. 15	The future of education research: focus group sessions (report by The Research Base)

Appendix 6: List of abbreviations used in this report

AHRC – Arts and Humanities Research Council

AQA – Assessment and Qualifications Alliance

ARI – Areas of Research Interest

ASE – Association for Science Education

BCME – British Congress of Mathematics Education

BEIS – Department for Business, Energy and Industrial Strategy

BERA – British Education Research Association

CCT – Chartered College of Teaching

CEBE – Coalition for Evidence-Based Education

CIEREI – Collaborative Institute for Education Research, Evidence and Impact

DfE – Department for Education

DWP – Department for Work and Pensions

ECS – Education Commission of the States

EEF – Education Endowment Foundation

EPI – Education Policy Institute

ESRC – Economic and Social Research Council

FE – further education

GTCS – General Teaching Council for Scotland

HEFCE – Higher Education Funding Council for England

HEIs – higher education institutions

HESA – Higher Education Statistics Agency

IB – International Baccalaureate

IoE – UCL Institute of Education

IoP – Institute of Physics

KEF – Knowledge Exchange Framework

LOtC – Learning Outside the Classroom

NFER – National Foundation for Educational Research

OECD – Organisation for Economic Cooperation and Development

Ofqual – Office of Qualifications and Examinations Regulation

Ofsted – Office for Standards in Education

QR – quality related funding

REF – Research Excellence Framework

SQA – Scottish Qualifications Authority

STEM – science, technology, engineering and mathematics

TLRP – Teaching and Learning Research Programme

UKRI – UK Research and Innovation

The Royal Society
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- Demonstrating the importance of science to everyone

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