Royal Society

Piece on research system initiatives

Introduction

Connecting science with the delivery of public services is no easy task, nor is it a new challenge. This paper aims to inform future efforts to link the two in the field of education. It offers an account of some previous initiatives, interspersed with personal reflections on what might be learned from them. The account covers some of the practical actions taken rather than the full epistemological debate that accompanied them. A full scholarly account awaits the interest of a historian. Its purpose is to illuminate issues current in todays' initiatives on the research system with a view to avoiding previous errors and highlighting productive ways forward.

Early context

The complex relationship between scientific evidence and societal context has played a significant role in the history of science, as Galileo found when evidence from his observations fell foul of the orthodoxy of the Roman church. The idea that the state should play a part in funding scientific research was boosted in the United Kingdom by the establishment of the Royal Observatory in Greenwich in 1675. For the purposes of this paper, more useful starting point is the Haldane report of 1918 which suggested that research required by government departments could be separated into that required by specific departments and that which was more general. It recommended that government departments should oversee the specific research but the general research should be under the control of autonomous Research Councils, which would be free from political and administrative pressures that might discourage research in certain areas. Even then the issue caused controversy when the distinguished crystallographer J.D. Bernal argued that social good was more important than researchers' freedom in deciding the direction of research. Later, Lord Zuckerman, chief scientific adviser to the Government, criticised the artificial separation of basic and applied science, and the consequent elevation of the status of the former.

Today the dual system of research funding for universities involving both the Research Councils and the Higher Education Funding Councils is still with us, but other funding, from government departments, public agencies, the European Union, charitable foundations and a variety of other bodies enable research also to be carried out, though to a lesser degree, in research institutes, companies, agencies, schools and colleges. The overall picture of what may be called a 'research ecosystem' is complex and fragmented. The many players act, largely, independently of one another. The relation between the demand for research knowledge and its supply is not straightforward. As a 1995 OECD report[i] succinctly put it "the markets for educational services and knowledge production are imperfect".

The 1990s

During the eighties and nineties awareness of educational research and its value for teachers, leaders and policy makers, was strengthened as important research outputs began to penetrate farther than usual. The Inner London Education Authority, with its energetic Research and Statistics branch began to inform local policy and practice. Studies of leadership and school effectiveness

proved influential. Research on assessment by Paul Black and Dylan Wiliam, disseminated via a user-friendly report *Inside the Black Box*[ii], led to the spread of the influential formative assessment concept**.**

At the same time a number of schools and colleges were themselves beginning to engage in research and development projects, albeit on a very small scale. A scheme, jointly funded by the Education Department (2003-2006) – the Best Practice Research Scholarships[iii] – supported teacher led research. Arms-length bodies, such as the Teacher Training Agency (1994) and Further Education Development Agency (1994) were also springing up, many of which commissioned or conducted research. Capacity in the university sector also grew, not only by the incorporation of the former polytechnics but also of the former Colleges of Education (or Teacher Training Colleges).

In Further Education the rapid pace of curriculum innovation to cater for new groups of learner – unemployed youth, recent immigrants, mature women – led to new forms of development-led research. In schools' policy the rise of central intervention, typified by the introduction of the national curriculum (1988), Ofsted (1992) and new measures of performance, led to increasing consciousness of the importance of evaluative studies to accompany intervention. Statisticians and economists in the analytical services of the education department played a key role in this.

Innovation, intervention, policy changes and performance measures also made research an increasing priority at local authority level. The research institute they had founded collectively in 1946, the National Foundation for Educational Research, became increasingly important.

The possibility of research outputs adapted for use by teachers and policymakers, threw the traditional forms of academic research into the spotlight. A particular issue was the paucity of research on the central issue for any education system – teaching and learning. A landmark speech in 1996 by David Hargreaves[iv], formerly Chief Inspector of the ILEA, but at the time a professor at the University of Cambridge, outlined his vision of a research-led profession and suggested reforms to the way the research agenda is set and managed and research is funded. The speech was widely circulated, providing encouragement to many immersed in the world of practice and provoking critical responses from some parts of academia[v]. It is widely quoted in the UK and internationally as a turning point. The speech declared that "teaching is not at present a research based profession… if [it] were it would be more effective and more satisfying……a radical change [is needed] in both in the kind of research that is done and the way in which it is organised". It proposed a National Educational Research Forum to "create a national strategy for educational research, including the formulation of .. priorities and .. a mechanism for coordinating the work of the various funding agencies" It should "establish a continuing dialogue between all the stakeholders and to shape the agenda for educational research and its policy implications and applications"

These proposals were criticised by some academics. As an example, Hamersley[vi] in 1997 points to the "distinctive problems associated with studying social phenomena" and the "too direct and instrumental a form" suggested for the relationship between research and practice. In a later paper to the British Education Research Association in 2001[vii] the same author pointed to the danger of privileging research evidence over evidence from other sources, especially professional experience and the difficulties in interpreting the implications of the generalisations that emerge from research when dealing with particular situations.

The Education Department in England responded to the speech by commissioning a report on the research-policy-practice system: *Excellence in research on schools*[viii], dubbed the "Hillage Report" after its principal investigator. This produced a large number of observations and several recommendations. On priorities it noted a divergence of views between researchers and

practitioners and policy-makers. On the research process it described a fragmented system with divergent view about commissioning, funding, involvement of teachers, quality and the influence of the RAE research assessment exercise (now the REF). On dissemination it found a lack of encouragement for dissemination to practitioner and policy-making audiences and shortage of time and support to help policy-makers and practitioners access research. It concluded that the actions and decisions of policy-makers and practitioners are insufficiently informed by research and that policy- or practice-relevant research tends to be small scale, failing to generate reliable and generalizable findings. It noted that research tends to be largely inaccessible to a non-academic audience and lacks interpretation for a policy-making or practitioner audience.

Two of its recommendations were acted upon: the establishment of a *National Education Research Forum* to develop an overall research strategy and framework, and co-ordinate and monitor developments and the creation of a *Funders' Forum* to enable consultation on research agendas, quality control processes and dissemination strategies. Many other recommendations were not taken up, including: policy fora, collaborative funding of systematic reviews and quality assurance centres for education research.

In the following section the work of NERF, the Funders' Forum and subsequent system-wide initiatives is outlined.

System-wide Initiatives

The National Education Research Forum (1999 – 2006)

Set up by the Secretary of State David Blunkett in 1999, the aim of the National Education Research Forum was to "strengthen both fundamental and applied research… guide and coordinate its support and conduct, and promote its application"[ix]. The chair, Sir Michael Peckham, had a background in research for healthcare, as the first director of the NHS R&D programme. Members were selected from schools, colleges, universities, professional associations and intermediary bodies. It began its work with a public consultation exercise which invited responses from practice and policy organisations as well as research producers, on issues including: research synthesis, quality criteria, horizon-scanning, priority-setting and impact modelling. There was a degree of academic criticism of the process, in which one paper described its vision of educational research as "simply a set of technical-rational procedures un-beset by uncertainty and unmarked by any kind of epistemological reflexivity"[x]. Following the consultation, a report on shaping and implementing a strategy was published[xi]. It proposed a Foresight ('futures') exercise, a standing group on priorities, a funders' forum, a review of training opportunities, a serious debate about quality and support for improving access to the knowledge base. Five subgroups were set up which produced brief reports on funding, priorities, quality, impact and capacity-building. Further work led to a detailed paper and discussions on capacity-building[xii], which assessed the existing situation and recommended: developing expertise amongst professional researchers; creating organisational infrastructure to maximise capacity and enhancing practitioner and policy-maker capacity for producing and using research.

However, the Forum found it difficult to work towards providing a coherent strategy or framework as it was tasked to do. There is no evaluation to show why this was so, but my observation, as the incoming director at the halfway stage, was that the very differences of view between the various communities indicated by the Hillage report were holding back progress within the Forum. The wish to debate the premises and constructs underpinning the initiative and the wish to make rapid improvements on the ground were in conflict. During this first phase the Funders' Forum was set up

but little progress was made on the strategic objectives and no further publications were produced or working groups set up. Because of the stasis induced by this internal disagreement, frustration about lack of progress became apparent.

While the first phase of NERF was happening, the Department for Education in England joined a number of other OECD countries in 2000 by commissioning an independent study of its research system. The OECD report 'Examination of Education R&D in England'[xiii] recommended that research capacity be increased and this should be linked to 'to system-wide continuous improvement'. A 'portfolio of use-inspired research' should be developed, in 'Pasteur's quadrant' – meaning, in effect, research that seeks both fundamental understanding of scientific problems, and is useful for society. The report recommended that NERF continue but be strengthened.

In 2002 a new approach was adopted which brought the parties together, not only in a debating forum but also in practical, collaborative projects. Interest groups were established in which stakeholder organisations were invited to participate. They proved only too willing and activities took place, mainly inspired by the topics highlighted in the Hillage report and outlined in NERF's first five booklets. These are outlined below.

a. *Capacity building* workshops took forward ideas in the Dyson and Desforges paper with key organisations including the research council, funding council, and major research institutes and teacher organisations.

b. *Quality discussions* took place with a team at the University of Oxford (Alis Oancea and John Furlong) who were devising a framework to embrace the diverse aspects of quality, including scientific ones[xiv].

c. *Priority setting* workshops, inspired by processes in the Health Technology Assessment programme, worked on modelling the process in education. A working paper[xv] was produced, based on the workshop discussions, which set out ideas, but got no further.

d. *A 'Futures' project*[xvi] led by the *Tomorrow Project* team, involved a scenario-building exercise over twenty years, based on group consultation with representatives from across the education system. The emerging theme was the need for a 'holistic approach to education research' and a 'coordinated agenda'. A 'knowledge management approach to conceptualising current and future developments' was proposed.

e. *Agenda sharing* workshops were held with the principal commissioners of research to share their current and future priorities. Developing greater coherence in the production of research by this means proved difficult. Priorities tend to emerge over time as needs emerged and an element of confidentiality was apparent in the subtle competition for top flight proposals and experts.

f. *Impact* work was developed by piloting a teacher-friendly research bulletin[xvii] which presented key studies of relevance to practitioners in concise plain English articles. These summarised key studies of relevance to teachers in plain English and were distributed via DfE and other networks.

g. An *Educational Evidence Portal* was developed by a consortium of a dozen organisations working with the Teacher Training Agency and Microsoft Corporation. With sponsorship from CFBT Education Trust and others this provided a 'google-type' search function for research outputs that were free of charge (the 'grey ' literature). A series of online modules and face-to-face workshops were developed to train practitioners in the use of research.

h. Small-scale studies were also undertaken into practitioner and policymakers' engagement in and with research[xviiixix].

In addition to this suite of practical projects and workshops, two strategic proposals were developed to put to the Secretary of State. A brief one-page document[xx] was presented to the incumbent Secretary of State (Ruth Kelly) proposing:

- That a *National Evidence Centre for Education* (NECE) be established, learning from the examples of NICE in healthcare and SCIE in social care.
- 'D&R programmes' be gradually introduced, combining the developmental of policy interventions with simultaneous research activity.

Two working groups, led by NERF members, sketched out what D&R programmes might look like in two key areas: science education[xxi] and behaviour management[xxii]. Each identified areas where research evidence was particularly needed to support improvement on the ground and outlined ways in which disparate organisations might contribute to a coherent multi-component *programme*. A further working party explored options for a *National Evidence Centre for Education*, producing a report[xxiii] with recommendations. The working party included representation from SCIE and NICE. It set out proposals on the role, function, scope, scale, outputs and governance of such a Centre and recommended that 'the beginnings of a Centre be established soon and that stages of development and piloting be used to resolve technical issues as they arise'.

These proposals were put to the Secretary of State but were not taken up. A study was commissioned by the DfE[xxiv], however, into the opinions of key stakeholders about the suggestion of a National Evidence Centre. Broadly speaking, this showed that opinions were divided on the specifics but there was a degree of consensus around the idea of some form of distributed system for making high quality research evidence from multiple sources available in an accessible way and for developing the evidence for practical use beyond the academic community. A strong plea was to build such a system 'carefully and gradually' from the components that already exist rather than creating a novel institution from scratch. Proposals were made in relation to funding, governance and operations.

Preliminary discussions were held with the then Prime Minister's Strategy Unit about conceptualising the existing and emerging Knowledge Centres in healthcare, social care and education – NICE, SCIE and the potential NECE – as a distinctive part of the social policy infrastructure. Discussions were held with NICE and SCIE to inform the design of an educational version and about the benefits that might accrue in areas of overlap, such as child development and adult learning. It is worth noting that since that time, a closer association between SCIE and NICE has developed and that a series of 'What Works Centres' have been established by government (see below).

In 2004 the work of the National Education Research Forum was evaluated by an external team from the USA: Michael J. Feuer of the National Research Council and Marshall S. Smith of Stanford University[xxv]. They proposed that to correct the imbalance between basic and applied, more 'use-inspired' research was needed, involving multiple disciplines. They supported the concept of 'Development in front of Research' (D & R) and recommended that a return on investment would need to be demonstrated for use-inspired research. Strategically they recommended that NERF pursue an 'incremental strategy, starting with early wins'.

NERF closed in 2006 when government funding ceased. Its final report emphasised that

a. the whole system of research and development, and their use, needs to be considered, rather than research alone

b. the overall system is particularly fragmented in the field of education, which means that the individual organisations on their own are unable to act in the best interests of the system as whole

c. in education the linkage between development and research is underdeveloped.

d. The differences in culture, incentives, priorities and skills between the three principal communities should not be underestimated in any future initiative.

e. a third-party brokerage body is crucial for developing empathic working relationships between the communities.

Funders' Forum (1999 – 2005)

An independent Funders' Forum, as proposed in the Hillage report, was established in 1999, chaired by the former Chief Executive of HEFCE. Sir Brian Fender. It grew rapidly to include some 30 organisations and produced a handbook of their programmes and procedures. It went on to organise discussions on a wide range of topics including systematic reviews, pupil data sources, and the Research Assessment Exercise. Although a number of useful links were established over specific topics, planning of collaborative funding for new programmes, hoped for by some, did not take place. In a self-evaluation some considered an open forum was not an appropriate setting for this. The Forum closed in April 2005.

Reflection

Clearly NERF and the Funders' Forum fell well short of the original expectations. The 'framework and coherent strategy within which research in education could thrive', envisaged by the Hillage report, were not realised. The degree of consensus required to create these did not exist and was not developed. The Forum became an arena for expressing, rather than resolving differences. In retrospect, perhaps the intention was too ambitious given the position of the parties at the time. However, a valuable start was made by the working groups on important practical aspects of capacity building, agenda-setting, engaging with teachers and making research accessible. Their reports remain a useful resource today

UK Strategic Forum for Research in Education (2008 – 2010)

The *UK Strategic Forum for Research in Education*[xxvi] was a three-year initiative focussing on the way educational research is generated and made available for application, as well as on its actual use. Its aims were:

- to maintain an overview of the UK system and national sub-systems for the production of new knowledge in education and for its transformation, dissemination and use as a whole.
- To facilitate networking for the exchange of information and the sharing of good practice concerning the organisation, production and use of educational research within the UK.
- To make recommendations for processes and infrastructure needed to address the long-term sustainability, development and improvement of educational research within the UK,

including the identification of research priorities and of particular initiatives and investments to address such concerns.

The initiative was led by the British Educational Research Association (BERA) and the Economic and Social Research Council (ESRC), with funding being provided by BERA, ESRC, DCSF (Department for Children, Schools and Families, England, now DfE) and CfBT Education Trust (recently renamed, the Education Development Trust). Three national conferences, addressed key issues in relation to the creation, accumulation, interpretation, valuing, mediation and impact of different types of education research. The approach built on the OECD 'Country Reviews' of educational research and development[xxvii] by facilitating internal self-assessment and knowledge exchange within and between each UK country.

The challenges considered in the three events were:

Forum I: context, quality and capacity

- the contextual circumstances of each country and the nature of existing educational R&D provision
- what the quality assurance and accountability procedures were in place
- whether capacity building was adequate to sustain educational research and development

Forum II: research types and priorities

- whether provision and incentivisation for the production of high quality research in disciplines, innovative applied research, developmental research, evaluation and practitioner enquiry was adequate
- how interdisciplinary research was supported
- how stakeholders were engaged in the identification, development, application and evaluation of national priorities

Forum III: knowledge accumulation, mediation, use and impact

- What provision there was for knowledge accumulation and review, co-production, transformation and dissemination of research findings
- Whether impact strategies for educational R&D were adequate

Key points arising from each forum were set out in a series of reports and included:

Context, quality capacity

- effective research dissemination and mediation was a particularly strong common challenge
- no single set of quality criteria could be identified; different types of research had particular purposes and aims
- the capacity of researchers to frame their work for users and the capacity of users to engage with research were a challenge.
- A disconnection was growing between those involved with teacher education and those undertaking research

Research types and priorities

- a conceptual framework and a mapping were used to distinguish different types of research (disciplinary, applied, development and evaluation, practitioner research and enquiry)
- the complexity of the disciplinary landscape of education research and the permeability disciplinary boundaries were acknowledged

Accumulation, mediation and impact

- Despite the potential of new technologies, users still face significant barriers in accessing evidence in education because of limited access, variable quality and fragmentation of sources
- there are inadequate incentives, training and infrastructures for research mediation
- user engagement, co-production and dialogue between stakeholders were seen as significant, but capacity and commitment for this remain limited at present
- the role of 'champions' in the use of evidence from practitioner, policy-maker and researcher communities remains vital. Strategies for impact should aim to create enabling conditions for further engagement with research evidence among practitioners and others. The measurement of actual impact for research assessment purposes should be secondary to this.

In addition to reports of each conference, a final report synthesised the work and produced a number of recommendations organised around a six-element representation of knowledge development and mobilisation.

1. *Origination and planning*
    a. Governments and their agencies should aim to support both responsive and prioritised research
    b. Strategic thinking about applied research should consider long-term research on enduring issues as an effective way of providing evidence on immediate priorities
    c. In establishing research priorities, there should be greater liaison between funders and stakeholders
2. *Creation and production*
    a. Collaboration among educational researchers should be encouraged, together with incentives to promote multi-disciplinary research
    b. user engagement in applied research should continue to be promoted.
    c. Developmental and evaluative research should be used for piloting, cost-benefit analysis, decision-making, review and measuring value
    d. Practitioner enquiry should be an integral part of professional formation, development and knowledge creation
3. *Assessment and validation*
    a. Criteria for research quality should be appropriate for the research approach.
    b. Producers of published research should provide sufficient methodological detail to enable critical assessment of the work.
4. *Collection and interpretation*
    a. a sustainable, cost-effective, comprehensive, publicly accessible and user-orientated 'UK Education Information Service' is needed
    b. the complementary roles of academic scholarship and of synthesising organisations should be affirmed and incentivised

        i. a single, centralised evidence organisation for education, comparable to NICE should be regarded as a step too far

5. *Mediation and brokerage*
    a. specialist research mediators and brokerage agencies, with their limitations, should be valued
    b. A comprehensive map should be created to increase the accessibility of brokerage organisations
    c. effective communication and mediation of findings should be an integral part of the work or universities and other producers of research
6. *Use and impact*
    a. Producers of high quality applied research, development and evaluation should seek to maximise impact
    b. barriers to the achievement of impact should be tackled, including incentives, procedures, processes and funding expectations and opportunities for user engagement

In concluding, the report emphasised that the establishment of a UK Education Information Service would significantly improve public access to knowledge about education and open up opportunities for innovation, much as the supply of clean water underpins public health. It saw its most important output as the conceptualisation of 'knowledge development and mobilisation' itself. It sated that 'much knowledge about education is locked away in classrooms, lecture theatres and workshops', and 'many perceptive, challenging and innovative analyses are embedded in academic practices' but the lack of shared analytic frameworks and language for public discourse.

Reflection

SFRE, based on the OECD model of 'country reviews', was designed to maintain an overview of systems for the production of new knowledge in education and for its transformation, dissemination and use, across the UK. It also aimed to make recommendations for the long-term sustainability, development and improvement of educational research within the UK. It achieved these aims and saw clarification of the 'elements of comprehensive knowledge development and mobilisation systems' as a major output which it hoped would 'enable organisations to review their roles and maximise complementarity and value for the system as a whole'. Assessing the extent to which its many recommendations have influenced actors in funding, policy and practice would require a major evaluative study. For present purposes, the recommendations set out clearly in its final report serve as a valuable resource for any new initiatives.

Other related initiatives

Whatever direct impact the various system-wide initiatives – NERF, Funders' Forum and SFRE – might or might not have had, significant developments were occurring in a number of other initiatives that took place before, during and after these. Though not designed to address the research-practice-policy system as a whole, they took forward some of the issues identified in the initiatives described above, including: capacity building, impact planning, methodological development and user engagement. A selection is highlighted here**:**

1. *Teaching and Learning Research Programme (2000 – 2011*)**.** A major initiative by the ESRC preceding the launch of SFRE, the Teaching & Learning Research Programme (TLRP) was the largest ever programme of research into pedagogy in the UK and it brought to the fore issues of user involvement, impact and capacity building. 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. Amongst other strands it launched a research skills training programme.

a. *ESRC National Centre for Research Methods (2004 -).* Building on TLRP experience, the ESRC established a capacity-building programme to enhance skills in a wide range of research methods[xxviii]. It continues to this day; its role is to 'increase the quality and range of methodological approaches used by UK social scientists through a programme of training and capacity building'

a. *HEFCE Research Excellence Framework*. Following the 2008 Research Assessment Exercise, HEFCE introduced new incentives for researchers to demonstrate that their work had led to impacts on the economy, society and/or culture. Impact was assessed as part of the 2014 Research Excellence Framework.

b. *Education Endowment Foundation.* A new commissioning body, the Education Endowment Foundation, was launched in 2011, funded by an initial grant from the DfE of £125m. It funds 'rigorous evaluations of innovative projects aiming to raise pupils' attainment', using randomised controlled trials and other experimental designs. Many of its projects are proposed by and led by schools, with universities and research organisations acting as evaluators.

c. *ResearchED*. A bottom-up initiative, ResearchED was launched by a schoolteacher in 2013. 'It built itself' in the words of the founder, Tom Bennett, following a call on social media for people interested in joining a conference on educational research, in a school, on a Saturday. Five hundred people attended. It brings together the many parties affected by educational research – teachers, academics, researchers, policy makers, teacher-trainers - and promotes collaboration between research-users and research-creators.

d. *EPPI Centre.* A centre for systematic reviews of evidence, the EPPI Centre, undertook systematic reviews in education from 2000 to 2010 funded mainly by the DFE. It has produced some 50 reviews on education topics and led the formation of the international network *Evidence Informed Policy and Practice in Education in Europe* (EIPPEE) with initial funding form the EU.

e. *What Works Centres.* The coalition government responded to the pressure in many sectors for some form of Evidence Centre. A number of *What Works Centres* were created by eth Cabinet Office in 2013, two of which were re-designations of existing organisations, such as NICE and EEF. Of relevance to education are the Education Endowment *Foundation's Centre for Improving Education Outcomes for School-Aged Children* and the Centres for *Local Economic Growth* and *Early Intervention*.

f. *International developments.* On the international front, many of the issues raised during the initiatives in England and the UK described above were being addressed concurrently in several other jurisdictions. Developments in Europe, such as the Norwegian Knowledge Centre, Danish Clearing House and Netherlands' Knowledge Chamber were documented by the EIPPEE project[xxix] (*Evidence for Policy and Practice in Education in Europe*) in 2010 – 13 and are being followed at the time of writing by the EIPPEE network. Other examples are work on 'knowledge mobilisation' taking place at the University of Ontario, on 'Best Evidence Synthesis',[xxx] at the Ministry of Education in New Zealand and in many centres in the USA.[xxxi]

CEBE **Coalition for Evidence-Based Education (CEBE) (2009 – present)**

As SFRE approached its end date, the need arose to try to maintain the momentum created by the system-wide initiatives: NERF and SFRE. CEBE was established by enthusiasts in 2009 as a network aimed at building on the efforts of previous initiatives in bringing together members of the disparate communities of research, policy and practice. As much of the data and many of the issues had already been presented and debated in previous initiatives, the plan was not to replicate these deliberations but to build on them by inviting individuals and organisations to work collaboratively on practical projects of mutual interest. The reasoning was that, despite many organisations having an interest in evidence informed policy and practice, it was rarely top of their agendas. The plan was to appeal to the individuals within organisations who focussed on evidence and to seek to establish collaborative projects combining the interests of the participating organisations. The intention was to both take forward understanding and practice in the use of research evidence and foster a sense of community across the sectors

With part–time support of a member of staff at the Institute for Effective Education at the University of York and a small grant from the university, a round of consultation events was held with all three communities and a set of collaborative projects proposed. Organisations were invited to participate in groups to specify the proposals and seek funding. CEBE's role was, and still is, to facilitate collaboration rather than become an institution itself. This approach has resulted in the creation of four ongoing initiatives.

1. The *Education Media Centre*, funded by the Esmee Fairbairn Foundation and some 15 other sponsors, established a service for anticipating news stories and eliciting evidence-based comments from experts. These are sent to news desks at breakneck speed to inform coverage the following day.
2. *Evidence for the Frontline* also acts as a brokerage service, enabling school teachers to pose questions about the evidence on issues they face in practice. A pilot scheme, led by Sandringham secondary school, was funded by the Education Endowment Foundation during 2015/16.
3. *Research Engagement* for providers, currently at an early stage, is preparing guidance for schools, colleges, early years and adult education centres on how to engage with research at whole organisation level. CEBE is also helping the emerging *College of Teaching* with its role in encouraging the use of evidence by teachers.
4. *Support for the College of Teaching*. CEBE secretariat (a small volunteer group) offered to advise the newly emerging College of Teaching on developing its approach to research utilisation. A positive relationship has resulted in CEBE participating in the College's research advisory panel, commenting on proposals and advising on options for knowledge services.

Two other proposals emerging from consultation events reflect ideas dating back to the earlier NERF initiative: to develop a specification for a National Evidence Centre for Education and to develop a space for funders of research to exchange ideas and information. Both failed to take off.

CEBE is a fragile network existing without funding, reliant on the goodwill of volunteers. Despite this it continues to carry the flag for developmental work on linking the three communities. It's continuing existence, plus its success in adding new pieces to the evidence infrastructure, suggest that there is continuing need for some overarching capability for enhancing the linkage between research production and use.

Personal reflections

As set out in the introduction a narrative of this kind is inevitably subjective. As a former teacher, college leader and research manager my bias is towards the practical and applied. This account probably falls short on representing the gamut of initiatives within the academic and policymaking communities. My thoughts about efforts to enhance the system of research production and use over the past twenty years inevitably reflect this background. I offer them for what they are worth.

The various system-wide initiatives, unsurprisingly, highlight the importance of the communities of practice, policy and research working together rather than in isolation or in pairs. Initiatives linking research and policy alone may flourish but then stumble over improving practice and learner outcomes. Similarly, academic-practice initiatives may fail when the policy context changes. Holding the three communities together, however, and achieving significant change is a significant challenge. They differ in some fundamental ways. Clearly the professional skills required for conducting research, running classrooms and developing policy are quite distinct. More importantly, the motivations, incentives and professional cultures may be at odds with one another. The researcher's hope of publishing original research in an international journal in two years' time may not match the practitioner's expectation of applying evidence-based guidance to a classroom problem today.

My conclusion is that the changes required for system-wide reform are essentially cultural. People on all sides need to be persuaded to look at things differently and to change some customary behaviours. The circumstances in each of the communities need to be viewed empathically by members of other communities. For example, the timescales to which teachers, academics and civil servants work, differ dramatically from one another, as do the hoops through which they have to jump to achieve approval and funding. This can make collaboration and system-wide change difficult to pull off in practice. It is easy to criticise researchers for writing in an inappropriate style for teachers, or policy makers for ignoring scientific evidence, but the incentives and resources in their separate worlds often tend in conflicting directions.

The experience of the system-wide initiatives is that progress can be made, incrementally, when the parties are brought together in conditions of mutual respect with the aim of taking forward specific practical developments. The Educational Evidence Portal (eep) was an example of this, emerging as a useful tool from a NERF collaboration and being picked up in the SFRE final report as a possible starting point for a UK Educational Research Information System (UKERIS).

It is likely that the system-wide initiatives referred to above have contributed, to some degree, to a growing consciousness of the role of evidence in educational improvement. Perhaps they helped create the conditions in which subsequent initiatives have flourished, However, in relation to the investment of time, thought and money in them, rather few of their specific proposals and outputs have stood the test of time. Reports may be noted briefly, but the education juggernaut carries on, largely unaltered.

The fundamental impediments to achieving significant advances in the use of evidence seem to me to be the fragmentation of the system and the short-term nature of funding and initiatives. Purposeful and productive activity tends to be confined within particular communities, age phases and jurisdictions, yet evidence-based improvements need to be developed across them all. The consequences of short-termism in budget-setting and policy development mean that research designs may be compromised to meet budgetary deadlines and to avoid methods that track effects on actual students as they progress.

For initiatives to be inclusive by phase, region and professional community and to drive change on the ground requires special effort in the design and management of the process. Key to this is the brokerage function that fosters collaboration between the various parties. A 2007 report from the

OECD Centre for Educational Research and Innovation[xxxii] drew attention to the critical importance of high quality brokerage in its study of the linkage between research and policy based on examples from a number of countries.

In conclusion, a sense of the importance of evidence has grown enormously in recent decades, to the point that 'evidence-based is commonly cited today, in the media and on the ground, as a hallmark of good practice or policy. This is a significant advance, yet as it is happening we begin to see the outline of a new struggle for scientific rationality in education – the way in which particular pieces of evidence get selected, and the purpose to which they are put. In world affairs more widely, we see evidence carefully selected to promote a prepared position rather than to winkle out the elusive truth in complex circumstances. The case for initiatives that advance the production and use of high quality research evidence in education, as in other public services, is as strong as ever.

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