10 Perspectives on education research

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This chapter presents different perspectives on what education research is, what types of research are relevant for policy and practice, and how research should be produced. The discussion is framed by some key questions that have emerged from decades of debate about the relevance of education research for teaching practice and policy. This is followed by short opinion pieces in which experts representing different countries, types of organisations and roles answer these questions from their own perspectives. The viewpoints include academia, policy, practice, funders, unions and teacher training. The chapter concludes with a set of convergences, divergences and open questions.

Introduction

In a discussion on the impact and use of education research in policy and practice one cannot avoid getting into the core questions about research itself. The nature and sources of research evidence as well as its quality and relevance for policy and practice have long been debated (e.g. Nutley, Walter and Davies (2007[1]), OECD (2007[2]), Nutley et al. (2010[3])). There has been a great deal of discussion about what purpose education research should serve, and which methodologies are the highest quality and most useful for addressing various questions. The debate also includes the question of how, by whom and under what circumstances research should be produced, and how it should be financed.

In 2007, Thomas Cook and Stephen Gorard debated the place of experimental design in evidence-based policy making and practice in the "Evidence in Education" OECD volume (OECD, 2007[2]). Despite the fact that one of them (Thomas Cook) is a strong proponent of randomised control trials (RCT) while the other (Stephen Gorard) is an advocate of mixing different methods, there was more agreement than disagreement between them. Notably, they both pointed to the importance of addressing causal questions that lie at the core of the evidence base for education policy, much of which is concerned with improving educational outcomes and efficiency. They also agreed that there was a lack of experimental design in education research. Where they disagreed was the urgency of producing more research on effective practices and the weight that experiments should have in causal studies. Fifteen years later, this chapter aims to pick that conversation up and take it forward in four main ways.

First, by *reflecting on what has changed* since then and the implications of those changes for education research today. The "what works" movement in education has led to significant investments into intervention testing in many countries, including through RCTs, over the past decades. Does that mean that education research today serves policy and practice more effectively? If so, in what ways? What is still missing, if anything? Research has been growing in other areas too. For example, the interdisciplinary fields of neuroscience and cognitive science have been yielding knowledge that could be relevant for policy and practice. Can that knowledge be used in educational decision making and is it? Could the same debate today be sparked by the question: "Experimental research or cognitive sciences: Which one yields a stronger evidence base?" What other substantive changes in research matter for education policy and practice?

Second, by *enlarging the debate from a primarily methodological one to a broader discussion* on the role of actors in research production and its implications for the quality of research. The evidence-based practice and policy agenda has led to increased collaboration between practitioners and researchers. Part of the appeal of co-production is that it brings research knowledge directly into practice while also enriching research with an understanding of what the practice-based challenges are. With this, the popularity of applied research and practice-based methodologies such as action research, collaborative enquiry and design-based research has grown. Are there additional actors engaged in research production and is now the time for them, or for others, to become more involved? What do such models imply for the scientific rigour of research? How can we (re-)define and ensure the quality of education research given that it now exceeds the boundaries of academia?

Third, by *considering the overall coordination of research production* and what can be done to address the perceived lack of it. Education research has been accused of not producing evidence in a cumulative way and thus being unable to systematically improve practice and policy. Can and should education research work towards building a comprehensive knowledge base for teaching and schooling? If so, how can that be done? Attempts have been made to direct research production through funding but some of these have also been strongly criticised. Should public funding be (more) prescriptive with respect to the production of education research? And if so, how? Is there a tension between evidence-informed policy/practice and policy/practice-driven evidence? Funders of education research have diversified in the past decades. In addition to public funding, which in many countries is very limited compared to other service sectors, increasingly more education research is funded by private organisations and foundations. While this

implies more resources, the particular interests, goals and criteria of funders influence the aim, scope and sometimes also the methods of the research. What does that mean for research relevance and quality? Are there any ethical considerations, and if so, how should they be addressed?

Fourth, by *adding more voices to the table*. In the 2007 volume, the debate took place between two prominent academics. In general, a lot of the discussion about the purpose, quality and the production of education research takes place within the confines of the research community. These issues are discussed during academic conferences and published in academic literature (e.g. Moss et al. (2009[4]), Nelson and Campbell (2017[5]), Furlong and Oancea (2005[6]), Rasmussen (2021[7]) to cite only a few examples relevant to the above questions). This chapter aims to make other voices heard: Actors who have roles in education policy or practice, or are at the crossroads of these communities. They may or may not have engaged in academic education research but they are all concerned with various aspects of research production. The invited experts not only represent different roles and types of institutions but also different countries with different education systems.

The next section presents short opinion pieces by invited experts. They were all prompted to react to the above introduction either by selecting and addressing one or more of the questions proposed above that they consider the most pressing or by bringing in a new question they think is more important. These opinion pieces aim to enrich the discussion and contrast distinct perspectives, with a view to learn from each other and broaden the scope of reflections.

The seven opinion pieces draw an interesting arc that spans from the production of research in a more traditional, academic sense, to the engagement of various actors, funding issues and ethical considerations. Dirk Van Damme focuses on core issues of research production, such as the disciplinary identity of educational research, funding (or the lack thereof), methodological and research quality issues. Mark Schneider presents a way forward to increase the scientific rigour of education research, where this takes into account the fact that research should serve practice and policy. John Bangs and Martin Henry provide a perspective that bridges research and advocacy, pointing to the important role of unions in ensuring the relevance of research production, facilitating teachers' research use and engagement in research. The teacher engagement piece is brought forward, with a focus on research co-production, by Emese K. Nagy's voice as a school leader, researcher and teacher educator. Tine S. Prøitz extends this discussion with deeper considerations for the effectiveness of research-practice partnerships. Vivian Tseng frames such partnerships in the democratisation of research production and proposes new and suitable approaches to funding research. Finally, Makito Yurita expands on the idea of democratisation, by pointing to imbalances and power issues not just between various groups of people, but also between research methodologies and countries.

The long and winding road for educational research

Dirk Van Damme, Center for Curriculum Design, former head of CERI, OECD

Educational research is in a dire state

This bold statement may seem counterintuitive because the output of research is steadily growing and the call for evidence-informed policy and practice has never sounded as loud as today. The list of interesting initiatives and organisations devoting themselves to the dissemination and translation of educational research (see the interesting overview for Europe in Pellegrini and Vivanet (2020[8])) is growing longer and the integration of research evidence in policy and practice is steadily improving.

Educational research has grown and matured. This has resulted in thousands of valuable and interesting research papers in specialised outlets. It has also led to growing optimism that educational research could resolve some of the most difficult issues in educational policy and practice. The expansion of experimental

design and, especially, of randomised controlled trials (RCTs), often proclaimed to be the gold standard of educational research design, has brought many people to believe that it is possible to develop a catalogue of 'what works' interventions that can be readily implemented.

With the expansion of educational research funding, activity and output, the methodological quality of educational research has improved. Though one can still find a lot of contemplative and opinionated papers in educational journals, the 'empirical turn' in educational research has clearly turned research output in the direction of quantitative, methodologically sound research. Research methodologies have become more sophisticated and research designs more complex.

However, focusing on these positive trends leads to a distorted picture. The reality is that education systems are still very far from becoming knowledge-intensive systems in which research evidence penetrates decision-making processes both at macro-, meso- and micro-level. Like other complex public policy systems, education is looking for reliable sources of knowledge and is increasingly turning to scientifically founded research knowledge. Research evidence promises to provide the knowledge and information-enabling complex systems to change in order to adapt to or to anticipate changing circumstances (Fazekas and Burns, 2012[9]; Burns and Köster, 2016[10]). However, despite the growing number of educational researchers and increasing quantity of published educational research, the influx of research evidence into educational policy and practice is still far below what is necessary to turn education into an evidence-informed system. The consequence is that education – both at the macro- and at the micro-level – suffers from an epistemic or lack-of-knowledge uncertainty problem. Policy makers as well as practitioners try to minimise the risks associated with epistemic uncertainty by tapping into various knowledge sources that compete with research evidence, such as experiential knowledge or teachers' professional knowledge. These knowledge sources, although valuable and not to be underestimated, cannot match the accuracy of scientifically founded research evidence. The consequence is the multiplication of ineffective and sometimes counterproductive interventions and practices.

To explain why education has so far failed to turn into an evidence-based system, one can look at three possible factors: The production of research evidence; the transmission and translation of research evidence; and the reception and integration of research evidence into policy and practice. Each factor is relevant. But in my view, the core issue is situated on the production side. The research system is failing to produce sufficient quantity and quality of evidence to feed a complex system such as education.

Funding and supply issues

The easy explanation is that this is the result of a lack of funding and that if more resources were available, the situation would automatically improve. There is some truth in this. Compared to the health sector, which is a public policy sector similar in size and mission, education is very far behind in terms of moving to an evidence-informed system. Estimates suggest that the share of education research in public research expenditure is about one-fifth of that of biomedical research.

But in order to assess the maturity of a research sector, the quality of published research is much more relevant than its financial input. The share of published research synthesis papers is an excellent indicator of this. In its recent White Paper, education.org calculated that, globally, the health/education expenditure ratio is 1.75 but the health/education knowledge synthesis ratio is no less than 26 (Education.org, 2021[11]). Whether the publication of research synthesis papers is a reliable metric is open to debate, but the magnitude of the gap is significant.

However, there is little empirical support for the claim that we are dealing with a purely quantitative supply problem. If that were the case, the positive trends in production and dissemination of educational research would have had a visible impact on the overall effectiveness and efficiency of the educational system itself (Tucker, 2019[12]).

Deeper causes

Over the past decades, education systems have not benefitted from the increase in educational research spending and output. Education has not improved in terms of macro-efficiency indicators such as per student cost nor overall learning outcomes or equity This is the case for both developed and developing economies (Angrist et al., 2021[13]). How is it possible that, while knowledge of effective teaching and learning has grown, progress in getting children into schools (i.e. in building schools and training teachers) has not resulted in better learning opportunities?

What are the deeper causes of the problem? Why has more and better educational research not resulted in visible impact?

The theoretical basis is weak and flawed

A lot of educational research is heavily influenced by fashionable frameworks with weak scientific support such as social constructivism. The empirical turn in educational research enabled it to distance itself from old philosophical and pedagogical foundations without, however, establishing a theoretical basis of its own. Theories have been imported from neighbouring disciplines and only very rarely have they emerged from educational research itself. The space of theory in research has been filled by particular pedagogical belief and value systems such as early 20th-century child-centred *Reformpädogogik*, John Dewey's pragmatism, or Paulo Freire's critical pedagogy.

The most interesting research on education is found in neighbouring research domains such as sociology of education, economics of education, cognitive psychology and neuroscience. Educational research benefits from these fields, but as an interdisciplinary and applied field of research, it should also be able to produce groundbreaking research itself.

Methodological debates and biases

Philosophical and normative debates on methodology have absorbed enormous research power and energy, and occupy a large part of publication output (Wrigley, 2018[14]). For example, the discussion on randomised controlled trials (RTCs) lingers on, turning into an unproductive and unsolvable ideological battle (Connolly, Keenan and Urbanska, 2018[15]).

The replication crisis in social sciences has hit educational research very hard. Already in 2014, an analysis of the top 100 education journals revealed that only 0.13% of the published papers were replications, far less than in any other field of social research (Makel and Plucker, 2014[16]; Perry, Morris and Lea, 2022[17]).

Policy makers and practitioners are calling on educational researchers to do more relevant research that is applicable to educational policy and practice (Wyse, 2020[18]) and this risks further weakening the scientific basis of educational research. Situated research with often weak methodologies does not lend itself to generalisation and the construction of a consolidated knowledge base (Tipton and Olsen, 2018[19]).

Educational research suffers from different kinds of biases. "Insider bias" (i.e. those designing and implementing an educational intervention being the ones evaluating its impact) is strong in educational research (Barshay, 2019[20]). External, independent evaluation studies are rare in the educational field.

Finally, educational researchers are particularly prone to ideological or political bias. Many are strongly motivated by political activism, which influences their research design and findings.

Education systems and societies at large do not receive the high-quality educational research they need and deserve.

How to fix them

There are no quick fixes to the current situation. Making education systems more evidence-based will require a lot of effort on multiple levels. And it will require time. More fundamental issues need to be addressed.

Provide more strategic funding for research growth

Educational research has not reached the quantitative threshold to meet the demands of a huge and complex system like education for reliable evidence. Growth in the production of educational research is very much needed. Governments and research funders need to develop a strategic plan for the gradual increase of funding resources. Qualitative issues will be more easily solved with some extra quantitative space. Despite the call for more relevant, policy- and practice-oriented research, sufficient resources need to go to more fundamental, time-intensive research (for example, in longitudinal designs) and theoretical research building on generalisable empirical findings.

Educational research does not enjoy high priority in research funding mechanisms. Even though it is perceived to be applied, educational research does not enjoy the same status as more fundamental research domains. But for more funding and improved status to have impact, educational research must address its qualitative deficiencies.

Establish education research as an academic discipline

The funding issue is closely related to the relationship between educational research and its neighbouring disciplines. Interdisciplinary connections and mutual fertilisation are extremely important but education needs and deserves its own foundational body of research evidence, informed by but not reduced to the perspectives of neighbouring disciplines.

To establish itself firmly as an academic discipline, education needs to devote more attention and energy to establishing its own theoretical foundation. Important pedagogical traditions can certainly inform the construction of educational theory but are not to be considered as theories in their own right. Theories emerge through sufficiently generalisable and replicable empirical research, not through ideological frameworks.

Improve self-regulation and evaluation

The educational research field has to improve self-regulation in its assessment and evaluation procedures, peer review practices and publication procedures. There needs to be more rigorous approaches to research, and less ideology and activism. The publication pressure on researchers also leads to over-publication, with too many close to worthless papers. With so many competing publications, high-quality publications struggle for visibility and impact. There also needs to be much more rigor in educational research associations, research funding bodies and educational journals.

Accept limitations

In order to gain more respect (and funding), educational researchers often over-sell the capacity of empirical research to provide useable answers to policy and practice. Much effort that goes into promoting evidence-based policy and practice implicitly suggests that there is an evidence-based answer to every problem in education. This is untrue; in fact, research evidence provides useful knowledge for addressing only a very limited number of issues in policy and practice. The often-used phrase “research evidence shows” should be employed only when there is robust, replicated and generalisable evidence from high-quality research.

The road to upgrading educational research so that education systems become evidence-based knowledge systems is a long and winding one. In the meantime, let's be respectful of how policy makers and practitioners solve their knowledge needs. The challenge lies with the research community, not with teachers and policy makers.

More scientific rigour for education research

Mark Schneider, Director of the Institute of Education Sciences, United States

Box 10.1. Institute of Education Sciences, United States

The Institute of Education Sciences (IES) is the science office within the United States (US) Department of Education. The Institute's portfolio supports research on early childhood, elementary, secondary, tertiary, and adult education.

With an annual investment in education research of around USD150 million, IES is one of the world's largest education research funders. Since its founding in 2002, IES has been focused on supporting rigorous education research that is transparent, actionable, and focused on consequential outcomes with the potential to improve student achievement.

Source: IES (n.d.[21]), *Homepage*, https://ies.ed.gov/.

This chapter has a wide purview but I have chosen to focus on the last point enumerated in the chapter introduction: How should research be produced? Education research is a large field pursued in many different ways around the globe. My contribution to this chapter has a particular focus: Increasing the scientific rigor of education research.

I have the pleasure of reflecting on what I believe to be some of the challenges that the field of education research faces as it works to increase the quality of work aimed at improving learner outcomes. This brief essay reflects a set of fundamental principles I believe need to be followed to move education sciences forward.

From RCTs to standards for excellence

For the first 20 years of the Institute of Education Sciences (IES) in the United States (see Box 10.1), we focused on strengthening the field's capacity to do rigorous research characterised by internal validity and relying heavily on randomised control trials (RCTs). But simply knowing that something works is not enough. To be truly transformational, research must address a wider range of issues. We have embarked on an institute-wide effort that emphasises factors that can make research transformational. We call this effort Standards for Excellence in Education Research (SEER).[1] I introduced SEER in two blog posts.[2] IES has refined SEER frequently and will continue to do so as we receive feedback from researchers, practitioners, and policy makers.

IES previously enumerated eight SEER principles encouraging researchers to:

- Pre-register studies.
- Make findings, methods, and data open.
- Identify interventions' components.
- Document treatment implementation and contrast.

- Analyse intervention costs.
- Use high-quality outcome measures.
- Facilitate generalisation of study findings.
- Support scaling up of promising interventions.

IES recently announced a ninth principle focused on equity in education research, calling on researchers to "Address inequities in societal resources, opportunities, and outcomes".

SEER codifies practices that IES expects – and increasingly requires – to be implemented as part of IES-funded causal impact studies. But note that many SEER principles and associated recommendations are applicable to other types of research the Institute supports as well.

There is growing scientific literature supporting each of these principles – but much of SEER is relatively new to education science research. The first two are clearly "normal science" and I will not comment on them further. In the rest of this brief essay, I briefly highlight the importance of a few principles that have presented challenges to American education researchers. I begin with the challenge of identifying the *core components* of an intervention.

Identify the components of an intervention

Imagine a medical trial where the intervention consisted of a bag of pills – some green, some red, some yellow. Patients take these pills and at the end of the experiment, we find that these pills improved outcomes. It is unlikely that any medical review board would ever approve such a treatment and the results would likely (and deservedly) be denied publication. Yet, far too many education interventions are exactly like the bag of pills – a collection of parts, many of which have never been clearly identified, let alone evaluated. IES has been pushing hard to get education researchers to identify the components of an intervention and then work to isolate the effects (and the costs) of each component. This requires a lot of work, especially in developing a common taxonomy by which to classify components and a nomenclature to identify and describe the components themselves. We have been supporting social science research firms who have, in turn, partnered with intervention developers and study authors to help create both.

Analyse costs

For several years, we have been requiring cost analysis for most of the research we support and the requirements for cost analysis have been getting more demanding. Education officials need to know how much something costs. Sometimes a less effective programme should be chosen because it is much cheaper than a more effective programme that exceeds a school's budget. Introducing cost analysis was a challenge to American education researchers, very few of whom have training in economics. In the first year of implementing this SEER principle, many grant applications were rejected as being "non-responsive" to this requirement. We, in turn, provided technical assistance[3] – from easy-to-use tools to help desks[4] staffed with cost analysis experts – to the field. Given how many proposals were rejected as non-responsive, it was obvious that we were serious about cost analysis and now almost all applications meet this requirement (and the proposed work is getting better and better).

Use high-quality outcome measures

Consider the SEER principle that calls for the use high-quality outcome measures. This principle traces back to a simple fact: When researchers or developers create their own outcome measures, the measures are all too often "over-aligned" with the intervention, producing estimates of effects that can be several times larger than observed using measures created by others. As the late Robert Slavin convincingly argued (2014[22]) these biased measures all too often lead to false conclusions and bad recommendations. While we still allow developers and researchers to use their own measures, we are now requiring them to

use high-quality "common measures" so that results can be more easily validated and compared across interventions. We have supported work like EdInstruments[5] to help catalogue measures used in contemporary education research. More work is needed, though, to identify a more parsimonious set of high-quality outcome measures.

Facilitate generalisation of findings

There are many prongs to the generalisation SEER principle. The one that we have emphasised most focuses on replication. Many sciences have a replication crisis – that is outcomes of experiments fail to replicate. The good news: Education science research does not have a replication crisis. The bad news: That is because we hardly ever replicate existing work. There are at least two consequences to that. First, idiosyncratic (sometimes fraudulent) work enters the mainstream (see Stuart Ritchie's book *Science Fictions*[6] for just how common this is) and, often, consequential decisions are made on the basis of those claims. Second, without replicating work, we cannot identify which populations of learners might benefit the most (or not at all) from specific interventions. Thus, not only do we need more replications but we need to make sure those replications systematically vary population groups to advance IES' mission of identifying "what works for whom under what conditions".

Unfortunately, traditional field-based impact evaluations, especially randomised control trials, the gold standard of research, can be very expensive and take a long time to implement and analyse. We have been supporting[7] digital learning platforms that can accommodate multiple researchers conducting faster turnaround studies than is the norm in traditional experiments. Here, we borrowed from the work of Jim Manzi[8] and his mantra to "fail fast." We are supporting an XPrize competition to instantiate that idea by having teams of researchers use digital learning platforms to deliver experiments and then replications based on the findings of the original experiment. To compete, teams had to have platforms with at least 100 000 users (some have far more).

Support scaling

Another SEER principle pertains to the scaling up of promising interventions. All too often, interventions that have promise in transforming learner outcomes never come to market and never scale beyond the small number of schools/students that were involved in the original field tests. Part of the problem is one of misalignment of incentives. To the extent to which we fund academic researchers, their interests are to publish and get tenure and promotion. Most do not have the interest nor the skills to scale their products. IES has been struggling with this issue for some time. Most recently we have worked with SRI International to identify and inculcate explicit market orientation into work we fund (Wu et al., 2021[23]). We still have not found a scaleable way of encouraging scaling – but we are working on it.[9]

Address inequities

The final SEER principle calling on researchers to "address inequities in societal resources, opportunities, and outcomes" is the newest addition. This principle reflects the growing concern for social justice and for addressing historical inequities in education. This principle is a sharper version of our long-standing commitment to research designed to close education gaps – a commitment built into our 2002 authorising legislation (US Congress, 2002[24]).

In sum

SEER is not the only set of principles to structure the study of education interventions – and for many problems facing education around the world, it is not even the best way. However, we can often conduct far more rigorous research than we have done in the past. IES has placed a large bet that SEER can

increase the rigor of education research, help education research improve its standing as a scientific enterprise, and, most importantly, improve the outcomes of more and more learners across the life span.

From research to advocacy

John Bangs, Special Consultant, Education International

Martin Henry, Research Coordinator, Education International

Box 10.2. Education International

Education International (EI) is the largest global union federation with just under 400 member unions and organisations in membership who represent over 32 million teachers and support staff. Founded in 1993, it has become the principal advocate for the teaching profession across the world. In the last 15 years, EI has increasingly focused on linking research evidence to the framing of teacher policy. It works closely with UNESCO, the OECD and a range of other global organisations.

Triennially EI publishes comprehensive research on the Global Status of Teachers. The 2021 edition painted a graphic picture of the views and aspirations of the global teaching profession as it emerged from adapting education to respond to the impact of the pandemic.

The full range of Education International's research and publications can be accessed at www.ei-ie.org/en/resources/publications-and-research.

Source: EI (n.d.[25]), *Homepage*, https://www.ei-ie.org/en and EI (2021[26]), *The Global Report on the Status of Teachers*.

Introduction

In inviting Education International (EI) (see Box 10.2) to give its perspective on the use of research evidence in education, the OECD asked some interesting questions. One of the most relevant to EI is: "Does education research serve policy and practice more effectively?" (It is a question, we assume, which uses the 2007 baseline when the OECD's *Evidence in Education: Linking Policy and Practice* (2007[2]) was published). The purpose of this paper is to demonstrate that the answer to the OECD's question is, unequivocally, "Yes".

Education International and research

To answer this question, we refer to the wide range of EI research and how it informs EI's advocacy. We then focus on how EI's and the OECD's research have contributed to the development of effective teacher policy by way of providing an in-depth exemplar of how EI has constructed research and advocacy partnerships with another global organisation. This does not mean, however, that because a specific EI/OECD lens is used to illustrate EI's relationship with research and teacher policy that this presents an exclusive summary of all EI's research output on teaching as a profession.

Union membership density – the proportion of teachers who are members of unions – within the teaching profession is the highest and most stable among all economic sectors (Carter, Stevenson and Passy, 2010[27]). It is not surprising, therefore, that unions are in constant touch with their membership, investigating and analysing their views and the professional environments within which they work. In the past, teacher unions were targets of research and contributors to research but, increasingly, teacher unions

have become key players in commissioning educational research. Twenty years ago, EI created its own Research Network of member organisations who share their own research with other unions and an independent Research Institute which commissions research directly.

Why does EI commission research? The answer is quite simply to inform the development of its education policies and to enable its member organisations to be able to confidently advocate for them knowing that they are supported by research evidence. One example among many illustrates this. Triennially EI publishes comprehensive research on the Global Status of Teachers.[10] The 2021 edition painted a graphic picture of the views and aspirations of the global teaching profession as it emerged from adapting education to respond to the impact of the pandemic (EI, 2021[26]).

Research and teacher policy – Education International and the OECD

EI supports teachers' ownership of research

Of course, research and evidence collection has always been important to teacher unions. Prior to 2010, the OECD's social partner, the Trade Union Advisory Committee (TUAC) through which EI is represented, was not represented on the OECD's key research boards such as those for the Centre for Educational Research and Innovation (CERI), the Programme for International Student Assessment (PISA) and the Teaching and Learning International Survey (TALIS). Now TUAC is invited by these boards to send participating observers to their planning meetings.

One of the reasons for this shift was that, through EI's advocacy, the OECD understood that teachers' active consent to take part in OECD teacher-focused studies helped it to both implement those studies more smoothly and to achieve a much wider understanding among teachers of the studies' outcomes. For its part, EI's engagement in the development of TALIS and PISA through TUAC has enabled it to contribute to the teacher policy aspects of those studies and to argue that their data and policy findings are as much the property of teachers and their organisations as they are of educational jurisdictions.

EI helps research reflect the reality of teaching

EI's engagement in the developmental processes of TALIS and PISA has also, for example, led to the questionnaire scales on the causes and nature of teachers' stress within TALIS 2018 (OECD, 2020[28]). This came about as result of proposals made by EI. Additionally, the scales on teacher leadership within the TALIS 2013 questions and the conclusions within TALIS 2013 (OECD, 2014[29]) about the need for systemic guidance on securing a shift towards distributed leadership in schools (OECD, 2014, p. 200[29]) were influenced by EI's own commissioned study on teacher leadership (Bangs and Frost, 2012[30]). This EI study involved a qualitative survey of classroom teachers and their organisations in a range of countries in order to provide EI with recommendations for a policy framework for enhancing teacher leadership.

The inverse is also true: data from OECD studies has also provided the basis for EI-commissioned research into the impact or absence of jurisdiction-wide teacher policies. For example, Burns and Darling-Hammond's analysis of TALIS 2013 data led to insights and policy proposals independent of the original report itself, particularly in relation to teacher shortages, collaboration and leadership (Burns and Darling-Hammond, 2014[31]).

Teachers themselves are also increasingly engaged in carrying out research themselves, not least because Masters degrees and Doctorates require research reviews if not primary research. An important question for teachers is how they can gain access to research partnerships and work alongside researchers. Securing these opportunities is becoming an increasingly important goal for teacher unions in countries such as Norway where teacher training includes an academic dimension involving teachers learning about research disciplines and carrying out action research.

EI supports research that informs the creation of effective teacher policy

EI partnership with the OECD on teacher policy-related research has continued since 2010. For example, through TUAC, EI has twice contributed chapters to the OECD's synthesis of educational policy development, Education Policy Outlook (EPO). Those contributions were informed by surveys of teacher unions in OECD member countries carried out by EI to provide the evidential basis for its TUAC chapters. In essence, the surveys tracked teacher unions' changing priorities within teacher policy. For example, "Education union partnerships in policy reforms" (OECD, 2015[32]) found that the most productive teacher union discussions with governments were on teachers' professional development, working conditions, equity issues and curriculum in that order. By 2019, "Success in hard times" reported that the highest percentages of teacher union respondents believed that the most productive areas of discussion with governments were now on teachers' pay and conditions, and curriculum reform (OECD, 2019[33]).

Since 2010 EI's and the OECD's developing relationship on research and evidence-informed policies has enabled the creation of the International Summits on the Teaching Profession (ISTPs), which is a unique partnership between OECD Education Ministers, the OECD itself and EI (see Box 10.3). Bangs (2020[34]) provides an in-depth analysis of the ISTPs' relationship to the development of teacher policy. It came to two conclusions. The first was that the bedrock of outstanding education systems was a confident teaching profession at the edge of its game, engaged as equals in the development of reform. Secondly, it concluded that the organised voice of teachers was essential to the success of those reforms.

Box 10.3. The International Summits on the Teaching Profession

Established in 2011 by United States Secretary for Education, Arne Duncan, the National Education Association and the American Federation of Teachers, the ISTPs have taken place annually up until the present day. They are unique in providing the only international forum in which elected Ministers and teacher union leaders can meet on a confidential basis to share educational practice and set practical education targets for the coming year. Hosted by individual OECD countries, each ISTP has focused broadly on aspects of teacher policy. They are supported by background reports from the OECD and EI, which synthesise evidence and research outcomes relevant to each Summit's discussion themes.

The most recent Summit was again hosted by the United States. Its theme, Learning from the Past, Looking to the Future: Excellence and Equality for All, explored actions needed for post-pandemic educational reconstruction with a focus on teacher professionalism and well-being, whole child education and equity, and intentional collaboration (NCEE, 2021[35]). The OECD and EI reports provided the research evidence for the background reading for the Summit (Schleicher, 2021[36]; EI, 2021[37]).

Source: NCEE (2021[35]), *Learning from the Past, Looking to the Future: Excellence and Equity for All*, https://ncee.org/quick-read/learning-from-the-past-looking-to-the-future-excellence-and-equity-for-all/; Schleicher, A. (2021[36]), *Learning from the Past, Looking to the Future: Excellence and Equity for All*, https://doi.org/10.1787/f43c1728-en; EI (2021[37]), *Learning from the Past, Looking to the Future: Excellence and Equity for All: A Briefing by Education International*, https://www.ei-ie.org/en/item/25427:learning-from-the-past=looking-to-the-future-excellence-and-equity-for-all.

The relationship between EI and the OECD on research developed since 2010 has led to a joint initiative to set out the principles both organisations believe should inform post-pandemic educational recovery. Published in 2021, they emphasise that the recovery of education systems from the effects of the health crisis will be vital to the future social and economic health of societies. They also stress the importance of: Schools as centres of their communities; digital technology which supports teaching; focusing on education

for the whole child; and the need to foster teacher well-being and efficacy. The principles draw on the research and policy collaboration between EI and the OECD since 2010 (OECD/EI, 2021[38]).

In conclusion

It is quite clear from EI's experience that partnership and engagement has served policy and practice more effectively because of the alliances it has built up with global organisations that understand the policy and practice link. OECD is one example but a similar story could be told about EI's relationships with organisations such as UNESCO and the United Nations.

EI's primary interest in creating effective teacher policy is not solely because it enhances the daily professional lives of our members but because education systems function better and students learn more when teacher perspectives are taken into account. We also know that education systems that seek to enhance the well-being and efficacy of their teachers are correlated overall with high levels of achievement among all their students.

Teacher unions' involvement in research is not confined to pay and conditions. Teacher unions around the world commission and carry out significant research on professional issues. Yet the value, quality and extent of teacher union-initiated research is often underestimated by educational jurisdictions, which is a mistake because, increasingly, unions understand that evidence-informed policies are far more persuasive than policies based on assertion.

Indeed, the primary purpose of research commissioned by unions is to support their advocacy of union policies. Increasingly, researchers are attracted to working for teacher unions because they know that the policy impact of their research is much more likely to be amplified by union advocacy than when it is confined to publication in academic journals. Yet, interestingly, given the density of union membership in teaching, there are very few academics whose main research discipline is the study of the teaching profession and its organisations.

Engagement in research, whether as a participant completing questionnaire scales or as a director of research, does not come without a time cost. Survey fatigue is real among teachers involved in studies. However, teachers will willingly engage with surveys if they understand their purpose and can have access to their results. That is why the research teachers engage in most willingly is research that is relevant to their professional lives. They are as interested in seeing evidence have an impact as the union leaders who represent them.

For the day-to-day practice of teaching, teacher unions can reinforce the relevance of research for teachers. For researchers and research itself, teacher union involvement in research can amplify research findings and encourage an increase in the range and foci of educational research activities. For the development of robust and effective education policies, teacher unions can play a major role in strengthening the impact of research on policy.

Thoughts on public education research

Emese K. Nagy, School leader, Hejőkeresztúr; Head of Institute of Teacher Education, University of Miskolc, Hungary

As the director-general of a Teacher Training Institute and a core member of a doctoral school, I continuously participate in university research. As the head of a primary school, I experience how external and internal examinations and research affect the school. I treat the two as complementary, keeping in mind how useful they are together for the school. There is already a lot of joint research between universities and the school but our goal is to involve both parties in joint research with the same communication status to increase efficiency.

Other public education institutions think similarly. Most have recognised that education-related research (action research) and internal, institutional research are essential for their successful operation. While there is excellent research going on in universities and doctoral schools, the widespread publication and practical implementation of some of this research is slow and sometimes lags behind.

The purpose of my writing is to draw attention to the importance of action research[11] for the school and the importance of its joint implementation by researchers and school teachers.

The purpose of educational research

Research can take place at multiple levels, affecting society as a whole. It can affect an institution, a teacher, a student, or a parent. The overarching goal of organisational research (theory / cognitive and experimental / action research) generated at all levels of education is to improve the quality of education, bearing in mind that it effectively influences and supports (educational) policy and school practice. Research on pedagogical practice (action research) can only be interpreted positively if the aim and results of the given teaching and learning activity are mutually reinforcing, the teachers are aware of the importance of their own activities, and all this is related to their own activities and self-efficacy. As a school leader, useful research means that its results can be transferred to everyday education. However, I argue that in research, process and content are at least as important as outcome. A meaningful outcome is only possible if the research is conducted by professionals who are experienced in the activity.

School research can focus on teaching and learning in the narrow sense as well as education more broadly. We research how to improve learning, literacy, intellectual development, and within that, personality development, keeping in mind how knowledge gained in practice can be used to improve education. All this is aided by the relationship between research and practice as well as that between basic research and applied research. As a school leader, useful research is related not only to phenomena and facts but also to their practical application or use. Therefore, applied research supported by education policy plays an increasingly important role. It is expected that research results will be disseminated and utilised as widely as possible, and that research will make a positive contribution to the overall development of education policy.

Who should participate in research and how?

It is common for most school-action research to be carried out by “external” professionals and that the whole research process follows the methods and pace they define. In such research, school teachers are only passive participants in a process. The role of the educator in this case is not so different from when education policy or the education government initiates reform efforts. In this configuration, teachers do not find research useful because they feel they do not “own” the research. Thus, they do not benefit from its results and the research does not help their daily work so there is no reason to change their daily work or increase their knowledge. In the absence of direct impact, research is not important to them or to the school. Once the research project ends, it is often not followed by pedagogical development. This is regrettable as researchers primarily involved teachers because they believed that they would use the knowledge gained during the process.

Accumulated theoretical knowledge is usually far removed from the school context. A better understanding of educational processes is not as important and useful for a school as putting the knowledge gained through the teaching and learning process into practice. In the life of teachers, action research only becomes useful if they can hope to change their own school conditions and competencies, i.e. it brings practical benefits. After identifying the questions to be answered, area to be studied, and research aspects, and selecting the partners, the school treats both parties – external researchers and teachers – as equal partners with both parties influencing the research. In this configuration, the teacher has the status of a competent expert.

When school educators initiate action research, they often focus on areas that were not previously available to developers. Theoretical researchers usually look at issues related to disciplines, trying to find the system in them while school educators look for answers to questions that are expected to have a direct and usually immediate impact on their work. In the course of the research, it is therefore worth relying on the opinions, knowledge and research of professionals and educators with practical experience as all this can be transformed into useful knowledge.

Box 10.4 gives two examples. One illustrates research- "burdened" teachers whose involvement in research did not benefit the school. The other example demonstrates how the close collaboration between a research group and the school was able to provide information that subsequently increased student performance. It is fundamental for researchers to involve teachers in research if the aim is to expand teachers' professional knowledge. Action research will only be useful in the lives of educators if they can hope to change their own school conditions and develop their competences, thereby bringing practical benefits.

Box 10.4. Good and bad research in schools: Two examples from the author's school

Example 1

The aim of a research project conducted in 2008 was to assess the work and workload of teachers, and to explore the use of teachers' working time frameworks, especially mental and temporal workloads and their distribution. The study was exploratory in nature. As the researchers had little knowledge of teachers' use of time, one expected result of this exploratory research was the development of an analytical framework for teacher workload. The study aimed to measure the average number of pedagogical hours spent in the school building, the way in which compulsory working time frame was filled in and out of school, and the proportion of time spent teaching students per day. Methods included questionnaires, detailed interviews and document analysis. However, after the research was conducted, no feedback was received from the researchers. The school could not use the results and conclusions and as school director I could not benefit from them to increase school performance.

Example 2

One of the country's leading universities launched a research project at the school aiming to transform the school's organisation after diagnosis and adapting the results to school. The research would be important in informing the school's endeavour to scale up a major innovation. The school had adapted the Complex Instruction Programme developed by Stanford University, transformed it into a new innovation, and began to disseminate it to other schools. The diagnosis had three main foci:

- Assess the operation and condition of the organisation.
- Examine the motivation and behaviour of the faculty and teachers.
- Map the operation of school management.

The diagnosis enabled the school to apply and stably integrate the programme.

As the programme is used in nearly 200 schools in Hungary, it was important that the measurement tools be valid. University researchers prepared a questionnaire based on continuous feedback received from school management and teachers to help ensure that the measurement could be conducted in other schools as well. School teachers therefore played an important role in the process, drawing researchers' attention to the fact that questionnaires can be too general and misleading without proper knowledge of the method. The results of the research provided useful information for the proper foundation of the management of the institution.

How can policies support research and practice links?

In Hungary, the pedagogical career model and related evaluation system were launched in 2013 to support the effectiveness of educators' pedagogical work and identify areas for improvement. In addition to professional recognition, financial motivation was created: The assessment qualification serving as the basis of the teacher advancement system. The career development system includes the following grades for qualification:

- Trainee.
- Teacher I.
- Teacher II.
- Master teacher.
- Researcher teacher.

While obtaining the Teacher I. and II. categories is based on previous performance and assessed competences, the "Master" and "Researcher Teacher" categories involve specific future assignments. This is not simply a higher degree of a linear progression system but is quite different in quality. Teachers in these roles are expected to contribute actively and intensively to the development, research and innovation processes in the public education system. A researcher teacher is also expected to share their research results outside their own school and offer solutions to improve public education (see also Box 4.3).

As an example, research has made my school a knowledge-creating organisation. Due to the help and involvement in various projects of researcher and master teachers, the school is today characterised by continuous research, measurement and evaluation, and the sharing and incorporation of results into education both within the institution (with the help of master teachers) and outside the institution (thanks to researcher teachers).

I must note, however, that we are talking about a "lucky coincidence" in the case of this school as it has a researcher teacher who works closely with the university (as an instructor) and three master teacher colleagues who are also involved in research. In addition, their research topics are all related to the school's pedagogical programme, the Complex Instruction Programme. As a researcher teacher, my own research on the preparation of university students for a teaching career extends beyond school education. Such lucky constellations, however, are not yet widespread.

Summary

In sum, action research is important for schools but can only be truly beneficial if implemented jointly by researchers and teachers. I strongly believe in the effectiveness of research for public educational institutions involving school educators. Therefore, education policy makers should support and facilitate this type of collaborative research and ensure that they are not just sporadic "lucky constellations".

Time to rethink research-practice relationships for practitioners

Tine S. Prøitz, professor in education science, University of South-Eastern Norway

Recent developments in education policy have emphasised the importance of practitioner involvement in education research. Although the question of practitioner involvement in research is not new, today's newer ways of working collaboratively and understanding knowledge development and relationships between researchers and practitioners have interesting potential but also face several obstacles.

One obstacle is how the focus of research on research-practice collaboration and partnerships often are limited to the research itself and fail to focus on the collaborative efforts involved. In a time when collaborative efforts are called for by policy and academia alike, there is paradoxically limited systematic and empirical knowledge about how research-practice partnerships can be optimally performed. Developing not only communities for the practice-based education research of scientific quality involving multiple actor groups but also researching how such communities can work productively for all parties involved is highly important for the development of new knowledge in education. And, it seems to be very timely.

Still, emergent research on the topic underscores the point that research-practice relationships characterised by the involvement of multiple actor groups need to be explored to find newer ways of involving and mobilising both practitioners and researchers. There are multiple forms of research-practice collaboration but finding the best way of working together requires a rethinking of both researcher and practitioner roles.

Researchers have varied understanding of the relationship between research and practice in education, how research use can be understood and what factors contribute to reducing or upholding the so-called research-practice "gap". Further, practice-based research has been highlighted as an umbrella term for newer approaches to linking and tightening this relationship (Furlong and Oancea, 2005[6]). Governments and universities have introduced initiatives aiming to strengthen the research-practice relationship in education. Across the Nordic countries, we can see variations of these initiatives, including:

- Partnership agreements between universities and schools, as well as with local authorities
- Funding schemes that require collaboration between researchers and practitioners
- Growth in professional doctoral programmes in which applicants must have teacher education and preferably work in teacher education or in schools while doing their doctoral work (e.g. Prøitz and Aasen (2016[39]); Prøitz and Wittek (2019[40])).

There is a recent and ongoing example of an ambitious national research-practice initiative in Sweden (Box 10.5). Studies conducted on the initiative's first five years of operation have shown that the issue of multiple actor roles in education research is a particularly interesting topic to revisit (Prøitz et al., forthcoming[41]). Research approaches involving teachers and other practitioners in research activities as, for example, co-researchers, is not new in Sweden; rather, there is a long tradition of action and design research. However, this new initiative both includes and parallels these approaches, thereby raising the question of multiple actor involvement in all types of education research, not only those that have teacher involvement as a built-in part of the methodology.

Box 10.5. The Swedish ULF project

ULF was a national pilot project commissioned by the Swedish government from 2017 to 2021. The project developed and tested sustainable collaboration models between academia and the school or school system in research, school activities, and teacher education. The project involved 25 universities with teacher education and more than 150 municipalities and a substantial number of schools and teachers.

The goal for the pilot project has been to develop an infrastructure that deploys long-term sustainable collaboration models between academia and schools to strengthen the disciplinary foundations and approaches used in schools. The collaboration models are intended to result in research that is relevant to schools by enabling professional groups within schools to initiate research, not just researchers within academia. After the pilot project ends, the ultimate goal is to make successful collaborative models

permanent and start using them nationally. The vision is for the collaboration models to serve as the basis for professional practice in schools and for teacher education.

Following the initial pilot phase the ULF project has been continued to 2024 by the Swedish government as a transition period. The intention is for it to become a permanent arrangement after this transition period.

Note: The Swedish acronym ULF stands for Utveckling (Development), Lärande (Learning) and Forskning (Research).
Source: Ulfavtal (n.d.[42]), *ULF FAQ*, https://www.ulfavtal.se/about-ulf/ (accessed on 2 March 2022).

The research-practice gap – A metaphor stating the obvious?

Despite variations, a common characteristic of initiatives is the involvement of multiple actor groups in what we traditionally have considered to be the academic turf of researchers. Another characteristic is a strong belief in how these actors who have been brought together will almost effortlessly develop not only a stronger relationship between research and practice but new and improved knowledge that is applicable and relevant to education practice (Prøitz, 2020[43]). Seen from a traditional perspective, initiatives to strengthen the research-practice relationship and close the gap blur the demarcation lines between theory and practice; scientific knowledge and experience-based knowledge; researcher and practitioner; and the university and school. In the field of education, the relationship between these categories is often characterised by tension, and as being opposites, contradictory, and even conflicting.

On the other hand, researchers have pointed out how the gap metaphor is an exaggerated misunderstanding and that it can be used productively to make people aware of the challenges in the field and in their development towards more integrated perspectives. Further, the literature presenting "newer perspectives" on these matters is 15–20 years old, with studies discussing more integrated ways education research can involve multiple actor groups. Developments in today's situation in both academia and the education sector indicate a growth in the mutual interest and discovery of the benefits of collaboration that can overcome the less functional sides of the traditional divisionary lines between theory and practice, and between discipline and profession. Most of these perspectives are rooted in the perceived need to bridge and overcome the research-practice gap. However, the key question is whether such initiatives are approaching the issue in the most constructive way by trying to reduce and overcome differences that are considered to be the very qualities of the professions concerned. Another way could be to explicitly recognise and even appreciate the differences between researchers and practitioners including the values, perspectives, strengths and weaknesses that follow from their practices. Acknowledging the differences in collaborative initiatives cannot only push collaborations further but also their outcomes.

One way to think of the involvement of multiple actors in practice-based research can be to consider collaboration as an effort involving different discourses with different languages and frames of reference anchored in the actor's workplaces and profession. Over time and with resources and efforts, the discourses can potentially become a common one with shared language and interests between researchers and practitioners, creating a "third space discourse" (Moje et al., 2004[44]). This does not necessarily mean discourses that are harmonious, without disagreement or debate or where practitioners or researchers have to become more alike; rather, these are areas where dialogue is based on a shared goal.

Getting there requires more than simply placing the different actors in the same physical room: It requires time, money, dialogue, the exchange of views and mutual respect, interest, and understanding for each other´s work environments and contexts. It will probably challenge traditional views on the status of knowledge types as well as require openness to innovation, the redesign of roles, and different ways to develop research-practice relationships. Even with these challenges, the potential for developing not only

new knowledge but innovation in education research that is informed by shared understandings in a common search for solutions makes the effort critical.

Rethinking the research-practice relationship

A central question in research-practice initiatives is as follows: What role should/can different actor groups have in practice-based research? Research that has described well-functioning partnerships points towards the ideal of involving actors as equal partners in all parts of the research process. This can be from research problem identification, definition and data collection to analysis and the presentation of results. Others have pointed out how challenging this can be, for example, for economic reasons. It is difficult to get the resources required to work together and find the right time and place for meetings between teachers and researchers. Culturally, the lack of a shared language and knowledge frameworks, and asymmetrical power structures and status also inhibit productive collaborations.

What is to be gained by teachers or administrators as co-researchers and is it best for all to get involved? The Swedish example displays successful projects involving teachers and school administrators in various ways, such as in the research process and other roles in the research process; it also points out practical difficulties such as providing practitioners with the necessary time to become involved and finding gathering areas that can function for all. Other issues relate to research competence and research literacy among practitioners; researcher knowledge about the everyday life of schools; and funding and available resources. The varied approaches can hopefully lead to relationships that can be beneficial to the development of new knowledge relevant for practitioners as well as provide important new and expanded insights into education that can further research and knowledge development in the field. Furthermore, the Swedish initiative provides a concrete - though not exhaustive - list of proposals for further work on practice-research relationships that have been developed by acknowledging the differences of the actor groups involved and what they bring into education research processes.

Clarity in actor roles for both practitioners and researchers

Explore and clarify the roles of both teachers and researchers in the relationships by engaging in early-stage discussions on what involving multiple actor groups entails in research-practice initiatives. A timely question is whether a more productive way of involving practitioners would be to have them take part in discussions and decision-making processes to secure a practice-based perspective rather than being co-researchers.

Equality between practitioners and researchers involved

For the discussion on actor roles to be productive, every actor should be involved in research based on their existing knowledge, competences, and experience, with the researcher as researcher and teacher as teacher. This approach requires several issues to be considered: It requires the acknowledgment of practitioner knowledge as being equally important in research development processes to scientific knowledge. This is not necessarily easy because actor status, actor power, and perceptions of hierarchy between researchers and practitioners influence what knowledge will dominate the discussions. It requires mutual competence building, respect, and curiosity between the parties involved, which takes time and engagement.

Accessible arenas where practitioners and researchers easily can meet

The Swedish initiative has shown that practice-based research requires well thought-out processes and arenas adapted to practitioners and researchers working together. One example of such efforts is to gather practitioners and researchers in seminars with smaller groups to discuss, collectively identify knowledge needs and develop researchable topics of relevance and interest to all parties involved. Later in the

process, the same seminars can be used to discuss central concepts, challenges, opportunities as well as results.

Ensuring scientific quality in the research-practice relationship

Careful considerations of what scientific quality means and what requirements must be covered to secure quality in research-practice collaboration is needed. Issues that will emerge include questions regarding research ethics, ownership of data and results and epistemological and methodological issues. This requires the involvement of researcher competence and researchers experienced in practice-based research that can foresee and handle challenges that arise when multiple actors are involved. As an example, Swedish history has shown that over time, practice-based initiatives can become more developmental than research-oriented and that it can be a challenge to uphold the principles of scientific rigour when multiple actor groups with varied interests collaborate. The question of involvement requires epistemological considerations of what constitutes and ensures quality in education research when multiple actors are involved.

Actor involvement in the various phases of the research process

Practitioners' involvement can be carried out in terms of practice orientation and practice involvement in the various phases of the research process. It can also occur in pre- and post-research processes; for example, as part of needs identification and considerations of relevance as an integrated part of securing scientific quality. Collaboration between practitioners and researchers in these processes is highly important for the development of a scientific knowledge basis for both policy and practice.

Multiple actor involvement for larger practice- research projects

Finally, the question of multiple actor groups in education research is not confined to smaller, local, context-bound, and practice-based research projects; it is also highly relevant for larger research projects aiming for empirical or analytical generalisations.

First things first

Vivian Tseng, Senior Vice-President, William T. Grant Foundation

Box 10.6. William T. Grant Foundation

The William T. Grant Foundation invests in high-quality research focused on reducing inequality in youth outcomes and improving the use of research evidence in decisions that affect young people in the United States.

Source: William T. Grant Foundation (n.d.[45]), *Homepage*, http://wtgrantfoundation.org/.

First things first: What is the purpose of education research?

Any discussion about what research is needed – and the ancillary questions of how it should be conducted and funded – must begin with the fundamental question of what purpose research serves. If the central goal of education research is to improve practice and policy, then research agendas should focus on key practice and policy concerns. Unfortunately, that is more often the exception than the rule. For far too long,

researchers and research funders have had outsized influence on research agendas, and thus it is unsurprising that research is more likely to fill gaps in the academic literature than inform practice or policy dilemmas. Even as the research community has increasingly sought to produce more relevant research, we still rely heavily on our discussions *about* practitioners and policy makers rather than *with* them. Even our attempts to study a practical topic like implementation ends up focusing on questions about intervention dosage and fidelity (researchers' priorities) rather than questions about adaptation for specific populations, contextual concerns, or implementation conditions (practitioners' priorities).

Informing practice and policy is not an end unto itself and, for many of us, the ultimate goal of education research is to serve students and communities. Unfortunately, students and communities – especially those marginalised by racism, poverty, xenophobia, and homophobia – are even further sidelined in research agenda-setting than are education practitioners and policy makers.

In the United States, both universities and school districts have long histories of racial injustice (Diamond, 2021[46]). Universities sit on land acquired through theft, conquest, and the genocide of Indigenous peoples. They were built using the proceeds from slavery and exploitive taxation of Chinese labourers. In modern times, universities still produce "extractive research" wherein academics collect data from marginalised students and communities but neglect to leave behind anything of significant value for the people who shared their personal experiences, family lives, instructional time, or saliva. On the other side of the table, education practice and policy-making bodies have also been sites of exclusion. Black, Asian, and Chicano children were segregated from White children throughout most of US history. Indigenous children were sent to residential schools to separate them from family members and erase their cultures and languages. White flight from urban communities drove segregation in the 1970s and 80s, and gentrification fuels it today.

If we see students and their communities as beneficiaries of education, then their interests should be at the centre of education research. Their *self-determination* is critical given our colonial and racialised history, and education research should serve *their* interests in the ways *they* want to be served. This is not to say that researchers and funders have not sought to centre marginalised students in research but too often it has been done through researchers' perceptions of what would benefit marginalised students (Bruno and Iruka, 2022[47]). Moreover, because the research enterprise has been racialised, research on racially and socio-economically marginalised students has too often been deficit-oriented and damage-centred (Kirkland, 2019[48]; Tuck, 2009[49]).

If the purpose of education research is to make policy and practice more equitable, then it is critical that marginalised students and their families and communities be present at the research agenda-setting table along with practitioners, policy makers, and researchers. Designing, conducting, interpreting and using research alongside them has never been more important, especially given our current social and political moment when, for example in the United States, we witness the widening inequality caused by the pandemic, the racial reckoning spurred by the murder of George Floyd, the White supremacist insurrection at the US Capitol, rising anti-Asian violence, the callous treatment of Haitian and Central American refugees at our southern border, and the backlash in communities where families of colour are moving in.

Democratising Evidence through Partnered Research

To re-centre research agendas on the intended beneficiaries of education research, practice, and policy, we can look to the democratising evidence movement (Democratizing Evidence in Education, n.d.[50]; Tseng, forthcoming[51]). The idea is simple: To apply democratic principles to the production and use of research evidence. Democratising the production of education research would mean that agendas are no longer set primarily by researchers and research funders but by a variety of stakeholders who decide "what questions are asked and answered…result[ing] in an evidence base that is more relevant to the concerns of stakeholders, including the communities served by educational institutions" (Jackson, 2021, p. 209[52]). Researchers, practitioners, communities, youth, and policy makers would deliberate, negotiate, and

compromise over research priorities. The agenda-setting process would likely be messier and more time- and resource-intensive than our current system but the research would yield more relevant, trusted, and impactful work (Tseng, Fleischman and Quintero, 2018[53]).

Research-practice partnerships (RPPs) are a promising strategy for democratising evidence. In a recent landscape scan in the United States, Farrell and her colleagues (Farrell et al., 2021[54]) define RPPs as "long-term collaboration[s] aimed at educational improvement or equitable transformation through engagement with research. [They] are intentionally organized to connect diverse forms of expertise and shift power relations in the research endeavour to ensure that all partners have a say in the joint work."

RPPs contrast in several ways from traditional research arrangements (Tseng and Coburn, 2019[55]). First, researchers co-develop research agendas with practitioners, youth, and/or community members. Second, partnerships embrace relationship building as opposed to strict researcher independence and detachment from "the researched" (Vakil et al., 2016[56]). RPPs rely on close, iterative interactions to determine research needs and to collectively interpret findings and their implications for policy or practice. Trust between partners is a marker of the strength of the partnership. Third, partnerships embrace long-term commitments. Researchers do not come and go with different projects and grants. No study can ever address the complex problems faced by educators or communities, and RPPs emphasise sustained commitments to build knowledge over time, delve into complex challenges, and iteratively apply research to educational improvement.

Implications for funders

The success of research-practice partnerships and other forms of community-engaged or participatory action research will rely in part on funders' willingness and capacity to depart from some traditional funding practices (Bednarek and Tseng, 2022[57]; Tseng, Bednarek and Faccer, forthcoming[58]). Below I offer four recommendations for funders who seek to join the movement to democratise evidence.

1. Provide sustained and flexible funding

Building any kind of productive relationship requires time and the challenges are amplified by historical uses of research to justify and exacerbate inequality. Many marginalised communities are wary of research and researchers, and it takes time and intentionality to build more equitable, trusting relationships. Relationship building is not a one-and-done activity (Wentworth et al., 2021[59]). Sometimes trust is broken, and repair work is needed. Other times, leadership changes and new relationships must be created.

Funders can invest patiently in relationship building, especially with communities that have been systematically marginalised. On the front end, funders can launch new partnerships by supporting planning periods when partners can begin building trust and developing a shared sense of purpose and commitments. In times of leadership transitions or community change, funders can provide supplemental funding so partners can revisit their goals and agreements. Throughout the partnership, funders can support "brokers" or "boundary spanners," staff who shoulder the responsibility of strengthening the partnership and partners' skills to carry out collaborative work (Wentworth et al., 2021[59]).

Funders can consider which expenses are allowed, encouraged, or even required in grant budgets. When the funding system incentivises researchers to constantly seek support for new projects, their time and energy is diverted away from the long-term agendas developed with partners and towards funders' priorities, which may not align with those developed in partnership with communities. Further, organisational infrastructure and staffing are crucial for partnership activities such as communicating findings to diverse stakeholders; applying findings to practice or programme change; supporting communities and youth to mobilise research to advocate for change; scoping new projects; and maintaining robust data systems (López Turley and Stevens, 2015[60]; Tseng, Easton and Supplee,

2017[61]). These are all operating and capacity-building costs that are not adequately covered in most research grants.

Funders can also attend to how funds are allocated across partners (Fine, 2022[62]). Because researchers are often the Principal Investigators on research projects, funding tends to support the researchers and research organisations. While it is common for budgets to include "incentives" for study participants, the payments are premised on the need to induce "the researched" to participate in studies. When funders back authentic collaborations, however, community and practice organisations will need support for their time, effort, staffing, and expertise.

2. Redefine deliverables

Research funders often consider publications as key deliverables, and thus it is no surprise that the field is awash with journal articles and lengthy reports. The unfortunate reality, however, is that those publications are rarely read by practitioners and policy makers and even more rarely by communities and youth.

Relationships, not papers, drive the use of research (Nutley, Walter and Davies, 2007[1]). Practitioners and policy makers seldom turn to journals, reports, or books to help them solve problems; instead, they look to trusted colleagues. Communities turn to their neighbours. In strong RPPs, they turn to their research partners. Publications are still important for codifying research findings but they are not the mechanism through which research achieves impact. If funders want research to be used, we might do well to focus less on the number of publications and more on the quality of relationships, partnership infrastructure, and capacity support for interpreting and using findings.

While interpersonal relationships are foundational, institutional relationships are better positioned to withstand leadership turnover. Urban school superintendents in the United States last less than three years in their positions, and thus RPPs that foster institutional collaboration persist even as individuals come and go (Tseng, Easton and Supplee, 2017[61]).

Funders might also consider changes in organisational capacity, incentives, and norms as grant outcomes. Academic incentives tend to reward faculty for their influence on other academics, not policy makers, practitioners, or communities (Bogenschneider and Corbett, 2021[63]; Hart and Silka, 2020[64]; Gamoran, 2018[65]). Graduate students and faculty are offered little guidance, mentoring, or skill-building opportunities to conduct partnered research (Tseng et al., in press). Funders can use their grant making to incentivise changes so that academia rewards faculty and departments that produce socially impactful research and equips academics with the requisite skills.

Box 10.7. Examples of democratised research funding

Deliverables

- The Carnegie Corporation of New York's Rigor and Relevance Initiative (2014[66]) provides special funding consideration to universities that "count" policy-relevant activities in promotion and tenure reviews and that stop tenure clocks for "periods of immersion in policy work".
- The William T. Grant, Doris Duke, and Spencer Foundations' Institutional Challenge Grants encourage universities to reward faculty partnerships with policy makers and practitioners (Tseng, Bednarek and Faccer, forthcoming[58]).

Grant criteria and processes

- The Lenfest Oceans Programme at the Pew Charitable Trusts has developed a set of grant-making criteria, which might serve as a model for education funders (Landrum et al., 2022[67]).
- Henrick and colleagues' (2017[68]) Five Dimensions of RPP Effectiveness can also inform funding criteria for partnership proposals. The dimensions are 1) building trust and cultivating partnership relationships, 2) conducting rigorous research to inform action, 3) supporting the practice organisation in achieving its goals, 4) producing knowledge that can inform educational improvement efforts more broadly, and 5) building the capacity of participating researchers, practitioners, practice organisations, and research organisations to engage in partnership work.

Source: Carnegie Corporation of New York (2014[66]), "Rigor and Relevance Initiative: Bridging the academic-policy gap", Request for Proposal; Tseng, V., A. Bednarek and K. Faccer (forthcoming[58]), "How can funders promote the use of research? Three converging views on relational research", *Humanities & Social Sciences Communications*; Landrum, J. et al. (2022[67]), "Grant-making criteria for developing useful and usable marine science: A philanthropic perspective", https://doi.org/10.3389/fmars; Henrick, E. et al. (2017[68]), "Assessing research-practice partnerships: Five dimensions of effectiveness", https://wtgrantfoundation.org/new-report-assessing-research-practice-partnerships-five-dimensions-effectiveness.

3. Reconsider grant criteria and processes

Changing *what* gets funded requires changes in *how* grants are funded. Academia has criteria for determining what constitutes strong research but funders will need additional grant-making criteria to evaluate the strength of partnerships and partnership research, and the extent to which it serves marginalised communities.

Grant review processes can be more inclusive and funders might consider both *who* they bring into the review process and *how* different stakeholders are engaged in reviews. The academic peer review process has relied on researchers as reviewers but if studies are to serve the interests of practitioners, policy makers, youth, or communities, then perhaps there should also be proposal evaluators. Review processes may also need to be reconfigured: While all stakeholders can weigh in on all aspects of proposals, different parties might weigh in more heavily on certain issues. For example, communities might have final say in whether the research fits with their goals and interests whereas researchers might be relied on more heavily to evaluate the research methods and analyses, and practitioners might closely attend to the potential actionability of findings.

4. Study thyself

For funders who want the research they support to be more useful and used, we can put our ideas and practices under empirical scrutiny. We can support studies examining whether, how, and under what conditions collaborative projects are successful, and ways to improve their effectiveness. This includes developing methods and measures to rigorously assess whether collaborative research is used in policy and practice and whether educational outcomes improve. We can also study the partnership practices, and operating conditions that make some collaborative projects more successful than others – findings that could help partners improve their work. We can also study which funding practices are more likely to support successful projects and thereby improve our work as funders. By supporting rigorous empirical studies, we can build stronger knowledge of how we can produce and use research to achieve educational equity.

Conclusion

In offering my take on education research, I have suggested that we focus on first things first: What is the purpose of education research? If the goal is to inform more equitable policy and practice for marginalised students and communities, then we will need to redesign our research enterprise to fit that goal. Today we have a research enterprise designed to address researchers' questions. We will need to innovate new ways to conduct and fund research so that it meets the goals of democratising evidence. Research-Practice Partnerships are one important strategy for redesigning research so that the agendas are co-defined by education stakeholders. Education RPPs are already expanding across the United States but their success will strongly depend on funders' willingness and capacity to alter our practices to support that work.

Professionalism in the production and use of education research in the era of useability and utility

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Introduction

This opinion piece calls for a critical look at how two decades of discussion on education research affected what discerning and choosing "quality" research in education in today's rhetorical space means.

Two issues are to be addressed: First, we need to critically investigate the role of different actors in defining or affecting what constitutes "quality" in the education research chosen to make "informed decisions" in policy and practice. Second, we need to examine the rhetoric around "quality" that poses threats on narrowing the scope of education and limits what knowledge is used. Hence, we need to examine who are the participants in education research and how are questions asked to inform policy and practice in education today.

New criterion of "quality" in education research and threats to professionalism

Democratising the decision-making process in education is an ideal that makes our education system accountable and inclusive of all people in a society. However, applying the rhetoric of democratisation to how we decide on what education research should look like sets a trap. This is because there are complex power dynamics and imbalances across stakeholders and participants in education decision making. Such a trap may threaten the rigour and ethics in education research and its application to policy and practice.

Education research has measures set in place to ensure its quality. Traditionally, it is the professionals in the research community that take on the responsibility to ensure rigour in education research through peer review. However, there have been persisting challenges in education regarding the gap between research and practice.

Nonetheless, the past two decades of discussion on the quality and use of education research have ushered in new criteria on discerning the quality of research that has a bearing on policy and practice. These criteria are established by needs and forces outside the research community: Namely, the criteria that research findings be practically applicable to resolve pragmatic needs or grasp current issues in education. "Is this finding applicable to resolve or answer (a certain) pressing issue?" has become a criterion of discerning and measuring the "quality" of chosen research.

Whose useability should define quality?

With “useability” as the essential criterion for discerning “quality” in education research, it is critical to work out in detail ways to balance different political powers. These are exercised by diverse actors who affect education research and its use in policy and practice. In discussions on making education research more relevant and responding to pragmatic needs in education, it is ideal to ensure the involvement of user-communities such as policy makers, practitioners, students, parents and even future employers. There are enough arguments in favour of a democratic forum in which the research community could come into dialogue with its user-communities, and progress towards education research that contributes better to the production of knowledge relevant to policy and practice. This is an interesting argument and even, theoretically, ideal but there are constraints to be addressed before its application in practice.

That said, education research has already or always been open to diverse users, some of whom are outside the research community. Furthermore, the user-communities of education research are overly diverse and fluid, and thus each of them represents different roles, responsibilities, interest, financial capacities and power to influence decision making in policy and practice in education. The research community does not have exclusive power of determination over education research, and thus, it has proved difficult to find sufficient common ground among user-communities.

The differentials in power held by different actors means that some actors have more determining power over others on how research gets funded, what scopes are set and what methods are used when designing research in education. For instance, in the United States, the Department of Education aims to control the types of education research by prioritising funding for randomised control trials. In so doing, it aims to make education research contribute to building a causal knowledge base to inform policy and practice. Many countries have also shifted investment in education research to that which promises the production of causal knowledge in education. Setting such a priority in the allocation of research spending is a rational policy action in the pursuit of “value-for-money” in public spending.

Funding allocation driven by utility and efficiency in research spending prioritises responding to the needs of the political and quantitative mainstream. Allowing the lens of “applicability” to discern who the majority is, what a majority wants and needs, and the ways to make a functional majority drive research risks overlooking the realities and needs of minorities, the disenfranchised, and voices that do not align with the criteria of “applicability” in a given context. Therefore, it is important to acknowledge that efficiency-based quality in education research comes at a cost. It sets limits on those who have a voice in education research as well as those whose voice is represented in policy and practice through education research.

Latent threats in the dominance of experimental design

Along with favouring useability of research knowledge, there is a trend in investing in education research using experimental design. This trend poses a threat to fairness and equity in the use of and access to quality research in education. Experimental design in education research is costly, one that is higher when the scope is set for system-level policy and practice. There are also the costs of the verification of produced knowledge. Hence, making overly heavy investments in particular types of research with a certain agenda or methodology may narrow not only the scope of research but the number and diversity of researchers who are able to participate in knowledge production.

Lastly, in an era of declining education spending, the current trend in focusing research investment on experimental design comes at the cost of undermining, if not ignoring, other important questions that cannot be answered with causal explanations. Experimental design is an adequate means to understand and measure the causal relations between inputs and their outcomes. It offers causal knowledge to better inform decision making in policy and practice in education but the causal knowledge produced by such research is done so through the removal of existing diversities and complexities in education practice in the form of variables. In this respect, research-based causal knowledge can tell us what intervention

techniques or what area of intervention would likely impact student learning or teacher teaching more greatly, for example. However, it answers very little about how such interventions functioned where they were implemented. More importantly, it does not answer why the same interventions worked differently or did not work for those for whom there was no impact.

If too much investment goes into education research that promises immediate useability in pragmatic issues of policy and practice, this could accelerate operationalisation in teacher policy and teacher professional development practice. Teachers would face de-professionalisation and become mere utility tools, enacting operations of "what works". This would be validated by quality education research at the cost of making statistically insignificant variables of the outliers (e.g. students on both tails of the normal distribution in terms of learning or social advantages). Undermining outliers works to reproduce social and political inequality as they cannot afford educational alternatives and would lose educational opportunities.

Issues smouldering beneath useability-based quality in education research

To sum up, while recognising the value in the democratic involvement of different actors, interests, and views in defining purposes and "desirable quality" in education research that is applicable to policy and practice, it is essential to critically examine how this diversity affects the funding of and choices made in education research. While pragmatically applicable research may enable the policy design to respond to a perceived majority of needs, the uneven and greater distribution of investment towards research and consequent policy that caters only to such needs leaves out "outliers" via statistic normalisation (e.g. in terms of research fields/questions or researchers' interests). Such omissions and exclusions of "outliers" in education contributes to a social reproduction detrimental to minorities, disenfranchised / disadvantaged groups and ideas that do not fit the statistical mean.

This leaves out not only individuals, communities, or minority groups of a given society but even entire countries and systems that cannot afford or do not have the means or specialists to adapt such research to their own conditions and contexts. They end up taking on research productions that overlook their own context in an attempt to align to a "normality" defined without them. Similarly, the operationalisation of teachers carried out from sources and processes external to them would make them into mere tools to seed and enact "useable", functional knowledge defined outside their communities of practice and their teaching/learning sensitive contexts.

Professionalism and ethics in education research

We need to remember at all times that a productive, successful education is just as much about the needs and rights of outliers to develop and access the opportunities of a modern society as it is about the "median majority". This needs to be reflected in the funding of education research as well as in the definitions of "quality" and decisions about "applicable" research designs and products.

Therefore, no discussion on the quality and use of education research can be complete without defining the roles of the professional community in education and ways to build trust around it. As argued in this opinion piece, education research is open to diverse actors; and the professional community has even smaller roles in today's rhetorical space in which "useability" has become an additional criterion in discerning the quality of education research. Today, education is increasingly a field in which differences in values and priorities are constantly negotiated among diverse actors and across complex agendas. The quality and use of education research cannot be established without defining some fundamentals of professional rigour and ethics that should cut across participants and discussions. Professionalism, therefore, is not so much about the knowledge and skills in conducting research in education but the ability to be entrusted with monitoring ethics in education research and its application in policy and practice.

Conclusions: The future of education research

Although the seven opinion pieces in this chapter are markedly different in terms of focus, narrative and proposed solutions, they have a striking common element. *They all want education research to be more relevant.* Some authors concentrate on relevance for policy makers and educational practitioners while others go beyond to include students and communities. There are four emerging themes that cut across several of the perspectives.

Theme 1: Research quality and scientific rigour

It appears that the discussion on research quality has moved forward on several fronts in the past decade. First, among those concerned with scientific rigour, the debate is no longer focused primarily on methodological approaches. Mark Schneider demonstrates how the new research standards of the United States Institute of Education now extend beyond traditional scientific rigour with a view to helping establish a stronger knowledge base for educational practice and policy. Notably, they include considerations for generalisation and scaling. In the same vein, Dirk Van Damme notes that the "empirical turn" in education research has brought more rigorous research; however, understanding how far these findings generalise is still a challenge. Both emphasise the lack of replications and various biases as major obstacles and both advocate providing strategic funding and working to overcome the main biases. What differs is that Dirk Van Damme believes that educational research needs its own identity (as a separate academic discipline with its own non-ideological theories and more self-regulation). Mark Schneider, on the other hand, focuses on more practical ways to increase research standards (e.g. well-defined components, unbiased outcome measures, considerations for generalisation and scaling).

Second, those whose primary focus is to involve users (and, even, ultimate beneficiaries) in research call for a novel conceptualisation of scientific quality. Rather than viewing practitioners' engagement in research as a threat to scientific rigour (as viewed by Dirk Van Damme), they favour the meaningful and deep engagement of several actors as a new criterion of research quality. At the same time, as Tine Prøitz stresses, ensuring scientific quality when multiple actor groups collaborate in the research process remains an important consideration. Vivian Tseng brings this discussion to a meta-level: Rigour is needed not only from those conducting research but those who fund it. Education research itself should be researched and evaluated to determine what works, how and under what conditions.

Theme 2: The nature and quality of collaboration between researchers and practitioners

The authors of the last five pieces all agree that actors' engagement in research is what ensures its relevance. They point to various developments while also drawing attention to major challenges that remain.

Over the past 20 years, practitioner-researcher collaboration has evolved from a wish and a discourse to reality in many countries. However, as demonstrated by Emese K. Nagy, the nature of collaboration matters strongly for the relevance and applicability of research. Developing mutual respect and overcoming traditional power relations is key. Rather than forcing different types of knowledge (research knowledge and practice-based, experiential knowledge) to converge, mutual respect is about valuing all forms of knowledge and experience equally, according to Tine S. Prøitz.

Scaling research-practice partnerships, as illustrated by examples in Sweden and the United States, is more recent. As a result, evidence on how and under what conditions such partnerships can contribute to building a robust and cumulative knowledge base for education is still in its infancy. Two sets of factors are to be understood: One is a set of characteristics internal to research-practice partnerships, including actors' respective roles, and suitable spaces and timeframes for collaboration; the other is a set of external factors such as funding schemes for research and systemic incentives for all actors.

Theme 3: Ethical considerations of democratised education research

Education research should help repair inequities in our society by making education better for *everyone*. Several of the pieces are concerned with how this can be realised in practice. Addressing inequities was added as a separate principle to the standards of research excellence in the United States. Vivian Tseng believes that for education research to fulfil this mission, evidence itself should be democratised. The voices of all actors, and in particular of marginalised groups, should be heard and incorporated not just in the process of each individual research initiative but in agenda setting. Makito Yurita also discusses democratisation in terms of methodologies. Prioritising certain methodologies, particularly expensive experimental designs, can lead to certain types of research and groups of researchers being sidelined. This is problematic because helping marginalised groups requires addressing different types of questions through different methodologies.

Theme 4: Better policies for education research

Better research for better policies, yes, but also better policies for better research. Several of the pieces remind us that improving research production has policy conditions. First and foremost: funding. The volume and nature of the research produced is contingent not only on available funds but the criteria for funding. Unsurprisingly, more would be better. The criteria however is a complex matter. What kind of research should be funded? Experimental designs? Foundational and theoretical research? Participatory research? What is the right formula to get desired outcomes?

Vivian Tseng demonstrates just how much equity depends on the way funding is provided. Makito Yurita adds that funding criteria such as prioritising high-cost designs can marginalise education research for entire education systems.

However, it is not just about money. Incentives for different actors also determine what and how research is produced. John Bangs and Martin Henry emphasise incentives for teachers. Emese K. Nagy illustrates this through a career model that explicitly incentivises teachers to engage in research. Several authors also highlight the problem of academic incentives that, by requiring certain types of output, discourage producing research for policy and practice. They do not favour participatory approaches either.

Bottom line

This chapter moves the dialogue on education research forward by offering a discussion space beyond the walls of academia that spans the different contexts of policy, practice, research and advocacy, and different countries. A great deal of thinking has gone into the production of education research in the past decades. As a result, there is more education research today. It has become more relevant for policy and practice, and more rigorous and more participatory. These developments have provoked a more refined understanding of what still needs to be done. The perspectives presented above express diverse but not truly contradictory views. We hope that readers and the authors themselves will recognise and benefit from the complementarity of these perspectives to advance the agenda of education research. Importantly, this dialogue should not just be broadened and continued but become more evidence-based itself.

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Notes

[1] For more information, see https://ies.ed.gov/seer.

[2] See https://ies.ed.gov/director/remarks/researchcomp2018.asp and https://ies.ed.gov/director/remarks/seer2018.asp.

[3] See https://capproject.org/.

[4] See https://ies.ed.gov/seer/cost_analysis.asp.

[5] See https://edinstruments.com/.

[6] For more information, see https://us.macmillan.com/books/9781250222695/sciencefictions.

[7] See https://seernet.org/.

[8] See https://www.basicbooks.com/titles/jim-manzi/uncontrolled/9780465023240/.

[9] See https://ies.ed.gov/funding/pdf/2022_84305N.pdf.

[10] See https://issuu.com/educationinternational/docs/2021_ei_research_statusofteachers_eng_final/.

[11] Action research – originally termed by Kurt Lewin – is a systematic enquiry centred on a problem related to teaching practice, in which the practitioner performs the roles of both researcher and teacher. In its popular adaptation, collaborative enquiry, researchers and teachers work together to solve a problem through systematic investigation (Kuhne and Quigley, 1997[69]; Ainscow et al., 2016[70]).