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The core content framework and the 'new science' of educational research

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ABSTRACT

This paper unpacks the assumptions underpinning England's new Core Content Framework (CCF) in respect of the educational research required for teacher expertise, with particular attention to the sources referenced in the final part of the CCF and claims that these constitute the 'best available educational research'. Drawing on sociological studies of educational knowledge, and assessments of the quality of educational research in England, in addition to the philosophy of expertise as related to teaching, it is argued that the CCF is currently orientated towards a scientism that (i) marginalises longstanding traditions of educational thought, and (ii) technicises and instrumentalises teaching practice. The predominance of a scientistic model of educational knowledge is demonstrated through a profile of the sources identified in the CCF, with a focus on the journals in which referenced material is published and an overview of subject matter via an analysis of keywords and titles. With an overwhelming preference for this 'New Science' as opposed to other traditions of educational knowledge, the CCF encourages an image of teaching as a decontextualised series of interventions with narrow objectives, and thus implicitly marginalises wider educational goods and purposes and deprofessionalises teachers work.

KEYWORDS

Teacher education reform; educational knowledge; teacher professionalism; initial teacher education

Introduction

The teacher education system in England has seen a series of changes in the last ten years of Conservative-led government that have sought to challenge the role of higher education institutions (HEIs) and prioritise school-based experience (McIntyre et al., 2019; Mutton et al., 2017; Whitty & Wisby, 2016), resulting in some HEIs closing their teacher education provision and organisations running chains of schools developing teachers 'in house' according to their own principles and working practices (Whiting et al., 2018). Most recently, we have seen a market review of Initial Teacher Education (ITE) (or Initial Teacher Training [ITT] to use the preferred term of the Department for Education) (Department for Education [DfE], 2021), which proceeded into a phase of accrediting all teacher education provision and led to a number of HEIs either (i) considering their future involvement in teacher education (Russell Group, 2021); or (ii) failing to achieve accreditation in either of

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the two rounds organised by the government (Department for Education [DfE], 2022a). The Department for Education (DfE) has stated that it is 'creating a world-class teacher development system' (DfE, 2022b, p. 4), by embedding 'a "golden thread" of high-quality evidence' (p. 5) that will underpin learning and development throughout a teacher's career. Despite persuasive findings suggesting that teachers in England have a positive view of their own experiences of ITE, and are sceptical about the advantages of the changes implemented (Ellis, 2022), the process seems destined to continue. This is taking place as the national curriculum and assessment reforms of the Conservative-led (2010–2015) and Conservative governments (since 2015) have left schools with a tightly specified curriculum that has prioritised the coverage of specific subjects and risks marginalising other curriculum activities (Parker & Leat, 2021). Meanwhile, the academisation of school governance has resulted in academy structures which promised freedom from local authority control but require new forms of negotiation and partnership development, with new organisations managing chains of schools with pledges to improve educational outcomes but responsible ultimately to the DfE (West & Wolfe, 2019). In England the school curriculum, school governance and ITE reforms have all involved a centralisation of power in the hands of the DfE, but this is combined with considerable complexity, tension and disruption.

A recommendation of the 2015 Carter Review was the introduction of a core content for initial teacher education in England, with the review suggesting that this could be developed by a 'sector body' and 'through a regulatory framework rather than by local ITT partnerships' (Mutton et al., 2017, p. 19). The initial version of that core content was published in 2016 and set out a 'framework' for ITE/ITT that was intended as a guide for providers in the development of their teacher education curriculum. In 2019 the core content framework was updated and became more specific and detailed, building on the recommendations of an 'expert advisory group' which included school leaders, academic and others with interests in teacher education, and is said to have been 'independently assessed and endorsed by the Education Endowment Foundation' (DfE, 2019a, p. 2) and authorised by the UK Government Department for Education. It is also now a mandatory element for all teacher education provision in England, and all ITE/ITT providers 'must ensure their curricula encompass the full entitlement described in the ITT Core Content Framework' (DfE, 2022c, p. 5) to achieve accreditation under the ITT criteria set out by the DfE. The Core Content Framework (CCF) intends to provide a 'structured introduction to the core body of knowledge, skills and behaviours that define great teaching' (DfE, 2019a, p. 3). It is organised in sections that relate to the Teachers' Standards (DfE, 2011) in order to 'ensure congruence' and 'for clarity' (DfE, 2019a, p. 4), with groups of 'Learn that' statements under each section heading, which 'have been drawn from current high-quality evidence from the UK and overseas' (DfE, 2019a, p. 4) regarding teaching practice, and 'Learn how to' statements which set out the 'entitlement to practise key skills' and opportunities to 'work with and learn from expert colleagues' (DfE, 2019a, p. 5). Each collection of 'Learn that' and 'Learn how' statements are said to be 'informed by the best available educational research' (DfE, 2019a, p. 10), which are 'provided as references and further reading' (p. 10) in the latter part of the CCF document. The inclusion of a full reference list (139 references are cited) to a government document is unusual, but perhaps reflects the CCF's status as a framework that required adoption by ITE/ITT providers for their teacher education curriculum, and demands that educationalists 'embrace ... evidence rather than the comfort of prevailing orthodoxies' (Gibb, 2017).

In the introductory section to the CCF it is asserted that the CCF 'does not set out the full ITT curriculum for trainee teachers' and that 'it remains for individual providers to design curricula appropriate for the subject, phase and age range that the trainees will be teaching' (DfE, 2019a, p. 4). Nevertheless, 'providers should ensure their curricula encompass the full entitlement described in the ITT Core Content Framework', while they should also seek to integrate 'additional analysis and critique of theory, research and expert practice as they deem appropriate' (DfE, 2019a, p. 4). Importantly, the document asserts CCF 'defines in detail the minimum entitlement of all trainee teachers' (DfE, 2019a, p. 3), and in connecting the 'core content' to the Teachers' Standards is designed to steer curriculum decisions towards prioritising the content specified. In mandating the CCF as a minimum entitlement, this will be seen as the principal and most significant component of the curriculum for initial teacher education, and will form the basis of the Ofsted[1] inspection framework for ITT/ITE (DfE, 2022b). Whenever there are constraints of time within the curriculum, and decisions need to be taken regarding which content to cover, it seems inevitable that the default will be to cover the 'minimum entitlement' rather than the 'additional analysis and critique' (DfE, 2019a, pp. 3–4). This default to the minimum entitlement of the CCF is likely to be reinforced by the relationship between ITT/ITE and the Early Career Framework (ECF). When the CCF was developed it had to be retrofitted to the content of the ECF to ensure that there was continuity between them. The reference list for the CCF and ECF are identical, as are the Learn that statements, with the only difference between the two frameworks in the Learn how statements (DfE, 2019b). The notion in the Carter Review that the CCF might have been agreed by the 'sector' has been overtaken by the centralised regulatory framework highlighted by Mutton et al. (2017), and the CCF is now absorbed within a regime of inspection-led accountability with significant implications for teacher education providers.

This paper aims to identify the assumptions underpinning England's new Core Content Framework in respect of the educational research required for teacher expertise, with particular attention to the sources referenced in the final part of the CCF. Despite suggestions to the contrary, it seems the CCF will in effect become a baseline ITE curriculum in England, reducing opportunities to introduce novice teachers to alternative educational ideas and restricting the professional capacities of both teacher educators and teachers, with long term consequences for education in England. Drawing on studies of educational knowledge, evaluations of the quality of educational research, and philosophical reflections on the purpose of educational inquiry and the expertise of teachers, it is argued that the CCF is currently orientated towards a scientism that (i) marginalises longstanding traditions of educational thought, and (ii) technicises and instrumentalises teaching practice. The dominance of this 'New Science' of education is demonstrated through a profile of the sources identified as the 'best available educational research' in the CCF, including the journals referenced and an overview of author keywords and titles. With an overwhelming preference for the New Science as opposed to other traditions of educational knowledge, the CCF encourages an image of teaching as a decontextualised series of interventions with narrow objectives, thus marginalising wider educational goods and purposes and deprofessionalsing teachers work.

Contrasting visions of educational research and their relation to teacher education

The changes in teacher education seen in the UK are accompanied by some longer-term developments in the structure and orientation of educational knowledge, a category which has included a wide range of traditions of research and inquiry (Furlong & Whitty, 2017). The relationship between teacher education and educational research is complex and nuanced, with some research traditions stemming from the objective of informing and enriching teaching and learning processes (i.e. action research, practitioner inquiry) while others approach education in broader terms from within a distinct disciplinary tradition (i.e. philosophy, history or psychology of education) and often cast their arguments primarily within the frame of disciplinary problematics rather than specifically with the work of teachers in mind) (BERA/RSA, 2014; Furlong & Whitty, 2017). It is clear that, in the UK at least, there is widespread acknowledgement of the continued development of high-quality educational research existing in multiple traditions, both within universities and beyond (Furlong, 2013; UKRI, 2022). The recent panel overview report for the UK Research Excellence Framework 2021 noted that Education is a 'large and diverse interdisciplinary field of research' (UKRI, 2022, p. 157) which 'continues to embrace and develop a very wide range of research methods' including 'very strong work in ethnographic and narrative research' (p. 165). Educational research also includes research of 'very high quality' within the philosophy and history of education, which offers 'a clear contribution to contemporary debates about core epistemic questions in educational practice' including on the 'epistemic, moral and social complexity of education' (p. 164). The report authored by Oancea and Mills (2015) and recent work undertaken for the British Educational Research Association State of the Discipline project (Stentiford et al., 2021) affirms the diversity and richness of educational research and educational debate in the UK, while also noting some structural issues faced by researchers.

Despite the rich variety of traditions, and the efforts of some academic communities to maintain the delicate balance between them, there are some perceptible trends in the direction of travel for educational research, with changes influenced by government education policy (Hordern et al., 2021). Some of the Foundation Disciplines of education, once quite prominent in educational inquiry and in the education of practitioners, have lost influence amongst many researchers and policy-makers (Barrett & Hordern, 2021; Furlong, 2013). Condemned as increasingly irrelevant to the concerns of teaching and unable to provide clear prescription for policy and practice, the Foundation Disciplines (or Educational Foundations in the USA) have been marginalised in discussions about educational research for teaching in the United States, England and Australia (Barrett & Hordern, 2021; Mayer & Mills, 2021; Paine, 2017). This can be interpreted as primarily a consequence of the ascendence of national government and supra-national policies, such as No Child Left Behind in the United States and the increasing focus on comparative measurement of student attainment and teacher performance at a global level (Paine, 2017), which emphasise the role of teachers in improving educational outcomes within the context of discourses about productivity improvements. The assumptions of increasingly uniform education policies globally (that which Sahlberg [2016] calls the Global Educational Reform Movement) include an emphasis on measurable educational attainment and teacher performance, so that comparisons can be made and policies borrowed to supposedly stimulate educational progress (Grek, 2009). This has been accompanied in many countries by an increased focus on the production of 'evidence' for high-quality teaching. In England, as Helgetun and Menter (2022) have identified, the notion of evidence-based (or informed) policy-making has become a form of 'rationalised myth' embedded in educational policy discourse. They note that this myth is sustained by 'obsessions over measured value for money and a scientification of public discourse where the provision of "evidence" takes the place of moral or philosophical thought' (Helgetun & Menter, 2022, p. 98).

These developments are concomitant with a growth in what Furlong and Whitty term the 'New Science of Education' which promises 'significant improvement in educational outcomes by finding out what works through the application of rigorous research' (2017, p. 28). The 'New Science' concentrates on large-scale empirical studies which seek to solve perceived educational problems or issues, usually those considered to be policy and practice relevant (Furlong & Whitty, 2017; International Society of the Learning Sciences [ISLS], 2009). While the Foundation Disciplines (or Educational Foundations in the United States) have been criticised for offering ambiguity and impenetrability for teachers (Barrett & Hordern, 2021), the New Science seems to promise answers to the questions policy-makers pose and the demands for 'evidence', and offers 'interventions' for teachers to introduce to their practice as part of a rationalised approach to improvement. Central to the New Science is a hierarchy of research methodologies, in which only certain research approaches (such as Randomised Controlled Trials or Systematic Reviews) are deemed to be credible (see, for example, Institute of Education Sciences [IES], 2022, pp. 13–18). In a policy context in which there is some momentum behind a will to 'harness' educational research to meet specific objectives (Royal Society/British Academy, 2018), it is the New Science which attracts the limelight while the more nuanced insights of Foundation Disciplines or other more deliberative traditions of educational thought (for example Curriculum Theory) are increasingly ignored or dismissed as irrelevant or subversive (Barrett & Hordern, 2021; Hordern et al., 2021). While the New Science increases in prominence, other disciplines and deliberative traditions have been marginalised in teacher education in England, with similar trends observable in countries such as Germany, the USA and Sweden (Beach & Bagley, 2012; Paine, 2017; Schriewer, 2017).

However, those 'New Science' approaches to educational research that concentrate on hypothesis-driven and quasi-experimental strategies of inquiry can be criticised for an overemphasis on causal relations in educational contexts and a neglect of questions of meaning. The highly technical methods used can be seen as distant from the substantive questions of educational practice. As Smeyers and Smith (2014) point out, a focus solely on *erklärung* (explanation) through certain forms of empirical investigation is profoundly problematic for the study of education. They argue that 'scientism', defined as the 'faith that imitating the procedures and language of physical scientists', is often inappropriate for 'investigation of human beings and their institutions' (Smeyers & Smith, 2014, p. 12). Echoing this argument, in a discussion of the role of randomised controlled trials (RCTs) in education, Gale notes that RCTs rest on 'an ontology that universalises the reality of the physical across the social world' (Gale, 2018, p. 211), even if this is not often made explicit. RCTs are designed to identify causation and 'general applicability', and while this works for things that do not 'have a mind of their own' (Gale, 2018, p. 211; Gale provides the example of viruses) it is problematic to try to ascertain universal principles for educational processes, because education involves the social formation of mind, and a human dimension that is inherently unpredictable and contextual. More appropriate for educational inquiry is something closer to *verstehen* (understanding), or a process of interpretation and 'intelligent and responsive thought' (Smeyers & Smith, 2014, p. 10) that is attendant to context, nuance and humanity. The position is shaped by the argument that insights into the human condition cannot be reduced to that which can be identified empirically, as decision-making, motivation and behaviour are profoundly influenced by our past histories and the practices we are embedded within. Moreover, human beings are individuals as much as members of collectives, and thus are difficult to predict or explain. Rather than relying on rational choice theories or the behaviourism of neo-classical economics, perspectives from social theory, philosophy and literature are seen as necessary and compelling for the study of contemporary humanity and its institutions (Smeyers & Smith, 2014).

Such an argument would suggest, therefore, that an overwhelming emphasis on a scientism in our approach to education, and policy decisions taken as a consequence, could overlook the human dimensions that are central to teacher education and learning to become a teacher. There is a risk that the notion of causality inherent in a scientistic approach to the social world leads us to make the assumption that educational practice is somehow a closed system, rather than 'open', 'semiotic', 'recursive' (Biesta, 2015, p. 16) and 'non-deterministic' (Gale, 2018). A closed system implies a degree of control, while an open and non-deterministic system acknowledges iteration, change and contextuality. A scientistic belief that causality in the social world can be identified unproblematically may thus lead to instrumental views of the relation between knowledge and practice, assuming that if a novice teacher is introduced to specific content, they can be expected to apply this to their practice, with results that can be predicted, monitored and evaluated. However, the provision of a specified list of content that all new teachers will be expected to be introduced to, does not necessarily lead to a straightforward process of implementation in practice. The process of learning to teach requires the novice teacher to address their assumptions about teaching (developed from their own experience as a student) and to unpack and augment those based on what they are taught. Therefore the systematically organised knowledge assembled and validated has to also be built incrementally in the new teacher through a combination of exposure to those ideas, and a series of events where they attempt to put them into practice. This more nuanced notion of teacher development has been frequently demonstrated (Darling-Hammond et al., 2017; Korthagen, 2001; Loughran, 2006), but its understandings are absent from the CCF.

A comparative perspective on the relation between educational knowledge and teacher education is useful, and here we might perceive some substantive differences at least between the Anglosphere and continental Europe. Anglophone countries such as the UK, Australia and the United States have histories of educational knowledge production that have tended to rely on other social sciences or humanities for foundational concepts and ideas (Barrett & Hordern, 2021; Mayer & Mills, 2021). The 'multidisciplinary fields' (McCulloch, 2017) of the Educational Foundations (in the USA) or Foundation Disciplines (in the UK) draw much of their originality of perspective from sociology, philosophy, psychology or history, but have justified themselves in terms of their credibility in providing insight into education as a societal institution, phenomenon and practice (and therefore having some bearing on the preparation of educational practitioners). Their complex and sometimes subsidiary relationship to their 'parent' disciplines, in addition to their contrasting foci and problematics, can provide an explanation for the relatively lowly status of educational knowledge in the Anglophone university (Barrett & Hordern, 2021; Furlong & Whitty, 2017). This is reinforced by the relative lack of esteem and status of the teaching profession in those countries, at least in comparison with professions such as Law and Medicine. Arguments have frequently been made that if teaching is based to a considerable extent on situated experience and the development of craft 'in practice', then what use would there be in exposure to systematically organised bodies of educational knowledge for novice and experienced teachers (see a critical overview of such arguments in Winch et al., 2015).

However, it is easy to be captured by the picture of educational knowledge and teacher education in the Anglophone world. In considerable contrast to the fragmented context outlined above, continental European countries such as Germany and Poland have historically established a more secure place for the study of education in the university, with 'Pädagogik' or 'pedagogika', sustaining a distinct identity amongst other fields of enquiry (Schriewer, 2017; Sztobryn & Dworakowska, 2020), while maintaining a relationship to teacher preparation. These educational knowledge traditions can be identified as necessitating a philosophical, deliberative or hermeneutic orientation towards educational knowledge, bringing issues of meaning and 'verstehen' to the fore (Smeyers & Smith, 2014). They are often closely embedded in longstanding conceptions about the relationship between the individual and society, while simultaneously providing for nuanced reflection on the relation between teaching, subject knowledge and individual development (Deng, 2020). For example, the Bildung-centred Didaktik tradition prominent in German educational thought offers Klafki's framework of self-reflection and deliberative examination of the process of teaching, while maintaining the importance of a 'theory of content' (Deng, 2020) that theorises the role of teacher as curriculum-maker and autonomous pedagogue. There are, in fact, a range of substantive normatively-inclined educational traditions in continental European thought that provide a sound basis for deliberation and professional expertise, and these have much in common in terms of underlying assumptions about educational practice with some elements of Anglo-American curriculum theory (Krogh et al., 2022). By drawing on these deliberative traditions the study of education can thus maintain an identity of its own, semi-independently of other disciplines (as has historically been the case in Germany), notwithstanding the encroachment of other disciplinary perspectives and a growing movement of empiricist new science which offers challenges (Schriewer, 2017). These traditions are concerned with teaching and teacher development, while foregrounding meaning, understanding and interpretation in pedagogical relations (Krogh et al., 2022), as opposed to relying on searching for universalisable laws of teaching and learning that can be 'applied' to each context. As Deng (2021) suggests, such an approach to educational inquiry and practice could be seen as closer to 'politics' and 'ethics' than to a causal social science, while Dunne (2005) has suggested that education can best be seen as a disciplinary master practice.

Systematic educational knowledge and teacher expertise

How does this relate to teacher expertise and assumptions about what constitutes appropriate teacher preparation? It can persuasively be argued that a capacity for well-reasoned professional judgement necessitates the availability of a systematic knowledge base for the profession which can be drawn upon selectively and appropriately to assess specific situations and make decisions that can be appropriately justified (Eraut, 1994; Winch, 2010). For Abbott (1988) professional judgements rely both on (i) an abstract knowledge base which 'legitimises professional work by clarifying its foundations' while making 'connections' and revealing 'regularities that can ultimately reshape' professional knowledge (pp. 54–55), and on (ii) professional knowledge in use, which draws on the insights of the abstract knowledge base, professional experience and the specifics of cases encountered to make decisions. The abstract knowledge system is not, however, divorced from practice concerns itself, as the process of 'clarifying foundations', revealing 'regularities' and providing 'new means for professional work' (pp. 54–58) requires close scrutiny of, and reflection on, professional work. As Addis and Winch (2019) suggest, expertise also requires the development and use of criteria by which the community of professionals can collectively determine which claims to knowledge can be admitted to the professional knowledge base. And these criteria can arguably only arise if there is a sense within the professional community of what the purpose of their professional activity is, and what goods it offers to society (Hager, 2011). While *elements* of the expertise of any professional will inevitably be tacit, engagement with systematically organised knowledge assembled and validated through insights into professional tasks and problems enables the professional to make sense of the variety of situations she may encounter, and to draw on the collective expertise to make appropriate decisions aligned with the purpose of the professional practice. In the context of education, such decision-making could relate, for example, to curriculum planning, activities within the context of a lesson, or balancing the demands of different students.

If systematic knowledge, in terms of an 'academic, abstract knowledge system' (Abbott, 1988, p. 55), or 'reservoir of knowledge' (Brooks, 2021, p. 144) is needed for teachers to exercise judgements in the context of their practice, then the preceding discussion would seem to offer a range of potential models as starting points around which knowledge can be assembled, including (i) the Foundation Disciplines; (ii) the New Science of Education; or (iii) the deliberative traditions such as Bildung-centred Didaktik and Curriculum Theory. But do each of these models provide a coherent knowledge base that can be drawn upon by teachers and a fostering of teachers' capacity for pedagogical judgement? Do they offer the potential to provide an 'abstract knowledge system' (Abbott, 1988)? In terms of the Foundation Disciplines there may be considerable insights into the human condition, patterns of educational disadvantage and the formation of mind that are of considerable benefit for a deeper understanding of education, and therefore for a rich form of professional teacher education. Despite the richness of insight, there are difficulties with developing the Foundation Disciplines into *a coherent and systematic* knowledge base that can be accessible to and meaningful for all educational practitioners (Barrett & Hordern, 2021). The multidisciplinarity that McCulloch (2017) identifies suggests that a further complex process of recontextualisation is required to transform the disparate perspectives and disciplinary traditions into something tangibly coherent for teachers to engage with and contribute to over time, and this may be problematic without a clear 'supervening purpose' to guide the process of recontextualisation (Muller, 2009). Drawing on Muller (2009), we can argue that the educational foundations have neither a 'conceptual coherence' (due to the diversity of disciplines and their lack of integration) nor a 'contextual coherence' (due to the multiplicity of sites and contexts in which educational activity occurs and which the disciplines research).

On the other hand, a number of organisations advocating for the New Science of Education specifically intend to develop a systematic knowledge base. The objective of the Educational Endowment Foundation is to build a knowledge base for teaching in England through 'generating new evidence of what works in teaching and learning' (Education Endowment Foundation [EEF], 2022) to build a 'comprehensive, reliable and credible repository of educational research evidence' (Education Endowment Foundation [EEF], 2020, p. 2), an approach that dovetails with the emphasis put on 'evidence synthesis' (Royal Society/British Academy, 2018, p. 12) to 'harness' educational research. The Institute of Education Sciences in the United States has the objective to 'provide scientific evidence on which to ground education practice and policy' (Institute of Education Sciences [IES], n.d) through the What Works Clearinghouse, which identifies 'well-designed and well-implemented impact studies' and 'summarises the findings' (IES, 2022, p. 6), categorising and disseminating these on its website. However, despite this emphasis on organising knowledge through problem-driven research projects, the New Science of Education is predicated on building educational knowledge that assumes that we can explain the social world on the same basis as we investigate the physical world, as noted above. This neglects the nuanced reality of pedagogical interaction and reduces the scope for teachers to exercise judgements in the interests of the specific children in their classes. The New Science stands in contrast to Biesta's (2010) broader and more nuanced education 'for qualification', 'for socialisation' and 'for subjectification', which are aspects of educational practice which are much more difficult to measure and evaluate using the research tools at their disposal. If we adopt a New Science vision of educational research, teacher expertise may become 'organised' systematically, but for teacher educators and teachers becomes primarily about implementing the 'technical protocols' that the educational scientists prescribe (Hordern & Tatto, 2018; Winch et al., 2015). There are limited opportunities for teachers to exercise a capacity to 'attend' meaningfully to the class of students they are working with. The New Science version of the 'abstract knowledge system' does not fit easily with the contextuality, nuance and 'open system' (Biesta, 2015, p. 16) of educational practice.

In terms of what we have termed here the deliberative traditions of educational inquiry, such as Bildung-centred Didaktik along the lines outlined by Deng (2020), and Anglo-American curriculum theory, the starting point for inquiry is educational practice as defined through the lens of the 'inner work of schooling' (Deng, 2020), bearing in mind that the 'work' here is not just about education 'for qualification', but that education also involves complex processes of socialisation and subjectification (Biesta, 2010). The focus is on deliberative (self) examination of pedagogical practice and on the process of enacting the curriculum, and this includes engagement with questions of the purpose of education activity and the question of what students are to become *through* education. Claims to knowledge are therefore often fostered through processes of reflective inquiry and hermeneutical exegesis as much as through critical evaluation of new empirical findings.

This is not to say that the empirical findings of the new science are irrelevant to a deliberative approach, but that they need to be *filtered and recontextualised* so that they enhance the practice of the teacher in respect of the interrelated and nuanced purposes of education. Teaching expertise thus requires a sufficient grasp of debates about the purpose of education and the curriculum, and to be able to exercise a scholarly approach to educational knowledge and research inquiry. Importantly, the deliberative traditions offer a potential for coherence and systematicity, as they are built on some shared assumptions about the purpose of their version of educational knowledge, namely a vision of educational inquiry that develops around the 'inner work' that Deng (2020) refers to, and the underlying issue of the formation of individuals within the collective that has been at the centre of educational theorising within the historical context of formal and informal education. Important efforts have been made to bring the deliberative traditions together in dialogue (i.e. Hopmann, 2015; Westbury & Riquarts, 2000) and thus improve conceptual coherence.

Are the sources the best available educational research?

While the CCF document claims the references provided represent the 'best available educational research' (DfE, 2019a), it is clear from the preceding discussion that the different traditions of educational research may well offer contrasting views as to what might constitute the 'best' amongst the research on offer. In a similar vein to Addis and Winch (2019), Young and Muller (2013) draw attention to how judgements about 'best-ness' in research communities are based upon the development of 'criteria . . . which allow their disciplinary community to arrive, with a greater or lesser degree of consensus, at a judgement of this "bestness"', noting also that 'even disciplinary communities that are characterised by sharp disagreements about the criteria for judging "bestness" can still usually judge innovations in their disciplines' (2013, p. 236). They identify that what is considered 'bestness' has, at different points in history and in different contexts, had an ethical, aesthetic and epistemic basis, noting also the importance of considering different approaches to truth and insight even if they 'do not conform to the currently dominant definition of criterial robustness' (Young & Muller, 2013, p. 236). This argument has something in common with that of Smeyers and Smith (2014), who emphasise the importance of educational research which foregrounds questions of meaning, as opposed to focusing only on issues of explanation, highlighting the importance of educational purpose as a means of determining 'bestness' in educational inquiry. However, in the case of the Core Content Framework 'bestness' appears to have been determined by the DfE, and endorsed by the EEF, rather than a disciplinary community as Young and Muller (2013), Abbott (1988) and Addis and Winch's (2019) models would suggest. As outlined in a diagram of the 'delivery infrastructure' of the ECF it is the DfE which has 'created evidence informed frameworks' which are 'validated by the Education Endowment Foundation (EEF)' (DfE, 2022b, p. 12). The state has therefore supplanted the academic community in terms of determining what constitutes professional knowledge for teachers, without an explicit statement of the criteria by which such knowledge is selected and appropriated, or reflection on its underpinning assumptions. A 'regulatory framework' has been imposed via the centralised processes of determining the core content

(Mutton et al., 2017) which has little to do with the usual processes for agreeing 'bestness' in a knowledge base.

The core content includes an appendix which identifies suggested reading (provided as a list of references) for each of the eight sections, with explicit linking to the associated Teachers' Standards (DfE, 2019a, pp. 32–48). There are 139 references in total across the eight sections, with 27 instances of sources appearing in more than one section, and therefore 112 individual sources when all duplications are removed. A total of 74 of the 139 references are journal articles, of which 11 articles are mentioned more than once (and in one case three times), leaving 62 journal articles noted across the sections of the CCF. The most frequently used journals are: Educational Psychology Review (seven articles, including two which are mentioned twice), Review of Educational Research (seven articles, including one mentioned twice), American Educator (four articles, with one paper mentioned three times), Psychological Bulletin, Psychological Science in the Public Interest, and Educational Assessment, Evaluation and Accountability (all of which have three articles included and the first two of which have the same paper twice). The largest volumes of references to journal articles are either published in a Psychology or Educational Psychology journal (32), with a further group (3) published in journals that focus on the Learning Sciences, such as Instructional Science. There is also a significant group of references from Economics or Economic Education journals (6). Many further articles are examples of systematic reviews or large-scale studies published in more general educational journals, such as Review of Educational Research, with seven meta-analyses or reviews of topics such as 'motivation interventions' and 'social-psychological interventions in education'.

As part of the review of the sources in the CCF, an analysis of author keywords for those sources listed in Scopus was undertaken, with the assistance of the VOSviewer software (Van Eck & Waltman, 2022). Sixty-seven articles and book chapters from the total 112 individual sources in the CCF were found in Scopus, 37 of which had author keywords identifiable by VOSviewer (the main exceptions being some older articles and book chapters). A total of 124 author keywords were identified across the 37 articles, with 13 keywords mentioned more than once across the literature. These 13 keywords were: Meta-analysis (10 occurrences); ability-grouping (three occurrences); self-regulation, feedback, teacher expectations, instructional design, cognitive load theory, implicit theories, systematic review, motivation, effect size, academic achievement, education (all two occurrences). The remainder of the keywords were mentioned once only. An analysis of titles and abstracts across all 67 Scopus sources was also undertaken using VOSviewer to identify terms and concepts occurring regularly across the literature. The ten most commonly identified terms in the titles (with at least three occurrences) across the literature were: meta-analysis, systematic review, effect, evidence, learner, academic achievement, classroom, assessment, research and education. In terms of the abstracts of the 67 sources, the most commonly found term was 'effect' (with 27 abstracts including the term). The analysis confirms the predominance of material drawing on methodologies favoured by the New Science and an overwhelming focus on identifying causal mechanisms in education.

Of particular note is the almost complete absence of journal articles which include any substantive discussion of sociological or philosophical issues in education, echoing the point made by Helgetun and Menter (2022, p. 98) regarding the increasing removal of 'moral or philosophical thought' from teacher education policy. There are just two articles that might be included in this categorisation: an influential paper by Biesta (2010) exploring the possibility of 'good education' in an 'age of measurement' which draws on philosophical work (e.g that of Hume on the is/ought distinction) and discusses purpose and values in education, and Tereshchenko et al.'s (2019) sociologically-informed research into mixed attainment grouping in secondary schools. Articles have generally not been selected from those longstanding education journals with a more sociological, historical or philosophical orientation, or those with a focus on policy analysis. The journals selected by Thomas (2012), for example, for an analysis of the state of educational research in the UK (which included the British Educational Research Journal, the British Journal of Educational Studies, the British Journal of Sociology of Education, and the Oxford Review of Education) are almost completely absent from the reference list (with the exception of the Journal of Curriculum Studies, with one article from 1999), despite regularly publishing scholarly work on teaching, teacher education, and the relationship between teaching and research. The legacy of educational studies in the shape of the Foundation Disciplines is thus bypassed almost entirely, as is the deliberative work of Anglophone Curriculum Theory and indeed other comparable traditions.

The 65 references (representing 50 individual sources and 15 duplicate references) which are not journal articles include a range of reports, chapters and books. The most popular source here is the Education Endowment Foundation, with 17 references, although seven of these are to the Sutton Trust-EEF Teaching and Learning Toolkit, which appears as a reference in almost all sections of the CCF. Other references with multiple mentions include 'What makes great teaching?: review of the underpinning research' by Coe and colleagues at Durham University (three references), the work of Hattie on visible learning (two references), and the publications of Deans for Impact (i.e 'The Science of Learning' (two references) and the Institute of Education Sciences (two references). While there are some publications that offer a broader perspective on the processes of education (Alexander [2017] on dialogic teaching, and Darling-Hammond [2009] on teacher development), there is a predominant focus on the technical aspects of improving teaching for learning, as understood as attaining measurable learning outcomes. For example, in 'What makes great teaching?' the authors define 'effective teaching as that which leads to improved student achievement using outcomes that matter to their future success' (Coe et al., 2014, p. 2). While acknowledging some limitations, the authors state that 'wherever possible, it makes sense to judge the effectiveness of teaching from its impact on assessed learning' (p. 9), before proceeding to consider how best to 'operationalise good pedagogy' (p. 10) through selected studies that must contain 'a clear, well-specified and implementable intervention' and contain 'evidence linking the approach with enhanced student outcomes' (pp. 11–12). For the authors, without 'some justification for a causal relationship' (p. 11), as demonstrated through methodologies which they consider to be rigorous, there is no contribution in the claims made.

Much of the research included in the reference list is underpinned with scientistic assumptions about educational inquiry, and what constitutes the best available educational knowledge. For example, the publications of the EEF, Deans for Impact and the IES all emphasise educational research as geared towards improvements in measurable learning outcomes, and for a type of 'gold standard' methodology (i.e. as represented by RCTs) that is characterised by a focus on identifying causal explanations for phenomena, while backgrounding discussion of the purposes of educational activity and overlooking the recursive and non-deterministic nature of educational practice (Biesta, 2015; Gale, 2018). While much of the research supported or highlighted by these organisations may be rigorous and well-meaning (and in the case of the EEF undertaken to improve outcomes for the most disadvantaged), and may also acknowledge the limitations of the findings provided (Education Endowment Foundation [EEF], 2018), there is an explicit methodological regime in place. The Deans for Impact organisation is guided by 'Data-informed improvement; Common outcome measures; Empirical validation of effectiveness; and Transparency and accountability for results' (Deans for Impact 2015, p. 2), principles which underpin their inquiry into the 'science of learning', which defines 'learning' as being related exclusively to 'existing research from cognitive science' (Deans for Impact (2015), p. 2). The IES What Works Clearinghouse only acknowledges research that is interested in testing causal explanation in educational settings that meets its criteria of 'eligible design' (IES, 2022, p. 10), scrutinising methodology 'to determine whether the study's findings can be attributed to the intervention' (IES, 2022, p. 11). If a study does not include 'sufficient detail to warrant a WWC review, including descriptive statistics of the study sample and inferential statistics about the findings' (IES, 2022, p. 22), it is of no concern to the IES. Even if one accepts that 'what works' (according to a scientistic approach) is of use for teachers, it is also important to note that the CCF does not focus on 'what works' for learning to teach, bypassing an extensive literature which discusses processes of initial and continuing teacher development (see Menter, 2022 for an overview of the contemporary context of teacher education research).

The references included in the appendix of the CCF appear to be predicated on the idea that 'the best available' educational research is that which focuses on investigating learning processes (narrowly defined) with the explicit focus on improving attainment, or on ancillary issues of 'teacher quality' based on notions of teaching as a process of (only) maximising attainment and managing behaviour. There is no encouragement to perceive teaching as something that encompasses consideration of values, socialisation or the development of citizenry participating in a democratic society. In other words, there is an overwhelming focus on a narrow view of individual enhancement (i.e educational attainment), without much consideration of how inclusion and participation can be brought about through education (Bernstein, 2000). Given the explicit preference in much of the research selected for empiricist methodologies, there is an understandable focus on the measurable efficacy of teaching and learning processes (i.e. via improvements in attainment). Arguments can be made that it is only such research processes (with a focus on that which is measurable) that can provide for evaluations of educational policies from which decisions about resourcing and future interventions can be made. The consequence is that much of what really matters within education can be rendered invisible.

An important point to come back to here is that the profile of the 'best available' educational research outlined in the CCF stands in considerable contrast to the 'high quality' educational research identified in the recent REF Panel Report for UK (UKRI, 2022), which in addition to highlighting the value of ethnographic research and narrative studies also mentions 'notable work . . . offering new insights for pedagogical practice' in a range of subjects, and 'the conceptualisation and facilitation of creativity' as a 'strength' of UK educational research (UKRI, 2022, p. 161). There is said to be 'a rich and diverse body of research' on language and literacy 'within . . . school contexts' (UKRI, 2022, p. 161), yet this is not highlighted within the CCF. Nor is there space in the CCF for 'some of the strongest' educational research on 'parents, families and communities' or the 'relationships between schools, parents, children and learning' (p. 162), which arguably have very considerable bearing on curriculum and pedagogical strategies within schools. As Furlong and Whitty's (2017) work demonstrates, there are many rich traditions of educational thinking that could be incorporated within a 'core content framework' and yet much of this appears to be completely absent.

Concluding remarks

The Core Content Framework can only be said to indicate the best available educational research if a convincing argument has been made that the New Science provides the best. The process of defining 'bestness' has, in the case of teaching in England, been taken out of the hands of the academic and professional community by the UK government, and specifically the Department for Education (DfE, 2022b). No justification has been provided by the UK Government for such a narrow and one-dimensional approach to educational knowledge, which runs counter to external assessment of the quality of educational research in the UK, and silences most traditions of educational research on teaching, curriculum and teacher development. The approach taken by the DfE and EEF also sets up a unilateral process for determining what counts as educational knowledge which has no provision for systematic revisability or disciplinary process (Young & Muller, 2013), or indeed the involvement of teacher education or teaching professionals in the ongoing definition and revision of that knowledge (Mutton et al., 2017). While organisations such as the EEF may be producing potentially useful syntheses of studies that use particular methodologies and relate to the achievement of certain learning outcomes (ultimately determined in terms of measurable attainment), defining their New Science as the only form of educational knowledge appropriate for teacher development in England is deeply problematic. The approach manifested in the CCF is predicated on a narrow view of the purpose of education, which is accompanied by a scientistic view of educational improvement that is incompatible with the realities of educational practice (Deng, 2020; Gale, 2018; Smeyers & Smith, 2014), and arguably confounds the prospects for educational goods such as the 'development of students as whole persons' (p. 249), 'intellectual enthusiasm' and 'relations of care and trust' identified by Noddings (2003, pp. 249–250), or the processes of subjectification that Biesta (2010) outlines.

The CCF and its role in ITE/ITT and the ECF serves to undermine teacher professionalism and teacher expertise by leaving little room for scholarly and critically engaged professional development, and this will be underpinned by Ofsted's role in monitoring its implementation in teacher education. The consequence is that future teachers are to be prepared in a technical manner on the basis of a systematic knowledge base pre-ordained by the DfE, with the prescriptive view of educational practice embedded in the CCF leaving little space for the development of a more democratic form of professionalism. As Beck and Young (2005) have observed, the connections between knowledge, identity and professional commitment are strong, and if these are severed then the engagement of professionals with the significant concerns of their practice cannot be guaranteed. The deprofessionalism engendered by the 'divorce of knowledge from the knower' (Bernstein, 2000) that the CCF represents leaves teachers malleable, with little wherewithal symbolically or epistemologically to scrutinise proposed changes or to contribute meaningfully to cycles of policy reform. There is therefore also a risk that this form of teacher deprofessionalisation accompanied by technical prescription leads to increasing reluctance on the part of future teachers to engage with the contextuality of practice and the specific circumstances of students in classrooms, hiding behind the technical protocols of research rather than being encouraged to develop and be held accountable for their pedagogical judgement. If the evidence myth is fully embedded and compelling then it will be difficult for teachers and teacher educators to deviate from it, irrespective of the consequences.

Note

1. Ofsted is the Office for Standards in Education, Children's Services and Skills. It is responsible for inspecting and regulating schools in England.

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No potential conflict of interest was reported by the authors.

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