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Conceptions of teaching and educational knowledge requirements

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Abstract

This paper scrutinises the educational knowledge requirements of craft, technical and reflective professional conceptions of teaching, as recently outlined by Winch, Oancea and Orchard. Drawing on Bernsteinian sociology of knowledge we identify the different requirements each conception makes of educational knowledge, and how it is envisaged this knowledge will be used in educational practice. While craft conceptions dismiss the value of educational knowledge per se, they nevertheless value other forms of disciplined knowledge. Arguing that technical conceptions of teaching may be either narrowly instrumental or autonomous, we suggest that an advanced technical knowledge base requires a disciplinary aspect, while knowledge for purely instrumental purposes offers a reductive view of educational practice. Moreover, the varying notions of reflection suggested by reflective professional conceptions require certain forms of engagement with educational knowledge, which are challenged by contemporary reforms in teacher education globally. It is suggested that there are often interdependencies between forms of educational knowledge and conceptions of teaching, with potential implications for the trajectories of educational reforms. The argument is briefly illustrated with reference to the national contexts of Germany, England and Finland.

Keywords: educational research; teacher education; teacher knowledge

Introduction

In a paper published as part of the BERA/RSA inquiry into the role of research in teacher education, undertaken in the United Kingdom in 2013-4, Winch, Oancea and Orchard (2015) set out three ‘interconnected and complementary aspects’ of teachers’ professional knowledge, and link these aspects to ‘popular conceptions of the good teacher’ (204). The three aspects (situated understanding, technical know how and critical reflection) correspond respectively to conceptions of teaching as a ‘craft’, as ‘the application of technical protocols’ and as a ‘professional endeavour’ (Winch et al. 2015, 208-210). While Winch et al. (2015) suggest that good teaching involves seeing these conceptions as complementary, policies and educational reforms may result in the advancement of specific conceptions rather than others, and complementarity may be difficult to achieve. In the context of global reforms that have seen teacher performance as a critical element within educational system improvement, conceptions of teaching and teachers’ knowledge have become political, with consequences for teacher education (Tatto, 2006). While teaching as a professional endeavour may appeal to many teachers and some governments, and indeed may be supported by strong philosophical and empirically-grounded arguments (Winch et al., 2015; Shalem, 2014), governments embarking on educational reforms may much prefer restricted technical or craft-based conceptions, and the knowledges they entail, as these may seem to fit more effectively with the objectives of those reforms and how teaching is conceived within them.

This paper draws on Bernsteinian sociology of knowledge to identify different educational knowledge requirements that underpin the craft, technical and ‘professional endeavour’ conceptions of teaching. While craft approaches may potentially involve no formal systematic forms of educational knowledge, it is argued that technical conceptions of teaching may require considerable engagement with systematic forms of knowledge that do not originally have a technical purpose. Alternatively, technical conceptions can suggest a narrowly instrumental view of teaching which may discourage critical forms of reflection. These in turn suggest requirements for varying types, and quantities, of educational knowledge. Moreover, the varying notions of reflection suggested by a ‘professional endeavour’ conception require certain forms of systematic educational knowledge production, and, arguably, certain forms of disciplinarity (Bridges, 2006) which are challenged in many national contexts by contemporary reforms in teacher education and developments in educational research. We suggest that there are interdependent relationships

between prevalent conceptions of teaching and the production and circulation of educational knowledge within national contexts, offering insights into trajectories of reform to teaching and teacher education.

Bernstein and interpretations of educational knowledge

The work of Bernstein (1999, 2000), and related work by Young and Muller (2014, 2016), Beck and Young (2005) and Muller (2009, 2014) provides a framework for thinking about the character of knowledge as it is produced in disciplinary and non-disciplinary forms, and then organised in curricula. Bernstein (1999) delineates between vertical and horizontal discourses, which can be seen respectively as specialised (or disciplined) and non-specialised (or non-disciplined) forms of knowledge – a distinction located in the Durkheimian tradition of emphasising collective representations as the basis for society and abstract thought (Durkheim, 1912/2001; Young, 2003). Importantly, drawing on Winch (2010), Muller (2014) identifies that Bernstein’s vertical discourse contains not only propositional knowledge ‘know that’ but also inferential and procedural ‘know how’ that enables those engaged with the knowledge to find their way around the propositions and realise their meaning, and to apply the disciplinary rules by which knowledge achieves validity.

Vertical discourse is further differentiated between ‘hierarchical’ and ‘horizontal’ knowledge structures, with the former relating to the physical sciences and the latter to a range of disciplines, principally in the social sciences and humanities (Bernstein, 1999). Hierarchical knowledge structures progress by ‘integrating propositions’ (ibid., 162) and discard redundant claims systematically, while horizontal structures consist of sets of ‘specialised languages’ (ibid., 161) which represent distinct co-existing traditions of thought. Bernstein also introduces the notion of ‘grammar’ to distinguish between types of horizontal knowledge structure. Strong grammar is found in disciplinary traditions that possess ‘explicit conceptual syntax capable of ‘relatively’ precise empirical descriptions’ (i.e. Maths, Economics, Linguistics), whereas weaker grammars have more fluid relationships between concepts and empirical data (i.e. Sociology, Cultural Studies) (ibid., 163-4). Furthermore, the concept of grammar also suggests that horizontal knowledge structures may possess theoretical perspectives (i.e. specialised languages) with different grammatical strengths and modalities

(Bernstein, 1999, 2000; Hordern, 2017a), which may lead to some perspectives achieving disciplinary prominence in certain conditions.

Bernstein also introduces the notions of ‘singular’ and ‘region’, which approximate respectively to a ‘pure discipline’ and an ‘applied discipline’ (Bernstein, 2000, 52-53; Muller, 2009; Beck & Young, 2005). These structures should not be seen as static, but relate to different socio-epistemic modalities of knowledge production and curriculum formation. Pure disciplines (i.e. history or physics) retain a high level of control over their internal problematics within a reasonably ‘bounded’ disciplinary community (Bernstein, 2000), or ‘community of arguers’ (Bridges, 2006). They tend to maintain a close relation between knowledge production and curriculum within higher education, with curricula largely in the hands of the academic community (Hordern, 2016). On the other hand, more applied disciplines (i.e. engineering or nursing) exist to serve a ‘supervening purpose’ (Muller, 2009, 213) which is not controlled entirely by those ‘internal’ to the discipline, but is shaped in concert with a range of external stakeholders. The region (applied discipline) must therefore maintain relationships both with the purer disciplines from where much useful knowledge may be sourced and with the ‘world of practice’ (Young & Muller, 2014), from which its problematic is (at least partially) derived. Not only is knowledge production usually shaped by practice considerations, but curriculum development tends to require responsiveness to the requirements of professional practice, at least in those regions that relate directly to an occupation (Hordern, 2016).

Bernstein introduces the idea of a ‘generic’ (2000, 53) as a mode of organisation which sits outside disciplinary structures (Beck & Young, 2005), and therefore contrasts with singulars and regions. Generic forms bypass disciplinary knowledge production by foregrounding market or bureaucratic logics (Beck & Young, 2005; Bernstein, 2000) which see little value in cumulative processes of disciplined knowledge iteration. In some forms of generic, the notion of ‘knowledge’ is itself redundant and replaced by ‘competence’ or forms of observable behaviour (Bernstein, 2000, 53).

It may be relatively straightforward to categorise sociology or physics as representing differing forms of vertical discourse (horizontal and hierarchical), and as singulars which define their own internal problematics and disciplinary procedures, and we can suggest that medicine or engineering represent ‘regions’ that draw extensively on hierarchically structured

vertical discourse (i.e. principally from the physical or biological sciences). For such disciplines (whether pure or applied) it is generally clear where the boundaries of valid knowledge lie. However, educational knowledge presents greater definitional problems, possessing boundaries of variable strength in relation to other disciplinary structures, with national traditions influencing the relationships (Hordern 2017b).

For example, the German educational tradition has historically resembled a distinctive type of discipline, generating concepts such as *Erziehung* and *Bildung*, which have defined the direction of disciplinary discourse without substantial recourse to other disciplines (Schriewer & Keiner, 1992; Biesta, 2011), although the discipline may have emerged primarily from philosophical roots (Schriewer & Keiner, 1992). This suggests a relatively robust singular structure, notwithstanding recent challenges (Schriewer, 2017; Furlong & Whitty, 2017). Educational knowledge in France, meanwhile, has not managed to carve out an equivalent independent disciplinary space within the social sciences or humanities, despite distancing itself from the ‘practical’ knowledge of teacher education (Malet, 2017). The consequence is a ‘plurality’ and ‘constitutive opening to all the human and social sciences’ (Malet, 2017, 71) that could leave the study of education in France vulnerable to dominance from other disciplinary configurations with their own problematics, or to political moves that assert the validity of alternative knowledge claims to support policy objectives.

In many English speaking countries the weakness of the disciplinary boundaries are also evident, resulting in considerable diversity in forms of educational knowledge. In the U.K. the ‘foundation disciplines’ of sociology, psychology, history and philosophy of education have varied relationships with their parent disciplines and each other (Lawn and Furlong, 2009; McCulloch, 2002), and represent horizontal knowledge structures (within vertical discourses) with varied strengths of grammar (Hordern, 2017a). Knowledge production in the psychology of education varies considerably from how this is understood in philosophy of education, for example, and these in turn vary with history and sociology (Hordern, 2017b). In England such an arrangement can be seen as constituting a mixture of fragments of singulars which have never been able to form into a coherent region as a consequence of the politicisation of education and teacher education. However, the foundation disciplines represent only a limited proportion of overall educational research in the U.K. (Lawn & Furlong, 2009), with much research in education more applied, related to policy or practice objectives and often restricted in its scope and purchase (Furlong, 2013). This results in broad

definitions of what is considered educational research, and some difficulties with establishing coherent disciplinary communities, resulting in what for McCulloch (2017) resembles a 'applied multi-disciplinary field'. The picture is further complicated by the growth of educational research conducted specifically to meet policy or organisational objectives, some of which is developed in the context of use and validated instrumentally in terms of its efficacy. Some forms of such 'networked' knowledge possess the characteristics of Bernstein's horizontal discourse (Furlong & Whitty, 2017), bearing *no necessary relation* to any disciplined form of knowledge production and validation.

A brief overview of educational knowledge demonstrates its varied character and weak boundaries, and its susceptibility to influence both by other disciplines, and by political and societal forces, particularly in certain national traditions. Education is of 'interest' (Biesta, 2011) to society and the public at large, with its purposes framed and continuously reconfigured within political discourse. Its problematic is therefore shared beyond the boundaries of its academic community, and it may be subject to expectations about its knowledge production that would not be experienced by 'purer' disciplines such as history and physics. Thus, prevalent conceptions of education and teaching held by government or by society are potentially highly influential in (re) structuring the boundaries and nature of educational knowledge, with substantial implications over the longer term for what counts as valid knowledge about education.

Partly as a consequence of the political pressures it experiences, a weakened educational discipline may be unable to meet novel requirements for disciplined educational knowledge as new conceptions of education and teaching come to the fore. The discipline of education may be dismissed as irrelevant if it is considered unable to provide the forms of knowledge deemed useful, or insightful, for educational practice, prompting funders of educational research to turn increasingly to those extra-disciplinary research producers who are prepared to work to a specific agenda without necessary reference to disciplinary educational knowledge. In such scenarios there are negative consequences both for the discipline of education and for collective societal understandings of the purpose and process of education. Previous cumulative knowledge is potentially ignored or misinterpreted, its authority disregarded. The way is open therefore for the foregrounding and embedding of instrumental forms of knowledge that may be mobilised for political objectives or to suit particular forms of educational reform.

In the following section of the paper, we examine the three prevalent conceptions of teaching outlined by Winch et al. (2015), and, in the light of the above discussion about educational knowledge, discuss the requirements for educational knowledge that these conceptions suggest. An implication of the discussion is that conceptions of teaching are influential in shaping the dynamics of educational knowledge production and validation.

Craft conception

Winch et al. suggest that the craft conception of teaching ‘overplays the value of situated professional knowledge’ and therefore ‘isolates situated understanding from other necessary aspects of teachers’ knowledge’ (2015, 208). In such a conception teacher ‘education’ is reduced to processes of observation of other teachers and immersion in teaching practice. The ‘findings of recent research’ and the ‘theoretical literature’ (ibid., 208) are deemed irrelevant to the process of acquiring teaching competence. Arguments for a craft approach to teaching suggest that ‘commonsense’ may be sufficient for teaching, even though this may consist only of ‘popularisations’ or ‘unconscious repetition of theories’ that have been ‘discredited’ (ibid., 209). Thus systematic educational knowledge is disregarded in craft approaches to educating teachers and in teaching practice, and forms of ‘horizontal discourse’ venerated, in the shape of the ‘local, context dependent and specific’ (Bernstein, 1999, 159). The craft conception does not, however, disregard all systematic knowledge, only systematic *educational* knowledge. It is often the case that craft conceptions are married with enthusiasm for teachers with considerable subject-based systematic knowledge (i.e. in history or mathematics), and high levels of general education (Furlong & Whitty, 2017; Winch et al., 2015). The craft conception of teaching is therefore often infused with a conservatism that suggests that there are only certain disciplines and subjects that offer genuine forms of knowledge (e.g. pure sciences, humanities), and educational knowledge is definitely not included.

If such a conception of teaching becomes prevalent educational knowledge is encouraged to develop in certain ways. Firstly, knowledge for teaching becomes ephemeral, and closely related to context. There is no rationale for any research or scholarship component in craft-driven teacher education. Secondly, there is no encouragement for educational researchers and teachers to perceive any necessary connection between the challenges of educational practice and whatever systematic knowledge is produced about education, suggesting that

educational knowledge is likely to be produced increasingly in other social science disciplines. The study of education becomes part of (e.g.) sociology, psychology, philosophy, history or economics, as there is no rationale for maintaining an autonomous education discipline. On the one hand, we have knowledge for teaching moving towards a ‘generic’ model with increasingly tenuous links to systematic disciplinary knowledge, while on the other we see absorption of research on educational issues into other existing pure disciplinary structures. Developments along these lines may have started to emerge in England (Whitty, 2014), and in the United States (Paine, 2017; Tatto et al. 2018).

Technical conception

Winch et al. suggest an alternative ‘popular’ conception of teaching as the ‘application of technical protocols’, which ‘emphasises the contribution of teachers’ technical know-how to effective classroom practice’ (2015, 209). The teacher can be seen as an ‘executive technician’ (Winch, 2010; Kuhlee & Winch, 2017) charged with implementing specific instructional techniques and procedures that have been developed by curriculum designers based on supposedly universal ‘maxims’ provided by educational research. Whereas in the craft conception there is a limited role for research, in the technical conception research is vitally important for structuring teaching practice. This view of research is, however, one that does not sit easily with many educational researchers. The development of technical protocols for teachers to implement is coupled with a view that educational research ‘must deliver certainty or... be discarded’ (Winch et al. 2015, 209). Certainty in the research findings is important as the executive technician teacher must be able to rely on the protocols and techniques she is instructed to implement. Without this certainty and reliability, improvements to the education system cannot be faithfully executed, and policy initiatives cannot be evaluated. Educational research is therefore encouraged, through policy and funding incentives, to demonstrate what appear to be stronger forms of ‘grammar’ (Bernstein, 2000; Hordern 2017a), and to dismiss those perspectives that are unable to achieve, or do not seek, a strengthened grammar.

The focus on certainty of findings suggests that much educational research that draws on disciplines such as philosophy or sociology, where enquiry is characterised by ongoing argument, qualification and uncertainty, has no meaningful bearing on educational practice. However, assumptions of certainty and predictability in educational practice are widely

acknowledged as highly questionable, suggesting that pre-specified teacher-proof technical protocols may do as much damage to pupil learning in certain situations as potential benefit in others. As Biesta (2010a, 500) notes, educational practice sits within ‘open’ and ‘recursive’ systems, rather than in closed cause-effect relationships that policy approaches often suggest. If pupil learning and socialisation is considered important, it is therefore inappropriate to standardise a pan-contextual approach to educational practice that eliminates teachers’ discretion in pedagogical judgement. However, frustrations with continued lack of desired ‘improvement’ in system performance (at national or institutional level) may result in a diagnosis of teacher incompetence in implementing protocols or in pledges to go further in specifying what counts as valid educational knowledge. Rather than develop a form of knowledge that speaks to educational problematics, ‘educational’ knowledge is generated that speaks to policy problematics – and, arguably, such knowledge is not educational at all.

What is also important in such a conception is the assumed relationship between educational knowledge and teaching. Muller’s (2014) use of Winch (2010) to interpret Bernstein’s vertical discourse is important here. When considering the development of expertise in a specialised knowledge base we need to take account of not only propositional knowledge, but also the forms of inferential and procedural knowledge which enable the practitioner to make sense of that propositional knowledge as a coherent body, and to understand the procedures by which new forms of knowledge achieve validity. It is only when these interrelated components of knowledge are brought together, in tandem with forms of acquaintance knowledge (i.e. direct experience of the occupational context), that full specialised expertise can be generated in an occupation (Winch, 2010). Importantly, this also holds true for the iteration of bodies of specialised knowledge (or vertical discourses) within disciplinary communities – these are not just ‘conceptual piles’ (Muller, 2014; Young & Muller, 2016), but can be seen as socio-epistemic entities that are in continuous (usually incremental but occasionally radical) transformation. Yet the instrumental technical conception offers the teacher a bare rudimentary assemblage of propositional knowledge, representing ‘how to teach’, which the teacher is not encouraged to make sense of conceptually or to develop the inferential and procedural capabilities which would allow that teacher to exercise judgement in respect of that knowledge and its use or to participate in disciplinary discourse. The knowledge on offer to the executive technician is partial therefore, and cannot support reasonable grounds for autonomous judgement.

While the technical conception offered by Winch et al. is highly ‘executive’ or ‘instrumental’, and sees the teacher as responsible for a bare ‘minimum of interpretation’ (2015, 209), it is possible to suggest a conception of teaching that posits teachers as more capable and knowledgeable ‘technicians’, with greater responsibility for judgement. A ‘professional technician’ (Kuhlee & Winch, 2017), in the manner of allied professions in engineering or health, is schooled in forms of specialised technical knowledge that are specifically developed and mandated to meet agreed occupational needs. As Winch states, ‘in technical occupations... a significant part of the knowledge required for practice is systematic propositional knowledge’ (2010, 165), which means a requirement for knowledge produced in a disciplined manner. While the executive technician utilises protocols (i.e. prescribed approaches to teaching the curriculum) which are potentially based on disciplinary knowledge, she is not required to engage with that knowledge directly, to make inferences from it or make judgements about it. However, this construction of technical practice relates only to certain occupations where discretion is low and practice regimented. Other technical occupations may have higher requirements for practitioners to directly engage with a systematically developed knowledge base to make judgements in practice. Winch identifies such practitioners as ‘autonomous technicians’ (2010, 166), who are required to make use of a systematic body of knowledge to ‘devise a plan of action and carry it out’ (ibid.), suggesting that they may need a greater inferential and procedural facility with that knowledge, and to be conversant with its continuously iterating nature. Rather than just applying rules or enacting protocols, an autonomous (or professional) technician is required to make judgements about a course of action taking account of ‘the aims of the activity’ and the ‘constraints of the situation’ (ibid., 166). Teachers, if they are seen as involved in an autonomous technical practice, must be ‘introduced to the relevant systematic knowledge to such an extent’ that they have a basis for ‘independent decision making in operational situations’ (ibid, 167).

So what are the knowledge requirements of an autonomous technician, if teaching is to be seen in this way? While the executive technician model suggests a mode of educational knowledge that is geared towards an instrumental purpose and is remote from the practitioner, the autonomous technician model necessitates the organisation of a systematic knowledge base and suggests greater practitioner facility with that knowledge. Disciplinary traditions of educational research may usefully contribute to such knowledge, as much as

accumulated case-based knowledge developed from practitioner experience, providing such knowledge is related systematically to the specialised knowledge base taking account of disciplinary procedures (Young & Muller, 2016). Attempts to reshape such a knowledge base for political objectives are likely to be problematic, for the reason that autonomous practitioners have more discretion to trial and evaluate novel propositions and assertions in practice, and to reject these on the basis of judgements about their efficacy and benefits for pupils. The autonomous technician is in a position to develop her judgements, and as a result is able, collectively with other technicians, to secure some control over the knowledge base for the occupation. Thus a form of professional 'region', or applied discipline may eventuate which focuses on developing knowledge specifically for teaching, but drawing where necessary on other 'purer' disciplinary sources for insight on particular teaching problematics.

Teaching as a professional endeavour

Winch et al. (2015) outline a third conception, teaching as a 'professional endeavour', which 'combines all three aspects of knowledge' (situated understanding, technical know-how and critical reflection) 'together in sound judgement' (210). Teaching here means being able to 'make decisions as to whether and how research-based considerations are relevant to how and what they teach' (ibid.). Engagement in educational research, 'in its diversity of modes', offers insights and ways of thinking about teaching practice that enhance the quality of judgement (ibid., 210). Disciplined educational knowledge can offer 'warrants for action' and forms of explanation and conjecture, while not offering certainty (ibid., 210). However, Winch et al. (2015, 211) also emphasise the importance of teachers being able to 'discriminate autonomously' between 'high quality and poor quality research'. Unlike in the (instrumental) technical conception, therefore, this conception of teaching suggests there is value in teachers being 'research literate' to the extent that they can make their own judgements about educational knowledge, and this is justified by the argument that such autonomous research literacy is vital for making sound pedagogical judgements. It recognises the complexity and unpredictability of teaching practice (which could be understood as its 'open' and 'recursive' nature (Biesta, 2010a)), and suggests that various types of educational knowledge are helpful in making sense of this practice and in thinking through practical action.

The professional endeavour conception can be further differentiated between an emphasis on reflection through ‘scholarship’ and an emphasis on teachers’ involvement in ‘systematic enquiry’ (Winch et al. 2015, 206-7). These suggest different priorities for the production of educational knowledge and different forms of research literacy. An emphasis on scholarship means a ‘significant role for educational theory’ (206) and encouraging teachers to reflect on and evaluate academic literature and education policy with the aim of building critical perspectives on their own, and others’, educational practice. This suggests, therefore, requirements for a strongly disciplined or ‘singular’ study of education that can challenge existing forms of practice and modes of education. For teachers to engage in scholarship there must be scholarly work focused on conceptualising education, comparing educational traditions and offering alternative modes of educational thought. There must also be a disciplined approach to differentiating quality in educational research, and a disciplinary system for accumulating, iterating and discarding educational knowledge (Bridges, 2006; Young & Muller, 2013). Teachers engaged in scholarship must be sufficiently inducted into these academic practices. They must be able to exercise their research literacy as users of research and must be able to make reasonable judgements about claims to knowledge. While an emphasis on scholarship does not necessarily see teachers as scholars themselves, some teachers might increasingly take on such roles.

On the other hand, an emphasis on systematic inquiry in professional endeavour foregrounds the role of the teacher as researcher. This is rarely seen as a ‘purely’ academic form of research, however, but rather as a form of research ‘in practice’ or action research, where the object of inquiry is often the teacher’s own practice, its assumptions and values, and the problems encountered in the course of teaching (Winch et al. 2015, 207). For some (e.g. Carr, 2006), reflective teacher inquiry is a more valid approach to understanding educational practice than formal academic research, while others question the foundations of teacher inquiry and whether its claims to knowledge can be set alongside more purely academic traditions (Fenstermacher, 1994; Hammersley, 2004). Still others may claim that both (i.e. teacher inquiry and university-based formal research) can enhance understanding and researchers can work collaboratively within and across these traditions. However, if systematic inquiry is defined in ‘purer’ formal academic terms, with teachers involved with academics in conducting large-scale research programmes, there are practical difficulties in

reconciling the commitments of engaging fully in inquiry with engaging fully in teaching, especially over the longer term.

These differing emphases suggest different orientations to, and requirements from, educational knowledge. Some might argue that engaging in research without systematic scholarship is meaningless, and there is a risk that teacher-researchers simply end up producing small-scale studies that ignore more rigorous and in-depth academic studies. By tacitly or explicitly buying into an argument that they are the ‘experts’ on their practice, teacher-researchers may wittingly or unwittingly contribute to the neglect of more sustained longer term research studies, or insightful conceptualisations drawn from disciplinary knowledge. If action research is prioritised, then there is a risk that educational knowledge becomes increasingly fragmented, lacking a coherent ‘supervening purpose’ (Muller, 2009) or internal problematic that will hold together a disciplinary structure. The focus of research knowledge may become increasingly ‘local’ and contextual, venerating individual practitioner experiences and leaving less and less room for the generation of cumulative insight or alternative conceptions, although there may be direct local practice benefits.

If we accept that teachers cannot be professional full time researchers, and yet it is thought important for them to be at least engaged in scholarship to achieve stronger professionalism, then we still meet the problem of how educational knowledge is represented to teachers. Systematic scholarship or inquiry benefits from a reasonably systematic body of educational knowledge. However, as noted above, educational knowledge is diverse, proliferate, and characterised by multi-disciplinarity and numerous purposes and audiences, at least in the UK context (McCulloch, 2017; Furlong, 2013). Postmodernist and relativist approaches have made inroads which have stimulated debate and critique but have eroded the potential for establishing consensus around the forms of knowledge that can underpin curricula (Young & Muller, 2016), and, arguably, hindered the development of coherent traditions that can underpin educational practice. On the other hand, governments are increasingly championing forms of educational research that seek to accumulate a detailed quantitative and systematic knowledge base but veil questions of educational purpose and ignore the nuances of educational interaction (Biesta, 2010b). The consequence is that ‘professional endeavour’ via systematic scholarship or inquiry is a challenging aspiration for teachers in such national contexts.

Conceptions of teaching and educational knowledge: interdependencies and their consequences

The above discussion establishes that differing conceptions of teaching require different notions of educational knowledge, and different forms of the production and circulation of that knowledge. However, the capacity to produce and circulate a particular form of educational knowledge cannot be assumed in any given national context. Any educational system that has experienced the dominance of a particular model of teaching (i.e. craft) cannot then seamlessly transition to the dominance of an alternative model (i.e. professional endeavour based on critical reflection) without concomitantly experiencing changes in the production for, and circulation of educational knowledge within, that system. The work of Whitty and Furlong (2017) demonstrates the varied character of national traditions of educational knowledge, whilst also identifying those that cross borders more seamlessly – and some of the national or supra-national traditions remain nevertheless firmly rooted in their socio-geographical contexts, as the curriculum studies-didaktik projects exemplify (Westbury, Hopmann & Riquarts, 2000). While educational knowledge production operates globally, educational systems cannot fully absorb the potential of that knowledge, or locate its traditions, without a degree of ‘national’ educational knowledge production (i.e. a research community). This is primarily because the conceptual webs through which propositional knowledge is interrelated only become fully meaningful and usable when those engaged with that knowledge are aware of the procedures and processes that secure the validity of that knowledge, and are able to make inferences between the propositions (Winch, 2010). And this can largely only be achieved through the sociality of a research community (Young & Muller, 2016). Moreover, the requisite forms of knowledge must be circulated and pedagogised within teacher education so that teachers become proficient in the practices associated with that knowledge. This requires substantial capacity within teacher education institutions or universities, however teacher education systems are organised.

Below we briefly consider illustrations of these interdependencies and the potential impact for future educational reform in three national contexts: Germany, England and Finland. The three contexts exemplify scenarios that may resonate in other educational systems internationally, although there may well also be distinctive alternatives that are not covered here.

Germany – modifications to professionalism and the singular discipline: the rise of an autonomous technician?

Germany has historically enjoyed a commitment to the development of critical reflection in its teachers as part of a conception of teaching as a strongly professional endeavour (Kuhlee & Winch, 2017; Biesta, 2011). This conception of teaching is related to a tradition of disciplined educational knowledge which has a distinctive place in German higher education (Schriewer & Keiner, 1992; Schriewer, 2017), and has developed concepts such as *Erziehung* and *Bildung* that have been influential in educational traditions in many continental European countries (Biesta, 2011; Westbury et al., 2000). However, with questions raised about the success of the German educational system in the face of surprisingly low performance in the global PISA tests (Ertl, 2006), German traditions of educational knowledge and prevalent conceptions of teaching have both been subject to criticism (Schriewer, 2017). Consequently, reforms have been introduced at the national level which attempt to establish a set of standards by which teaching can be judged. While strict entry requirements, legislative frameworks and lengthy induction allow teachers to sustain a certain level of autonomy, global concerns regarding the quality of education have resulted in the introduction of standards to evaluate teachers' performance or 'competences'. In addition, since the early 2000's federal measures began to require evaluation procedures to assess educational quality that may directly or indirectly reflect on teaching quality. These have included the use of standardised performance tests in each state, comparative tests in core subjects, the supervision or review of examinations by external staff, and evaluation of schools by external advisors (Halasz, Santiago, Ekholm, Matthews & McKenzie, 2004, 25).

These interventions can be seen as representing an increasing focus on the technical aspects of teaching, while not neglecting the professional elements (Kuhlee & Winch, 2017). In essence a new form of professionalism may emerge that seeks to link teaching a little closer with perceived national economic and social policy objectives. Concomitantly, educational knowledge in Germany can be seen to be gradually re-orientating towards a more empiricist model which is challenging traditional hermeneutic approaches (Schriewer, 2017) or at least gradually converging towards a global model of research production (Ertl, Zierer, Phillips & Tippelt, 2015). While these reforms can be seen as progressing independently, the rationales for both are closely intertwined, and are based on concerns in Germany that the education system needs to adapt to a role more intimately connected with national economic objectives

(Ertl, 2006). While the German education system is intricately intertwined with German societal norms, it is not immune to pressures from global educational reform and the supra-national policy discourse which sees educational systems as central components in the sustainability of economic competitiveness through the generation of human capital (Schriewer, 2017). Nevertheless, radical change or substantive moves towards greater instrumentalism seem unlikely considering the extent to which disciplined knowledge traditions centering on *bildung* and *didaktik* and coupled with professional autonomy for teachers are deeply embedded in German education (Hopmann, 2007; Westbury et al., 2000).

England – craft and (instrumental) technical concepts combined with fragmented educational knowledge?

In England, meanwhile, a conception of teaching as ‘professional endeavour’ has never been firmly established. Instead it has competed for prominence, primarily with a more dominant craft conception which, it can be argued, has emerged from a voluntarist English educational system that developed originally through church and community initiative (Judge, Lemosse, Paine & Sedlak, 1994; Green, 1990), and the pragmatic and conservative character of English culture. As a consequence, the education system and teacher preparation has historically received lower forms of attention from the state than in many other European countries (Green, 1990). Moves to further develop the professional element to teacher education, closely connected with attempts to strengthen, or verticalise, the educational knowledge base, were forthcoming in the 1960s and 1970s as part of reforms and expansion in all aspects of the education system (McCulloch, 2002). However, these were met with considerable contestation from politically conservative voices and ‘traditionalists’ seeking to defend what they considered to be under threat in terms of the school curriculum and the culture of schooling (Ball, 2013).

Arguably, the failure to adequately strengthen educational knowledge institutionally in England can be seen as concomitant with the failure to enhance teaching professionalism. In other words, Education’s inability to cement its place in the academy in England as a professionally-orientated autonomous discipline is interwoven with the inability of teachers to enhance their professional status (Judge et al., 1994; Furlong, 2013), as a defence of occupational jurisdiction is considerably fortified by control over a recognised knowledge

base (Abbott, 1988). Over time, attempts to offer academic degrees based around the foundation disciplines (i.e. history, sociology, philosophy and psychology of education) that were intended as professional preparation for those commencing teaching have given way to a separation between Education Studies undergraduate degrees (often drawing on the foundation disciplines) and teacher education programmes guided by state-devised teachers' standards (Furlong, 2013). Essentially, this can be seen as a failure to develop a professionally-orientated region, primarily due to a lack of state support for a stronger teaching professionalism, and this has led to a fragmented singular discipline (Education Studies) existing alongside more generic forms of teacher education. Teaching is increasingly subject to forms of deprofessionalism in England (Beck, 2008; Whitty, 2014), and educational knowledge is finding it difficult to advocate coherently for alternative conceptions of educational practice as it battles with its own diversity and fragmentation (BERA/UCET, 2012).

Finland – *from situated understanding, to technical expertise, to critical reflection*

Over the last 60 years, conceptions of teaching in Finland have changed dramatically. A knowledge tradition that positioned teachers as 'authoritarian' and teaching as the implementation of instructional techniques and protocols guided by a central curriculum has shifted to a notion of teachers as 'democratic, broad minded and well-trained' and 'expected to rely on the findings and methods of educational science' (Santti, Puustinen & Salimen, 2018, 9). The development of the professional element of teacher education began with a shift of teacher education to universities and introduced the 'polytechnic model' to university studies (influenced by East Germany), bringing theory and practice together with the aim of addressing social problems, emphasising the 'skill to think scientifically' and 'research-based facts, not beliefs' (ibid.,10).

A university law that only recognised Master's level studies, however, had a profound impact on securing the academic status of teacher education as teacher educators were required to create a theory-based curriculum for teachers who would hold a master level degree before entering classroom teaching. Calls for the integration of theory and practice led to a new programme, the Pedagogical Studies for Teachers, and the reconfiguration of the educational studies curriculum. Teacher education departments were increasingly 'expected to produce educational research' and to 'ensure that every teacher, whether prospective or appointed,

adopted a research orientation as a guiding principle' (Santti, Puustinen & Salimen 2018, 12). This has been a crucial factor in the establishment of Educational Sciences as a recognised academic discipline and has resulted in an elevated social status for teachers (ibid.), reinforcing teachers' professional jurisdiction (Abbott 1988).

Thus, in a relatively short period, and aided by system and institutional level reforms, Finnish teacher education has moved from craft-based apprenticeships to professional and academic studies. Teaching in Finland is thus considered a 'professional endeavor' where research and practical day-to-day work are intimately connected as teachers tailor the basic national curriculum to local needs (Sahlberg, 2011). However, some have suggested that this professionalism is imposed and compromises teacher autonomy (Klette, 2000 cited in Santti, Puustinen & Salimen, 2018).

Concluding remarks

Much global educational reform suggests the advance of technical conceptions of teaching for state systems, supported by quantitatively driven research studies that take the desired 'outcomes' of reforms (i.e. improved PISA rankings or performance indicators) for granted as desirable objectives (Tatto, 2006; Biesta, 2010b). Such an approach pressurises classical professional models of teaching that are often coupled with a scholarship orientation towards increased technicism. Disciplinary educational knowledge may suffer from a perceived irrelevance as seemingly more purposeful or directly useful educational knowledge is supported by funding, governments and practitioners. While the UK and the US still sustain some disciplinary specialists in their university schools of education (Furlong, 2013; Paine, 2017), the capacity of the education foundation disciplines to sustain independent academic communities over the longer term may be at risk, and such work may be absorbed more fully into associated 'singulars', such as economics, history, philosophy, sociology, and psychology, without a distinct educational orientation. It could be said that these foundation disciplines only came into existence as *educational* disciplines because of their *interest* in educational practice (Biesta, 2011), and some purchase on how it was configured. If both of these (i.e. the interest in education and the involvement in practice) are lost or hindered, for example by a rupture with the world of teaching and teacher education, then disciplined educational knowledge is under threat. While an autonomous technical conception recognises the value of producing and using rigorous educational research to inform and guide practice,

a purely instrumental technical conception seeks to recast validity in education research in ways that meet policy objectives. A craft conception, however, simply bypasses the argument by suggesting that teaching is a matter of experience, character, and often of a certain level of general education unrelated to professional knowledge for teaching.

The trajectory of educational knowledge development over time is also significant for understanding the particular relation between teaching and educational knowledge in any given national context. Educational reforms may differently accentuate particular conceptions of teaching - for example, attempts to foreground aspects of professional endeavour may be problematic in educational systems that have previously operated with craft or instrumental-technical approaches, and professionalised systems which enjoy long periods of teacher formation may strongly resist more technical orientations because of the inclinations of existing practitioners. The forms of educational knowledge valued within these specific system contexts will be different, as will the expectations of practitioners in terms of engagement with knowledge. But interpretations of the passage of educational reform should not purely revolve around educational knowledge production or school culture, as there is also the question of whether higher institutions have the capacity to support substantive programmes of teacher education that can engage teachers with incoming conceptions of teaching. However, issues of long-term capacity development in higher education or in schooling are rarely at the forefront of policy – and the potential for capacity building is arguably compromised by the focus on systemic change that characterises current global educational reform.

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