
Practical knowledge of teaching practice - what counts?

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I am not arguing for not having pedagogical training – that is the last thing I want. But I claim that the facts mentioned prove that scholarship per se may itself be the most effective tool for training effective and good teachers (Dewey, 1964, p.327).

Abstract

The role of formal and systematic knowledge in socialisation into teaching is in question. There is a rising tendency towards anti-intellectualism in different quarters of the field of educational studies coupled with an ever increasing emphasis on tacit understanding and immersion in practice. Socialisation into professional practice is purported to depend predominantly on ‘doing’ *in situ*, and on learning what experienced teachers do and far less on ‘concept building’. In this paper we argue that the emphasis on immersion in the site of practice as the gateway to an understanding of the practice of teaching rests on an overstated conception of tacit knowledge which misses the crux of professional knowledge. The crux of professional knowledge, we argue, lies in specialised practice languages (Collins, 2011) which constitute criteria of professional practice and enable articulation between different reservoirs of knowledge. Emulating what expert practitioners do in practice is not central to the development of professional knowledge of teaching.

In the domain of professional education, the relationship between theory and practice and the nature of and role of disciplinary knowledge in ordering the acquirer’s understanding of the practice has occupied research for many decades. The return to this question now has a specific context. Broadly speaking, this context is characterised by a proliferation of policy evaluation research at the expense of disciplinary-based research, an attack on professional knowledge, and a turn away from a discipline-based curriculum to an inter-disciplinary practice-based one. Specific to teacher education, there are increasing calls for pre-service curricula to increase the amount of time spent in schools and to focus students’ learning on authentic assessment tasks and personal accounts from the outset of the degree. A common rationale behind these calls is the idea that it is by **actually** being in the school – in the presence of ‘old timers’ – planning, teaching and revising

one's lessons, by iteratively being involved in aspects of practice, that student teachers acquire practical knowledge or the know-how of professional knowledge, and that this is key for learning professional expertise. In other words there is an increasing tendency to downplay the systematised conceptual reservoir of teaching and to emphasise tools for practice. In South Africa, this view is expressed in claims such as "experience is the most important bridge to practice" (Henning and Gravett, 2011, p.21) or "the enterprise of teacher education must venture further and further from the university and engage ever more closely with school" (Darling-Hammond in Osman and Casella, 2007, p.35) or that in order to bridge the gap between theory and practice, teacher educators need to develop curriculum artefacts to personalise theoretical work (Peterson and Henning, 2010). It is also expressed in policy work which advocates informal avenues for teacher development (e.g. professional learning communities) and the establishment of 'Teaching Schools (TSs) and Professional Practice Schools (PPSs)' in order to "ensure meaningful Work Integrated Learning (WIL)" (Department of Basic Education/Department of Higher Education and Training, 2011, p.15).

Assumed here is the belief that by having to face different modes of school organisations and cope with novel situations, in particular those that are marked by 'uncertainty and indeterminacy' (Schön, 2001) student teachers get access to the 'real stuff' to "the tacit form of personal knowledge" (Eraut, 2000, p.114). On this view, learning to be a teacher is about cultivation of practical wisdom by means of action research, personal observations, field work and continuous experience in the site of practice. With these kinds of tools, it is argued, educational theory can be demystified and amalgamated with tacit theories held by experts in the practice (Henning and Gravett, 2011, S24).

Our concern is that more and more personal reflection in and on practice and not the acquisition of theoretical knowledge, *per se*, is seen to be central to the acquisition of professional knowledge. This privileging of personal experience is very often justified by post-modernist anti-intellectualism in, for example, the position that all theories are underpinned by tacit ideological assumptions and therefore there is no privileged position outside of practice (Carr, 2006) and/or by an overemphasis on tacit knowledge in claims that much of professional knowledge consists of modes of operations that cannot be made explicit by discursive means (Dreyfus, in Selinger, Dreyfus and Collins, 2007). This overemphasis on tacit knowledge is also contributing to

the growing anti-intellectualism in the approach to professional education. In different but equivalent ways the post-modernist project and the embodiment thesis call into question the educational project of formal education. In Winch's words (2010, p.123), the educational project of "instruction, explanation, training and exemplification" is made secondary or in a worst case scenario, redundant.

A systematic interrogation of tacit knowledge is, therefore, justified. Our primary aim in this paper is to develop a conceptual clarification of the notion of tacit knowledge, what it is and what precisely the tacit knowledge argument buys us. The flip side of this interrogation is an attempt to address the question of what it is that enables the acquirer of a professional practice to see distinctions and relations in and about the practice, and why this condition of possibility rather than the amorphous idea of tacit knowledge, is key to the development of professional expertise.

The paper is divided into four parts. We begin with a brief discussion of the debate between Paul Hirst and Wilfred Carr (2005), on the role of disciplinary knowledge in ordering the practice of teaching, conceptually. In this discussion we foreground the growth of anti-intellectualism in the field of professional education, evident in Carr's post-modernist attack on the idea that educational theory has a privileged position in relation to practice. In the second section, 'the embodiment thesis', we show that in the turn to ideas such as 'intuitive cognition' (Eraut, 2000), 'reflection in action' (Schon, 2001) and 'embodiment' (Dreyfus in Selinger, Dreyfus and Collins, 2007), a different form of anti-intellectualism is developing, promoted by claims that undervalue or discount the role of deductive reasoning in making professional judgement. In this thesis, tacit knowledge is propagated as a strong obstacle to formal instruction. Tacit refers to embodied rules of practice that experienced practitioners use to recognise connections between different elements of their practice, about which they "cannot give a complete or even a reasonably accurate description" (Schon, 2001, p.7).

In the third section, 'how is tacit knowledge classified?' we turn to Collin's work on tacit knowledge (2010 and 2011). Collins's argument is central to the view of tacit knowledge we develop in this paper and to the overall argument of the paper. Collins distinguishes between 'what is not, *but* could be made explicit' and 'what is not and cannot be made explicit' (our paraphrase). This distinction narrows down the realm of tacit knowledge, questions the idea that tacit knowledge cannot be made explicit, and also helps to shed light on the role of collective representations (rather than individual experience and

personal embodiment) in the acquisition of professional knowledge. In the last section of the paper, ‘where to from here?’ we extend Collins’ argument and by looking at social realist positions of professional knowledge (Winch, 2010, 2012, Abbott, 1988 and others), we show that the crux of professional knowledge lies in specialised ‘practice language’ (Collins, 2011) which constitutes criteria for seeing distinctions and relations in the particulars of practice. Collins’ and Winch’s analyses of tacit knowledge show that this form of discrimination, evaluation and therefore judgement cannot be obtained from emulating the activities of other professionals, *in situ*.

Intellectualism and anti-intellectualism in teacher education¹

In his debate with Carr (Hirst and Carr, 2005), Hirst foregrounds the difference and relation between theoretical reasoning² and practical wisdom.³ Theoretical reasoning, he argues, is primarily concerned with establishing the truth of theoretical knowledge (such as relations between ideas, inferences from ideas, mastery of concepts within a subject and procedures for testing knowledge claims), and concept clarification (systemisation of ideas). Practical wisdom, on the other hand, is concerned with the pursuit of practical action and relies on the ability of human beings for discernment in particular circumstances or on contextual wisdom. Hirst argues that with the help of “structures of justified propositional beliefs” (Hirst and Carr 2005, p.616), teachers are able to find rational justification for their practices, and discard presuppositions that have been proved to be false. In Hirst’s view, practical wisdom depends on theoretical reason, “if it is to begin to be reflectively adequate to all the complexities of educational situations and their

¹ A version for this section was first written in Shalem and Rusznyak, 2013.

² Different terms are used by different theorists to refer to theoretical knowledge and in our discussion we try to keep to the original use. Hirst and Carr (2005) refer ‘theoretical knowledge’, Winch (2010) refers to ‘propositional knowledge’ and Collins (2010) refers to ‘scientific knowledge’.

³ Different terms are used by different theorists to refer to practical knowledge and in our discussion we try to keep to the original use. Hirst and Carr (2005) refer to ‘practical wisdom’, Winch (2010) refers to ‘practical knowledge’ and Collins (2011) refers to ‘practical understanding’.

possibilities” (Hirst and Carr 2005, p.618). Hirst insists that a study of educational theory is a distinctive enterprise external to what teachers do in their day-to-day practice. Getting to grips with the internal coherence of concepts (and understanding of their exact meaning) is a prerequisite for developing rational judgement for practice. The disciplines of education, philosophy in particular, are paramount for prospective teachers because they provide them with conceptual clarity on the nature of knowledge, with ways of systematising concepts and with methods of justification that can be used to examine deep-seated beliefs, ideas from other disciplines **and** instances of practice.

In his debate with Hirst, Carr argues against the idea that theoretical knowledge can provide standards for rationality and truth: along post-modernist lines, he claims that the knowledge developed by educational theory cannot escape “particularity and contingency” (2006, p.147) and thus cannot be said to attain a higher form of rationality that “competent members of the community of educational practitioners” cannot access themselves (p.150). Educational theory is itself a social practice that is imbued with cultural norms and criteria. It is nothing more than a personal theory that practitioners develop through, a process of ‘self-reflective inquiry’ (p.141). In a subsequent article, Carr goes even further and calls for the abandonment of the pursuit of generalisable educational theory:

Educational theory is nothing other than the name we give to the various futile attempts that have been made over the last hundred years to stand outside our educational practices in order to explain and justify them. And what I am going to propose on the basis of this argument is that the time has now come to admit that we cannot occupy a position outside practice and that *we should now bring the whole educational theory enterprise to a dignified end* (2006, p.137, our emphasis).

In Carr’s position, the epistemic activity of formulating “propositions on which we can agree in our judgements of truth” (Hirst, in Hirst and Carr 2005, p.617) is replaced with reflecting on what is unacknowledged by educational theorists – the particular, contingent and the culturally specific, the unacknowledged bias.

The embodiment thesis

The anti-intellectual sentiments entailed in Carr’s post-modernist position are growing in other quarters of the field of professional education.

Anti-intellectualism is growing through the work of practice theorists (e.g. Lave and Wenger, 1991 and followers) who turn to the embodiment thesis to explain why professional knowledge relies primarily on one's bodily access to *tacit* knowledge. The main precept of the embodiment thesis is that a large element of professional knowledge is ineffable, acquired in a 'mode of experience', and when using this knowledge, every individual adds her signature to it (Winch, 2010, p.121).⁴ Practice-based theorists promote the idea that "first-hand encounter with the actors in their own settings, in the midst of doing whatever it is that they do every day, with whatever is required to do it" (Miettinen, Samra-Fredericks and Yanow, 2009, p.1315) is the best way to capture "the seen-but-unnoticed" (p.1316). Tacit knowledge is the intuitive aspects of professional knowledge, which cannot be codified. These aspects can only be accumulated through practical experience, by being directly involved with objects, products and services in the workplace (Nonaka and Takeuchi in Guile, 2010, p.34, see also Sellman, 2012). By spending enough time with an old timer, criteria of good practice get transmitted, and tacitly acquired, through the process of 'indwelling' (Polanyi, 1966 in Guile 2010, p.49).

The practice turn view returns to two foundational claims about tacit knowledge: Ryle's (1949) – that no amount of accumulative knowledge (knowledge that) will prepare one for practice (knowledge how) and Polanyi's (1966) – that 'we can know much more than we can tell.' The following claim by Dreyfus (in Selinger, Dreyfus and Collins, 2007, p.737) points to the heart of the embodiment thesis:

You may have mastered the way surgeons talk to each other but you don't understand surgery unless you can tell thousands of different cuts from each other and judge which is appropriate. In the domain of surgery no matter how well we can pass the word along we are just dumb.

This take on professional knowledge is that *embodied realisation precedes recognition* – practicing a thousand possible permutations of surgical cuts and doing experiments with an expert is necessary for gaining discernment of the idea (of surgery), for accessing criteria of practice. For Dreyfus then, explicit knowledge is made to depend on tacit knowledge.

⁴ See Winch's analysis of Oakeshott's treatment of practical knowledge.

What emerges from these points is that professional knowledge has an ineffable element to it, an interpretive set of criteria that cannot be formalised (and therefore cannot be generalised), and cannot be transmitted but can be experienced, in working with others who are more experienced. Somehow, day to day inductions are transformed over time into professional knowledge.

The post-modernist attack on knowledge and the embodiment thesis are disconcerting developments for the transmission and acquisition of professional knowledge. First, the former discounts the possibility of de-contextualised knowledge and the latter discounts the framing role of deductive reasoning. Second, by reducing theory to another social practice, by insisting that embodiment and personal experience are necessary for the acquisition of professional knowledge, both views overstate the case for tacit knowledge. Thirdly, without a theory of transmission (which the embodiment theory precludes), it is not clear what criteria one should follow in order to evaluate the practical knowledge of professionals. In view of these issues, the following question requires an answer: How strong is this tacit aspect of professional knowledge? Is all of it occult, can some of it be explicated? Can it be evaluated?

How is tacit knowledge classified?

In several publications, Collins (2010 and 2011) addresses the challenge of explaining tacit knowledge and its role in the acquisition of ‘practical understanding’ (2011) of professional knowledge. His fundamental aim is to take the mystery out of the idea of tacit knowledge (2010, p.7). Collins argues that many explanations of tacit knowledge fail to interrogate what can and cannot be transmitted discursively; they fail to exclude those instances in which Polanyi’s claim that “we can know more than we can tell” does **not** fit (2010, p.4 and 2011, p.272). According to him the idea of the tacit is overstated and muddled. His analysis shows that many of the instances considered by proponents of the embodiment thesis to be tacit and ineffable are weak forms of tacit knowledge; they do not touch on “deep principles that have to do with either the nature and the location of knowledge or the way humans are made” (2010, p.86) and they could be transmitted discursively (2010, pp.91-97 and 2011, p.284). Since these instances arise in person to person interactions (formal **or** informal situations), he categorises them as “relational tacit knowledge”.

In such instances not all the knowledge needed for acquisition is spoken about. These include situations in which: neither the bearer of the practice (the transmitter) nor the novice thinks that the information requires communication because the expert is so familiar with what she knows that she does not notice it anymore ('unrecognised knowledge'); information is withheld because the bearer of the practice does not know that the novice does not know it, and the novice does not know that she does not know it and yet it is salient for what the expert is doing ('mismatched saliences'); information is withheld because the bearer of the practice does not want to disclose it ('professional secrets'). In other words, the reasons for why knowledge remains unspoken are sociological or psychological and not epistemic. As he puts it "principles to do with the nature of knowledge are not at stake" in any of these instances (2010, p.98). The appropriate description of these situations is therefore different: 'we know more than we tell' and not 'we know more than we can tell' (our paraphrasing). Given the necessary will and/or contingences, more of the unspoken knowledge could be made explicit by

. . .telling secrets, by using longer strings,⁵ by finding out more about what is in other people's minds, and by doing more science so that what is not known to anyone becomes known (2010, p.160).

As such, instances of relational tacit knowledge do not form a real threat to discursive transmission of professional knowledge and do not justify the claim that embodiment is central to the acquisition of professional knowledge.

The second type of tacit knowledge is "somatic tacit knowledge" and is a stronger form than the relational type. It refers primarily to the practical understanding used in instances such as bicycle-balancing or typing. It points to constraints and affordances of the ways our bodies and brains work. In education we would include automatised reinforcement of responses to stimuli. This form of know-how is, indeed, attained through embodied experience. Nevertheless, practical understanding of that kind is not central to the understanding of professional practice (Collins, 2010, p.117)⁶ and does not prove the claim that the practical *understanding* of professional

⁵ In this he refers to computer intelligence that, theoretically, can be used to make explicit every procedure of scientific experiment.

⁶ Over time, the human mind could develop "symbolic resources with convenient affordances" (2010, p.154), he says, and so this is not the 'irreducible tacit'.

knowledge is tacit and can only be attained by being immersed in the site of practice.

So far we have seen that the tacit knowledge argument is insufficiently differentiated and buys us very little. What then is the irreducible tacit and where is it found? Collins argues that the strongest form of tacit knowledge lies in what makes human beings distinctive. This he argues, is ‘socialness’, the ability of human beings “to feast on the cultural blood of the collectivity” (2010, p.131) and thereby to successfully instantiate actions and activities appropriate to sociocultural and socio-historical contexts. What is actually tacit is the ‘mechanism’ (2010) by which individuals draw on collective knowledge and make fine distinctions, evaluate and bring ideas and context into a relation. Collins proposes that the epistemological aspect of the tacit knowledge problem is to be found in the human ability to make meaning, to produce and act in accordance with ‘socially located knowledge’. Human beings can, in principle, interpret intelligently, that is, in concert *with what other humans are doing* because they participate in the larger organism of society (2010, p.165, emphasis in the original). What enables this socialness is language – our ability to symbolise experience and knowledge across time and space – which not only manifests this tacit ability but also affords it. We participate in the language of others and make meanings of our surrounding by using their symbols.

Collins does not explicate the meaning of socialness sufficiently. The nearest to a sociologically familiar concept is a footnote on p.131, where Collins refers to Durkheim’s notion of ‘collective consciousness’ or the idea that by definition knowledge is found at the collective, the individual is the bearer of collective representations. In this, Collins brings us back to basics by arguing that the tacit is not a constraint of professional knowledge. If human beings did not have the ability to make knowledge explicit, the idea of tacit would not exist. The *mechanism* of doing this is tacit (in the strongest sense of the word) but the *ability* to make knowledge explicit is what defines us as humans. The challenge posited by Collins is to unpack the ways symbolisation through language facilitates the process of making the practical understanding of professional knowledge explicit.

In a more recent paper (2011) Collins attempts to explain the constitutive power of language in ordering and binding a specialist’s understanding of scientific practices, and to defend the claim that discursive interaction in the language of the practice rather than joint activity in close physical proximity

is a necessary condition for its acquisition. His defence draws on his analysis of linguistic fluency that can be found between experts within a domain of expertise across institutional settings, division of labour, geographical space and time. The collective contributions made by different specialists in a field form a collective representation of the practice as a whole or what he calls 'practice language' which articulates, ordines and co-ordinates their situated practices across time and space. It is the practice language which enables continuity and development and deepening of the collective understanding of the practice. Put differently, if situations in professional life were predominantly reflected in, or reduced to local situated personal knowledge, and if their understanding was a matter of inductive accumulation of bodily experiences, then communication across a diverse range of expert practitioners and spatio-temporal social contexts, intergenerational transmission of specialised knowledge would be impossible, and professional judgement would not be possible. The professional domain would be reduced to a collection of silos.

Collins is clear that the 'practice language' is anchored in physical reality – if the physical activities of the diverse range of professional specialists and the respective activities constitutive of the practice ceased to exist, then the practice language itself would also cease to exist (2011). However, practice language must entail a sufficient level of abstraction and generality to both represent and transcend developing grounded practices, if it is to enable informed judgement and the development of knowledge in practice. The crux of practice language lies in its regulatory role – it classifies what can be said in and about the practice, “what does and does not exist and what can and cannot be done” (2011, p.282) and what would count as outside of the collective enterprise of the profession. The power of practice language lies in its ability to classify and conceptually order situations, foreground and structure their salient features and place them in order of significance. The ground for practical understanding, the know-how of professional knowledge lies, then, in the collective ordering of the individual action. The new default position, Collins argues should be “that a practice can never be learned from someone else in the absence of shared language” (2011, p.279).

If these ideas of abstraction, generality and shared language are accepted then it must be agreed too that practice language is not a set of arbitrary conventions or discourses that can be manipulated to distribute different truths as the post-modernist Carr would have it.

Where to from here?

Collins invites the development of “a full theory of how language contains practical understanding” (2011, p.282). We agree with this and below we note others who make a similar call. Nevertheless, we argue that Collins’ notion of a practice language being a regulatory and constitutive feature of the practice could advance the debate much further if it is shown that the activities of specialists in a domain of practice are ordered by the conceptual structure of the subject matter at hand. In the absence of disciplinarity, the inferential power of practice language, its regulatory role, is not sufficiently explained.

Winch’s idea of ‘inferential comprehension’ (2012, p.130) is germane here. To know and communicate that something is the case (in Collins’ terms “what does and does not exist and what can and cannot be done” see above) is to understand, work with and develop inferential relationship between propositions. In his recent work on expertise (2010, p.104), Winch draws a distinction between “contingent” and “discrete propositional knowledge” that are gained through experience, and “organised propositional knowledge” that is acquired systematically. With this idea, he explains that true understanding of a proposition commits one to also know what can and cannot be inferred from that proposition, albeit, in different degrees of breadth and depth. Winch develops the idea of inferential comprehension to defend the view that the core understanding of professional knowledge is about grasping of its conceptual structure (knowledge that) and knowing how to select methods of investigation which are appropriate for the subject matter at hand (knowledge how). At minimum, professionals are acquainted with “subject-dependent warrants”, at best they also master “the appropriate procedures for knowledge generation within the relevant subject” (2010, p.110). Winch’s ‘knowledge how’ is a very different form of practical knowledge, one that is formal and is grounded in propositional knowledge and not in everyday experience, ideological underpinnings or tacit knowledge. Winch acknowledges Carr’s point that there is a proliferation of social science explanations and the ensuing contestation between theoretical perspectives. He also concedes the embodiment thesis’ claim that reflection on action in specific situations cannot be seen to be directly dependent on thinking about the truth of ideas about action, at least not in any simple way. Nevertheless, he argues that the critics would still have to explain how “propositional knowledge might have a bearing on practice” precisely because it has a systematic structure (Winch 2010, p.102).

Winch's reformulation of practical knowledge as an integral aspect of propositional knowledge is consistent with recent calls within the educational field to identify and develop the knowledge-base of teaching. There are arguments that this can be done inductively (Hiebert, Gallimore and Stigler, 2002) but Muller (2012) believes that it should be done deductively. He calls it "syntactic tracing" or constructing a chain of inferences, "as firm and accountable" as possible "between the 'invariants' of the conceptual pile and the variabilities of the empirical instance" (p.12). Lawn and Furlong (2009) remind us of the crucial role of disciplinary-based work in "breaking down problems into its own logics and mediating between public information and problems" and between these and public action (pp.549–550). Klette and Carlstern (2012) call researchers to move away from a restrictive view of professional knowledge that centres it on embodied practical knowledge and instead, advance the important work of knowledge codification. Encoded knowledge, they argue, is essential for framing decisions in practical setting; it foregrounds knowledge sources, instruments and theory-mediated objects ("object-centred relationship") rather than informal day-to-day individual teachers' strategies and choices ("person-centred relationship") (p.79). There is a key idea here about ordering principles, which lies at the very heart of these calls: concepts regulate existing forms of understanding and transform them into new possible forms, if they represent existing ideas **and** transcend their meaning in time and space. If a concept is isomorphic with ideas that are deemed insufficiently developed, it would merely describe what is already present and would lose its regulatory function (Shalem and Slonimsky, 2010). This is why the regulatory role of practice language depends on concept building.

In developing this idea Shalem (forthcoming) draws on Abbott's knowledge classification to explain the binding power of specialised professional knowledge. Professions, Abbott argues (1988), enjoy two reservoirs of knowledge classifications – academic and diagnostic. Both are formal bodies of knowledge but each is organised differently and constrains professional judgement differently. Academic knowledge classifications pull together propositions, formally, along consistent rational dimensions, thus producing relations and boundaries between ideas. They are stronger when they refer to subject-matter specific concepts that can only be explained by a singular

discipline.⁷ Concepts in educational theory such as *schemata*, *working memory*, *epistemological rather than formal access*; *the pedagogic device*, *criteria of education* etcetera may provide this kind of classification. Having these kinds of conceptual classifications (Abbott refers to them as “positive formalism”, p.102) secures the jurisdiction of judgement within the profession. The second reservoir of professional knowledge is ‘diagnostic classifications’ (1988). These classifications form a far more direct resource for the working knowledge of professionals, yet do not lend themselves to a “standard sequence of questions” (p.42). They are not tips, routine skills or direct commands. Criterion reference assessment and taxonomies of learning attempt to provide such classifications to teachers. Abbott explains the way in which professionals draw on the two reservoirs of knowledge. First, they collect information about a particular case (be it a specific disease, legal case, a building design in architecture or learners’ errors in an exam) and assemble it into a complex picture, *according to certain epistemic rules and criteria* specific to the subject matter. Second, the practitioner takes the complex picture and refers it to classifications that are already known to the profession (for example, a concept in the field of law, a formal theory in architecture or a set of conceptions in a particular area of science or mathematics), and deduces the type of the case in particular. In order for a practitioner to align a specific case with “the dictionary of professionally legitimated problems” (i.e. its diagnostic classifications, p.41), the practitioner needs to know “what kinds of evidence are relevant and irrelevant, valid and invalid, as well as rules specifying the admissible level of ambiguity” (p.42).

Abbott’s work on classifications and Winch’s reformulation of practical knowledge are important developments which locate practical knowledge in a formal process and not in every day experience. They point to the vertical relation between propositions, whereby the more general concept frames the relations between the subordinate concepts and in that way binds discrimination, evaluation and therefore professional judgement of the particular. This kind of work (see also Wheelahan, 2010, Young and Muller, 2010 and Rata, 2012) can be understood by reference to Vygotsky’s ‘scientific concepts’ (1987) – conceptual classifications of systematic propositional knowledge pull existing concepts into new relations of abstraction and generality and in doing so impose new orders of meaning on existing concepts. In different ways all of the above conceptual work comes

⁷ Two interesting examples given by Abbott are ‘particle interactions’ or ‘underwriting’ that can only be explained by a singular discipline (Physics and Actuarial Theory, respectively).

to a similar conclusion that the process of building a case from different information relies primarily on having access to a reservoir of deductive propositions and on disciplinary-based knowledge of procedure – securing

and validating evidence about the particular. Only in this way, we believe, the relation between theoretical and practical knowledge can be reunited.

Conclusion

This paper raises a critique of the anti-intellectualist stance promoted by post-modernists, by practice theorists and specifically by advocates of the embodiment thesis. Our analysis shows that each contributed to the current impoverished view of the role of educational theory in socialisation into practice. Other than Carr's explicit denouncement of educational theory, the more common view accepts that educational theory is important, **but** by arguing that student teachers cannot acquire the tacit logic of the practice without being immersed in the site of practice, doing what experienced teachers are doing, and by organising the curriculum around aspects of practice, the role of disciplinary knowledge has indeed been short-circuited (Lawn and Furlong, 2009) and the relation between theoretical and practical knowledge, has been severed (Guile, 2010).

We do not deny that the ability to execute practice requires physical and iterative practice. Of course, one needs to experience teaching to learn to teach, but practical knowledge is primarily about learning to analyse, discriminate and relate. Doing teaching or reflecting on it in practice will not help student teachers find the nuance of practice, its significance or to learn to recognise important situations. Furthermore it is overly romantic to think that mentor teachers, *in situ*, do not withhold information or that they offer a systematic account of what they do and why, or able to know what the novice needs to know.

If our argument is correct, then our conclusion is that the common view of socialisation into professional practice is wrong. The view that *we know much more than we can represent by telling*, and therefore practical understanding of professional knowledge must be acquired in experience is false. It is time that the over inflated view of the role of tacit knowledge is challenged and we hope that we began to address it.

The central claim that we want readers to take from this paper is that the heart of practical understanding is in discrimination and evaluation, which must be premised on disciplinary knowledge and cannot be obtained from emulating the activities of other practitioners. Practical knowledge develops, primarily, from learning to order ideas – to distinguish and relate between ideas, know what procedures to take to validate them and how to recognise what interpretation is most appropriate for the instance at hand. Acquisition of professional knowledge lies in access to criteria about what is permissible, right or wrong, true or false, appropriate or inappropriate, and what is better and why, in short, what counts in the practice.

Is this ‘knowledge how’ tacit? Is this what Collins means by ‘socialness’? Winch (2010), it seems to us, has got it right. For him any type of knowledge (propositional, practical knowledge and knowledge by acquaintance) has elements that are tacit, and in certain circumstances it would be more difficult to recover those. But, he argues, this argument buys us very little. And so he concludes:

Although being tacit is an important property of all three kinds of knowledge, it is neither mysterious nor does it make all practical knowledge, let alone expert practical knowledge, ineffable, nor is its acquisition beyond the reach of formal or semi-formal educational process (2010, pp.118-119).

At the end of the day, the strongest scaffold of the tacit is ‘epistemic ascent’ (Winch, 2012). What Hirst and Winch (and Vygotsky) elucidate is that the ability to order, which is at the heart of professional expertise, comes primarily from systematic work with an organised body of knowledge at different levels of abstractions, at different degrees of complexity, in and outside of specific contexts.

If one had to ask what the implications of our argument are for initial teacher education, we would direct them back to Dewey’s exploration of the relation between theory and practice in learning how to teach:

Nothing I have said heretofore is to be understood as ruling out practice teaching which is designed to give an individual mastery of the actual technique of teaching and management, provided school conditions permit it in reality and not merely in external form – *provided, that is*, the student has gone through a training in educational theory and history, in subject-matter, in observation, and in practice work of the laboratory type,⁸ before entering upon the latter (John Dewey, 1964, p.336 our emphasis).

⁸ Dewey distinguishes between ‘apprentice type practice work’ and ‘laboratory type practice work’. In the former, “the aim is immediately and ultimately practical” oriented to equipping the teacher with skills,

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