Learning Across Contexts

Introduction

The publication of Jean Lave and Etienne Wenger's book *Situated Learning* in the early 1990s generated widespread interest amongst educational researchers in analysing the influence of context on learning. Up until that point, the dominant influence of cognitive psychology, with its emphasis on mentalistic explanations of the mind based on the manipulation of representations, meant that there were few discussions of the influence of context in contemporary learning theory, let alone vocational/professional education (hereafter VE).

Lave and Wenger's book resulted in a profound reappraisal in VE as regards how to research workplace learning. Researchers moved away from analysing the vocational curriculum, vocational assessment and vocational pedagogy and towards the production of naturalistic accounts of workplace learning (see the edited collections by Evans *et al*. 2002; Rainbird *et al*. 2003). This interest in analysing the context of learning has been extended in VE by drawing on activity theory to reconceptualise the transfer of knowledge in VE as 'transition and boundary crossing' within and between contexts (Tuomi-Gröhn and Engeström 2003).

The focus of this paper is a neglected feature of recent work in VE: the relation between theory (as represented by the knowledge provided by the vocational curriculum) and workplace practice. This paper approaches this topic from a neo-Vygotksian perspective. It maintains that in concentrating predominantly on the processes of, environments for and outcomes of situated learning, many researchers have overlooked the relation between content of vocational and curricula and workplace practice: a relation that has historically been deemed to be central to vocational formation (Winch 2000).

The cornerstone of the position articulated in the paper is as follows. That learning to move between the contexts of education and work presupposes that we grasp the interdependence of theory and practice; and, that grasping this interdependence raises new questions and issues about the relation between vocational curriculum, vocational pedagogy and workplaces. The paper argues that the reason that writers have glossed over the relation between theory and practice can be attribute to Kant's legacy in post-Lave and Wenger VE. The paper maintains that Kant's ideas have exercised a hidden influence on the way in which writers working in the 'situated' tradition in VE (Billett 2001; 2003) or who are critical of that tradition (Young 2003) have construed the relation between theory and practice in VE. The net effect of these positions is to either leave learners locked into practice and cut-off from theory or with the dilemma of attempting to 'connect' theory and practice.

In contrast, the paper argues that when Vygotsky's concept of mediation is allied to the recent work of Robert Brandom and John McDowell, it is possible to formulate a non-dualisitic conception of the relation between mind and world. The great merit of this conception is that it provides a way to not only go beyond the Kantian separation of mind, but also to grasp the interdependency of theory and practice and hence theoretical and everyday concepst. The paper concludes by outlining the implications of this claim for vocational curriculum and vocational pedagogy.

Mind and world, theory and practice

The origins of the philosophical basis for the separation of mind and world

The origin of the separation of mind and world in philosophy is widely attributed to Descartes. Nevertheless, most contemporary philosophers acknowledge that Kant's attempt to overcome the Cartesian split constitute the starting point in the modern era for any re-thinking of the relation between mind and world (McDowell 1994; Rorty 1978).

The basis of Kant (1929) resolution of the mind world dualism was to invoke the distinction between 'scheme' and 'content' (Thornton 2004: 10). This distinction was Kant's way of conceiving of the relation of language or thought and the natural and social world which he assumed could be understood in isolation from one another. The totality of empirical beliefs that constitute a worldview is, for Kant, the result of the using the concepts that make up the scheme to organise our understanding of the world. Put simply, to ground knowledge we have to be able to synthesise scheme and content.

The logic of Kant's argument about synthesis compelled him to confront the 'perennial question'of the relation between theory and practice (Derry 2003: 143). The starting point for Kant's exploration of this issue was his insight that 'thoughts without content are empty, and intuitions without concepts are blind' (Kant 1929: 93 B75, A51). To explain the way in which concepts relate to objects, Kant distinguished between the human faculties of 'receptivity' and 'spontaneity'. Kant argued that it was the interplay between these faculties that enabled us to relate scheme and content (Thornton 2004: 211).

> If the *receptivity* of our mind, its power of receiving representations in so far as it is in any way affected, is to be entitled sensibility, then the mind's power of producing representations from itself, the *spontaneity* of knowledge should be called understanding. Our nature is so constituted that our *intuition* can never be other than sensible; that is, it contains only the mode in which we are effected by objects. The faculty, on the other hand, which enables us to *think* the object of sensible intuition is the understanding (Kant 1929: B 75, A 51).

The basis of understanding lies, for Kant, in the synthetic *a priori* of knowledge, that is, the way in which the conceptual side of our perception synthesises the representations the mind receives of the world into experience and knowledge (Thornton 2004: 10-1). For this process to yield cognitions, we have to be able to make judgements. The 'function' of a concept, for Kant, is to place what several intuitions have in common under one common representation and it takes an act of judgement to bring them under concepts (Schmaus 2004: 42). Hence Kant provided a 'psychological solution' to the dilemma that Descartes left philosophers with, his 'transcendental logic reduces validity to the synthesis of representations, to the description of processes of consciousness' (Rose 1981: 3).

Kant's formulation of the relation between mind and world has left philosophy ever since, as McDowell (1994: 9) observes, with an 'interminable oscillation' between two positions. Philosophers either have to base their ideas about mind and world on 'theories of coherence' where there it is assumed that there is no friction between thought and the world, or accept the 'myth of the given' and construe the natural and

social world independent of human subjectivity. The only way to escape from this interminable oscillation, according to McDowell (1994: 3), is when we recognise that philosophers all along have been mistaken in assuming that there has never been a gulf between mind and world that has to be bridged.

McDowell's radical reconceptualisation of the relation between mind and world raises new questions and issues about this relation in philosophy, and about the relation between theory and practice in vocational curricula and pedagogy. However, before exploring these issues, the paper discusses the legacy of Kant's ideas about mind and world in relation to recent debates about the situated basis of knowledge and learning in VE.

Kant, 'situativity' and VE
It is beyond the scope of this paper to try to trace the extent to which Kant's philosophy may have influenced the formation of the relation between theory and practice in VE. Given that the focus of the paper is post-Lave and Wenger VE, I will offer a much more circumscribed account and restrict my comments about Kant to his influence on the recent debates about 'situativity' and the concept of vocational knowledge.

One of Lave and Wenger's main concerns was to draw attention to the situated character of knowledge production and reproduction. They set about this task by trying to decentre learning from what they perceived as the unduly influential 'folk dichotomy' between 'learning by doing and learning by abstraction' (Guile 2005). In doing so, they sought to move the focus away from teachers' pedagogic intent towards a view of learning as a form of situated activity dependent on participation in communities of practice.

The reason that Lave and Wenger wanted to view all forms of knowledge as forms of situated practice was to challenge the two harmful myths perpetuated by the acceptance of the folk dichotomy in contemporary learning theory. The first myth is that learning consists of the acquisition of abstract representations made available to us through formally organised curricula. The second myth is that we use these representations to as rules to solve problems that arise outside schools, colleges, training workshop etc.
When Lave and Wenger's intentions are stated in these terms it is possible to detect the way in which they were engaging with Kant's legacy, albeit a somewhat hidden legacy, in vocational curriculum and pedagogy. Kant held, as we saw earlier, that the mind already has within it the means to construct the world, he maintained that our representations provided a correspondence to the external world, and that our judgements allowed us to subsume intuitions under concepts.

This idea about the centrality of representations to human thinking has informed the development of cognitive psychology which, in turn, has exercised a dominant influence in contemporary learning theory (Lave 1988). One of the main assumptions of cognitive psychology is that:

'all understanding consists of forming and using appropriate symbolic representations. For Descartes these representations were complex descriptions built up out of primitive ideas or elements. Kant added the important idea that all concepts are rules for relating such elements (Dreyfuss 1992: 23).

The entities that we imagine are inside our mind are therefore modelled on a particular class of entities that are outside the mind: symbolic representations which we use to make judgements about our experience of the world.

The centrality of representation within cognitive psychology has had a number of consequences. In the case of learning theory, it has underpinned the idea that the purpose of the curriculum is to transmit abstract decontextualised knowledge to learners (Lave 1988: 86). This results in a view of mind as a repository of stored knowledge, theoretical knowledge as the stock of expert representations that we can use as a set of rules or maxims to make sense of our practical experience, and expertise as the application of such maxims (Lave 1988: 91). In the case of VE, it has contributed to the idea that knowledge consists of abstract representations that we apply within the 'real' world being ingrained in the design of the 'standard' vocational curricula in most advanced industrial countries (Hager 2003).

In rejecting the dualism of learning by doing and learning by abstraction, Lave and Wenger were explicitly rejecting the legacy of the Kantian psychological solution to the relation between the mind and world. Specifically, they were rejecting dominant assumptions in cognitive psychology about the central role of representations in the process of learning, and that we use the abstract representations we acquire from the curriculum as maxims for action in the workplace. Lave and Wenger (1991: 98) proposed instead that the concept of representation should be replaced by the idea that 'participation in expert practice' is the 'epistemological principle of learning'. They deemed participation to be epistemological because it is the changes in the mode of participation that enables us to operate effectively in different contexts (Guile 2005).

What is clear is that the impetus behind the critique that Lave and Wenger initiated of cognitive psychology has inspired many researchers in VE to shift from viewing learning as a process of acquisition to viewing it as a process of participation in situated practice. Researchers have identified: the social practices, for example, 'guided participation', that facilitate learning in workplaces (Billet 2003); the environments, for example, 'expansive and restrictive', that facilitate different forms of learning in workplaces (Fuller and Unwin 2003); the extend to which workplaces offer 'affordances' that invite workers to participate in workplace practices (Billett 2003), the 'tacit' dimension of workplace learning (Evans *et al.* 2003), and the 'unintentional' forms of learning that occur in workplaces (Hodkinson and Hodkinson 2003).

Despite the enormous value of this work in revealing the complex way in which context mediates workplace learning, one consequences of this preoccupation with the process of learning is that the relation between the vocational curriculum, vocational pedagogy and the workplace has slipped out of view. In many ways, this is hardly surprising; the force of Lave's (1988: 76-7) critique of the dualism between 'scientific' (hereafter theoretical) and 'everyday' thinking, coupled with her and Wenger's critique of the legacy of this folk dichotomy in learning theory, appeared to have forever negated the validity of this distinction.

The problem with Lave and Wenger's critique is that they develop their critique of the folk dichotomy between learning by doing and learning by abstraction as though

cognitive psychology provides the definitive conception of the relation between those two forms of learning. The irony of their position is that in emphasising the centrality of practice to epistemology, Lave and Wenger overlook that there is an alternative 'practice-based' conception of the relation between mind and world and hence theory and practice, that is not characterised by Kantian 'transcendental' and 'representational' assumptions. The primary figure behind the development of this conception is Vygogtsky (Derry 2003).

Vygotsky, activity and knowledge
Vygotsky's theory of cultural mediation is predicated on a non-dualistic account of the development of mind, a rejection of the Kantian assumptions of the representational paradigm and an appreciation of the interdependence between theoretical and everyday concepts (Guile 2005). The guiding idea is that cognition develops through engaging with a world laden with meaning and significance, rather than a world bereft of meaning as Kant assumed (Vygotsky's (1987: 145-46). From this perspective, we use historically and cultural constituted tools, for example language, systems for counting, mnemonic techniques, algebraic symbol systems, writing, works of art, to mediate our relation with the natural and social environment.

The emphasis upon mediation, that is, an understanding how culture enters psychological processes and shapes behaviour, allowed Vygotsky to reveal that one of the most distinctive features of human consciousness is that we control our behaviour from the outside. We develop ourselves through using external symbolic, cultural systems. As a consequence, we are able to conceive of the situations in which we find ourselves as demanding a certain course of action, to question the correctness of their conception in the light of previous experience, and to project and evaluate alternative procedures.

By conceptualising culture in this way, Vygotsky anticipated the limitations of cognitive accounts of the human mind even though his theory of cultural mediation was formulated before the development of cognitive psychology. The basis of Vygotsky's critique is his recognition that the Kantian notion of representation, which lies at the heart of cognitive psychology, is inadequate to express the connection between things. It assumes that it is the representation itself which is responsible for disclosing the connections and relations that shape and inform the object of our thought or action. Instead Vygotsky argued that we must not seek the solution to the relation between mind and world:

'in general representations, not in absolute perceptions and orthoscopic diagrams, not even in concrete verbal images that replace the general representations – we must seek it in a system of judgements in which the concept is disclosed (Vygotsky 1988: 55).'

Thus Vygotsky is arguing that we have to understand the system of connections that exists between concepts and their representations before we are in a position to infer what follows from knowing a specific concept.

In making this argument about the 'inferential' purpose of concepts, Vygotsky, unlike Lave and Wenger, using the concept of activity as an explanatory principle of the genesis and relation of theoretical and everyday concepts. Thus, from Vygotsky's perspective, we do not have to abandon this distinction because it does not reflect a

dualism, rather it reflects the different outcomes that flow from the specialised activities in which we engage (Guile 2005).

This epistemological position allows Vygotsky to identify not only what is distinctive about theoretical and everyday concepts, but also their interdependent relation to one another. Both types of concepts, for Vygotsky, allow us to maintain a relation to the world; however, the system of knowledge in which theoretical concepts are located provides us with a way of disclosing relations about knowledge and practice that otherwise remain obscured from sensory perception. Theoretical concepts, unlike everyday concepts, 'reposition' us in relation to different fields of knowledge and to practice as well as to offer us possibilities for acting differently in relation to both of them (Guile 2005). The implications of this claim will be returned to at a later stage in the paper.

The reason that Lave and Wenger fail to appreciate Vygotsky's non-dualistic account of the development of mind and inferential theory of learning that respects the distinctions between theoretical and everyday concepts, is because they miss the significance of the 'Hegelian provenance' of his epistmological position (Derry 2003: 14). This predisposed Vygotsky, unlike Kant, to be sensitive to the way in which the foundations of theoretical knowledge are historically and culturally built up through the different specialised forms of activity in which we engage and subject to constant revision through those specialised forms of activity.

It appears, therefore, that Lave and Wenger have been overly hasty in their dismissal of the distinction between theoretical and everyday concepts. Vygotsky's use of the concept of activity as an explanatory principle for the relation between mind and world, allowed him to reveal the mediated basis of that relation, without having to reject the distinction between theoretical and everyday concepts. This introduces a potentially fruitful way of re-thinking the relation between vocational curricula, vocational pedagogy and workplace practice. Before pursuing this possibility further, it is necessary to turn to the reservations that have been expressed about Lave and Wenger's legacy in VE; not least because in expressing these reservations some writers have attempted to restore the concept of theoretical knowledge to the mainstream debate about vocational learning.

Vocational knowledge and pedagogy

Conceptions of vocational knowledge
In a recent discussion of the concept of vocational knowledge, Young (2003) addresses the 'process-based' of conception of vocational knowledge that is currently dominant in VE. The fullest expression of this approach to vocational knowledge or in his terms 'vocational knowing' is found in the work of Stephen Billet (2001; 2003). Billet defines vocational knowing through a discussion of sociogenesis in socio-cultural theory. Billett distinguishes between four lines of development - the phylogenetic, the sociocultural, the microgenetic and the ontogenetic, arguing that vocational knowing emerges out of the interplay between all of these four lines of development as we participate in specific forms of workplace practice.

knowing is held to be and active and reciprocal process engaging with the world beyond the physical self and drawing together both knowledge 'how', and knowledge 'what' (Billett 2001: 433).

This conceptualisation of knowing, according to Billett, constitutes a shift away from categories of knowledge which are held as 'entities that act *upon*' the world, towards an emphasis on the 'intrapsychological attributes (i.e. problem solving) that enable us to act within the world.

Young (2003: 193) expresses a number of reservations about this conception of vocational knowing. He argues that although Billett acknowledges that his conception of knowing presupposes the drawing together of both knowledge how and knowledge what, it appears as though the latter is merely a form of *in situ* knowledge acquired through vocational practice. This leaves learners, according to Young, bereft of the type of resources that the vocational curriculum has historically made available that enables them to make connections to other events, experiences and bodies of knowledge beyond the immediate situation they find themselves. In doing so, learners are denied the resources to 'predict and project beyond the present and to conceive of alternatives'. The process-based conception of vocational knowledge is, for Young, a valuable but only 'partial perspective': it alerts us to the variety of levels of practice that shape and inform vocational knowing, however, it remains silent about the value of theoretical knowledge for practice.

To reintroduce the idea that 'knowledge relates to reality in ways that transcend the conditions of its production', Young (2003: 194) argues for a 'social realist' stance towards vocational knowledge. He invokes Bernstein's (2000) distinctions between 'vertical' and 'horizontal' knowledge to clarify the basis of this social realist stance (Young 2003: 196). These distinctions emerge from the 'language of description' Bernstein introduced - 'vertical' and 'horizontal' discourses to differentiate between the two forms of knowledge that he felt are characteristic of advanced industrial societies. Young (2003: 196-7), following Bernstein, defines horizontal discourse as 'local, segmented and context bound', and vertical discourse as 'general, explicit and coherent, expressed in hierarchically organised bodies of knowledge such as the natural sciences or segmentally organised into specialised languages such as the humanities and social sciences'.

The main characteristic of vertical knowledge compared to horizontal knowledge is that it has specific knowledge structures that provide it with explicit principles that enable such knowledge to be recontextualised. Horizontal knowledge, however, does not have knowledge structures as such; thus it cannot embody any principles of recontextualisation' and is therefore less susceptible to transcending its context of origin (Young 2003: 197).

In glossing over the theoretical component of vocational knowledge distinction, the process-based approach, as Young (2003: 197) observes, generate a number of problems for VE. The first problem is that the vocational curriculum in most advanced industrial countries is predicated on the idea of providing learners with forms of knowledge that are relevant to the challenges they are likely to confront in the workplace (Onstenk 1988). This suggests that it is important to assist learners to understand the different internal structuring, contents and purposes of theoretical (i.e. vertical) and everyday (i.e. horizontal) forms of knowledge' otherwise they are likely to experience difficulty in grasping the relation of the two forms to one another. The

second problem follows from the first: the different structuring, contents and purposes of knowledge have implications for how both forms of knowledge may be acquired and related through vocational pedagogy. It is only when learners can see the different contribution that each form of knowledge makes to workplace practice, they are likely, to paraphrase Schon (1978: 3), to continue to oscillate between viewing theory as the academic 'highground' and practice as the 'swampland' encountered in workplaces.

The distinctions between vertical and horizontal knowledge, according to Young (2003: 198) point to the need for new pedagogic strategies that go beyond an emphasis on participation in practice. He suggests that it may be helpful to differentiate between 'principled' (i.e. general explanations) or 'procedural' (i.e. the location of particular instances) pedagogic strategies, however, he but does not explore how these two pedagogic notions might relate to one another. To shed some light on why it might be difficult develop a vocational pedagogy from the position Young has articulated, it is necessary to consider the significance of Durkheim's genealogy of knowledge for Young's suggestions about vocational pedagogy.

Durkheim's genealogy of knowledge and its implications for vocational pedagogy
The concepts of vertical and horizontal knowledge are, according to Bernstein (1996: 145), based on the two orders of meaning that Durkheim found in the societies he studied: the 'sacred' (conceptual codified knowledge) and the 'profane' (our immediate response to the world). Bernstein's distinctions are therefore best thought of as a reworking of Durkheim's original binary distinctions to provide, 'a way of talking about forms of knowledge' to avoid the tendency in social constructionism to 'reduce all differences of cultural content to the play of power and interest' (Muller 2003: 138-9).

Durkheim attached great significance to the systems of categories characteristic of 'primitive' religion and it served as the starting-point for his genealogy of knowledge (Callincos 1999: 142). For Durkheim, society:

was not a model classificatory thought followed; it was its own division which served as divisions for the system of classification. The first logical categories were social categories, the first classes of things were classes of men into which these things were integrated (Durkheim 1963: 40-1).

So for Durkheim, just as the distinction between the sacred and the profane evolved as we set apart religious festivals from profane seasons of work, the other most basic categories of human thought, for example, space, time, and causality were also social in character (Schmaus 2004: 121).

This line of thinking led Durkheim to follow Kant and affirm the universality, necessity and authority of human thought, but to argue that he was misguided in assuming that the mind could transcend experience and impose on though universal and binding categories of reason (Cladis 2001: xxv). Thus Durkheim rejected Kant's claim that the application of the fundamental categories of thought and faculties of mind can be used to explain the *a priori* conditions of judgement (Rose 1981: 15). Instead Durkheim argued that mental capacities and the origin and employment of the categories we employ to make sense of the world presuppose social organisation.

If men did not agree upon these essential ideas at every moment, if they did not have the same conception of time and space, cause and number, etc., all contact between their minds would be impossible, and with that, all life together. Thus society could abandon the categories to the free choice of individuals without abandoning itself (Durkheim 1965: 22).

In making this claim, Durkheim went further than Kant and explicitly stated that not only are these categories social, but also that their 'collective representations' are universal and by virtue of their origin invested with a prestige which means that they have the power to *impose themselves*' (Durkheim 1955: 85).

The reason that collective representations had this intrinsic power was that:

'some categories and concepts – or as Durkheim sometimes called them, collective representations – became autonomous, existing independently of any specific religious world view. This is how science and logic acquired their objective vocabulary, their system of concepts (Cladis 2001: xxv).'

This assumption about the link between collective representation and shared meaning led Durkheim to argue that, as Rose (1981: 15) observes: that the 'collective being', the origin of the moral force which confers validity on social institutions or social facts, is underivable, '*sui generis*'. So society *sui generis* became, for Durkheim, constitutive of the validity of judgements we make about the natural and social world.

Thus, Durkheim turned Kant's original transcendental argument on its head. Instead of maintaining that it is the synthesising qualities of the mind that are responsible for the production of objective knowledge, Durkheim argue that it is society or culture which confers objective validity on 'social facts'. In doing so, his own argument acquires a 'quasi-transcendental' structure (Rose 1981: 14). The newly specified social or cultural *a priori* becomes the precondition of Durkheim's categories of knowledge. This precondition, however, is informed by a quasi-Kantian sense of the transcendental; it is external to the mind, it has acquired the status of a natural, contingent, empirical object and, despite its intrinsic sociality, it leaves the mind separate from the world and hence theory separate from practice.

Where does the legacy of the quasi-transcendental structure of Durkheim's argument about the social basis of knowledge leave Young's suggestion that the distinctions between vertical and horizontal knowledge help us to categorise vocational knowledge and identify criteria for vocational pedagogy? Certainly, it does not undermine the value of distinguishing between forms of knowledge in terms of the different purposes they serve, their different epistemological foundations and the different social practices we have to learn to use them effectively.

It does nevertheless leave us with the problem, to paraphrase and extend Muller's (2003: 137), that just as no one ever lived only in the world of the sacred or the profane, vocational practice never involves us working with vertical knowledge in a way that is totally separate from horizontal knowledge because:

Neither the everyday world nor the world of science is epistemologically homogeneous. Indeed, argues Latour (1993), science has always comprised 'hybrid monsters', productively mixing science and society (Muller 2003: 137).

The acceptance that epistemological domains are not coterminous with vocational practice raises two critically important questions: do the above observations mean that

all forms of knowledge are ultimately hybridical? And, if so, does that means that the advocates of the process-based conception of vocational knowledge were correct in claiming that all forms of knowledge are equivalent social practices? Well the short answer is no. It is quite possible to maintain, as Muller (2003: 137) points out, that although the boundaries between vertical and horizontal are 'permeable' and that vertical and horizontal knowledge might 'nest' in one another, this does not mean conceding anything about the 'epistemological integrity' of the former compared to the latter. The concept of vertical knowledge offers us a way to avoid the 'arbitrary conceptual relations' that are generated by 'changing experiential particulars' (Muller 2003: 132).

The quasi-transcendental nature of Durkheim's argument about the relation between mind and world poses a problem for Young's argument about vocational pedagogy. It leaves us oscillating between principled and procedural pedagogic strategies in an attempt to connect vertical and horizontal knowledge. The reason for this dilemma is that this pedagogic stance denies us any criteria to mediate these two forms of knowledge. To understand how we might tackle this it is necessary to return to Vygotsky.

Vygotsky, mediation and knowledge
Vygotsky (1978: 231) also distinguished between two forms of knowledge – theoretical and everyday knowledge, and accepted, like Durkheim, that the former enabled us to avoid the arbitrary conceptual relations that are generated by sensory perception. Vygotsky maintained that although theoretical and everyday knowledge gave us access to different types of knowledge, they are still related to one another.

Vygotsky, following Hegel, accepted that in different periods, different criteria prevailed and that what counted as knowledge was dependent on those criteria (Derry 2003: 149). This emphasis on the historicity of knowledge does not mean that Vygotsky entertained a relativist epistemological position. Rather, as Vygotsky (1997) demonstrated in his famous essay 'The Historical Meaning of the Crisis in Psychology', once we acknowledge the historicity of knowledge we can appreciate that it is the conceptual foundations established as forms of theoretical knowledge move through phases of early development towards maturity that provides the basis for further development.

This emphasis on the historicity of knowledge did not mean that Vygotsky assumed that theoretical concepts emerged as the result of a social or cultural *a priori* as Durkheim believed. Vygotsky argued instead that the reason theoretical concepts arise in historically constituted specialist fields is because 'experts in those fields use the activities, techniques and procedures of theoretical inquiry to prise reality into expressing itself in forms which do not exist without it' (Derry 2003). Thus Vygotsky, unlike Durkheim, avoided the problem of seeing collective representations as purported representations of a truth that imposes itself on us. He instead maintained that theoretical concepts are part of an inferentially connected system of concepts, and it is this system of judgements that is responsible for providing theoretical concepts with their capacity for generalisation.

From Vygotsky's perspective, when we learn theoretical concepts we are not acquiring representations, rather we are being 'repositioned' to act differently in the

world (Guile 2005). Vygotsky identified two senses in which we are repositioned. The first sense arises from our discovery that we can identify that givenness is a variable feature of the natural and social world. Theoretical concepts allow us to see the connections and relations between things that otherwise appear to sensory perception to be free-standing objects or events.

Grasping connections presupposes that we understand the generalisation that is contained within a theoretical concept. The essence of such generalisations is not an abstraction from the world as Lave and Wenger maintained, rather:

'it is the enrichment of the reality that it represents, in the enrichment of what is given in immediate sensual perception and contemplation. However, this enrichment of the immediate perception of reality by generalisation can only occur if complex connections, dependencies, and relationships are established between the objects represented in concepts and the rest of reality. By its very nature, each concept presupposes the presence of certain systems of concepts. Outside such a system, it cannot exist'.

<div align="right">Vygotsky (1997: 224)</div>

At first sight this may appear to resemble Durkheim's position. To appreciate why this is not the case, we have to consider the second sense in which Vygotsky claimed that learning theoretical concepts repositions us. This form of repositioning arises as we begin to construct our understanding of theoretical concepts upon the foundation provided by our existing everyday or theoretical concepts. This 'conceptual restructuring' occurs because when we learn a new theoretical concept it never wholly nullifies our existing concepts; in contrast, it results in our existing concepts 'acquiring whole series of new relationships' with the new concept (Vygotsky 1987: 223).

Vygotsky (1998: 56) pursued the implications of his insight by pointing out that the common pedagogic assumption is that theoretical concepts are taught in schools, colleges and universities in their 'pure' form, that is, their main features and relationships are described to students. From this perspective, learners are assumed to assimilate or acquire concepts in that pure form (Sfard). The problem with this pedagogic conception is that we never assimilate nor reason with concepts in this form. Because our interpretation of a theoretical concept is mediated by our prior concepts, this process of mediaton inevitably affects the way in which we come to understand and use a new theoretical concept. For example, the way in which we understand the measure of generality contained within a theoretical concept in the field of electronics restructures the set of possible operations for how we use that concept in theoretical discourse. It also restructures our existing everyday understanding of electronics, enabling the former to be used in a new and more encompassing way.

Thus Vygotsky, like Bernstein and Young, accepts that it is sociologically valuable to maintain the difference between theoretical (i.e. vertical) and everyday (i.e. horizontal) concepts. Where he goes a step further than those writers is in revealing why it is possible to simultaneously accept the sociological separation of **and** the pedagogic relation between those concepts. This cornerstone of this pedagogic relation is the process of conceptual restructuring. Our understanding of the generalisation contained in a theoretical concept is always:

'partial because each new stage of generalisation emerges from the generalisation that was generalised in the previous structure of objects. It arises as a generalisation of generalisations, not as a new mode of generalisation of isolated objects. The result of previous efforts of thought which are expressed in generalisation that dominate the previous states do not come to naught. They are included in the new work of thought. They are the prerequisites for it'.

<div align="right">Vygotsky (1987:229)</div>

To understand the process of conceptual restructuring, that is, the way in which the generalisation that dominated in our previous mental state becomes included in the new work of thought, it is necessary to turn to the work of John McDowell and Robert Brandom. This work originated as an neo-Hegelian engagement with problems in analytical philosophy, however, when allied to Vygotsky's theory of cultural mediation, it enables us to move beyond viewing vocational learning as subsuming intuitions under representations, participation in social practice and connecting principles and procedures. Instead it allows a new conception of learning based on the social practice of inference to emerge, a conception, moreover, that offers new principles for vocational pedagogy.

The 'space of reasons' and the 'social practice of giving and asking for 'reasons'
McDowell is concerned with the relation between mind and world and hence the nature and limits of knowledge. His starting point was the interminable oscillation that Kant's insight 'That thoughts without contents are empty, and intuitions without concepts are blind' had generated in philosophy. What is distinctive about McDowell's (1994:3) position is that he maintains there is no gulf to be bridged between mind and world. He explains why this is the case, like Vygotsky, by focusing on how we use concepts to mediate the relation between mind and world. Using the example of colour, McDowell makes a two-fold argument about the mediated basis of our relation to the world. To offer any testimony of our experience of colour we already need to know a great deal about, for instance, the effect of different sorts of illumination on colour appearances, and once we understand the meaning of a concept we no longer have to rely on perception. Instead we are able to use concepts to help us to offer reasons as to why, for example, colour has certain effects in the sunlight.

This line of argument presupposes knowledge of concepts that originate outside the immediate delivery of the senses and an appreciation of the way in which those concepts help to restructure our understanding of experience. So, for McDowell (1995: 891), there is 'no making sense of that possibility unless one's conceptual space already embraces a world with more to it that is immediately present to the senses'.

McDowell (1994: xiv) reformulates Sellars' concept of the 'space of reasons' to allow us to see that the way we are caught up in the natural world already involves the exercise of conceptual capacities. In McDowell's terms, experience is already conceptualised: it is not the result of the clothing in concepts something given in non-conceptual form nor is it a form of un-mediated practice.

'In characterising an episode or a state as that of *knowing*, we are not giving a logical description of that episode or state; we are placing it in the logical space of reasons, of justifying and being able to justify what one says' (McDowell (1994: xiv).

The space of reasons provides the normative context that makes knowledge possible and allows it to exist outside us in the social world we inhabit.

So, for McDowell, when we engage in any judgement of our experience of the world our conceptual capacities are not exercised on non-conceptual deliverance of sensibility. He invokes the term the 'unbounded of the conceptual' to convey the idea that conceptual capacities are already operative in the deliverance of sensibility themselves'. Experience is not, in other words, an apprehension of raw data, rather it is an awareness that '*things are thus and so*' (McDowell 1994: 26).

McDowell's idea about the space of reasons allows us to make Vygotsly's argument about conceptual restructuring more explicit and to anticipate its implications for vocational pedagogy. The cornerstone of conceptual restructuring is, according to Vygotsky, that our understanding of the generalisation contained within a theoretical concept is built upon our prior foundations of knowledge. These foundations consist of our own personalisation of theoretical and everyday generalisations and, as such, influence the way to understand and subsequently use the new generalisation when speaking and thinking. McDowell helps us to clarify Vygotsky's claim that theoretical concepts act back on everyday concepts by highlighting that our new understanding is only meaningful when we can locate that meaning in the space of reasons. Thus McDowell helps us to see is that we are able to place an object, event or concept in the space of reasons is because it offers a normative context for judging such matters. To understand how we form such judgements, we have to turn to Robert Brandom.

Brandom (1995: 895) endorses McDowell's central claim that knowledge can be understood as standing in the space of reasons, however, he supplements McDowell's reformulation of Sellars' position by drawing attention to the social practices that help us to accomplish such understandings. For Brandom (1995: 896), when we talk about concepts as being places in the space of reasons we are talking about 'things that can in principle be given as reasons, and for which reasons can in principle be asked'. This means that we have to be able to move thought and/or action in the space of reasons by mediating between differentially elicited responses and situating them in a 'network of inferential relations' that are historically and socially constituted. Knowing what follows from an utterance, action or an event presupposes, according to Brandom (2000: 65), the social practice of 'giving and asking for reasons'.

The guiding idea behind giving and asking for reasons is that we strive in any situation to pick out what is 'propositionally contentful' in spoken or written communications, that is, whatever can serve as both a premise and a conclusion in inference (Brandom 2000: 65). Thus, from Brandom's perspective, representations are meaningful when we can locate them in the space of reasons thereby allowing others to draw inferences from them.

The link between the social articulation of the space of reasons and the social practice of giving and asking for reasons helps to clarify a number of issues that were left unresolved in process-based and neo-Durkheimian VE and more recently in the work of other philosophers such as Beckett (2004) who have drawn on Brandom's ideas about inference. The first issue is that we require a specific form of knowledgeability to mediate between theoretical and everyday knowledge. The primary feature of this knowledgeability is to engage in the social practice of giving and asking for reasons.

It is our ability to participate in this social practice that enables us to recognise what we can infer about the typicality or otherwise of discourse, an object or an activity. There is, therefore, a clear link between what we know and how we use that knowledge. From Brandom's perspective, the classic Rylian distinction between 'know what' (i.e. codified knowledge) and 'know how' (i.e. practical knowledge) that underpins much thinking about vocational knowledge (Hager 2000; Schon 1978) creates a completely misleading picture. They are not separate and different forms of knowledge acquired in independently of one another, rather they are related to one another dialectically.

This observation anticipates the second issue about the social practice of giving and asking for reasons. That even when we acquire some form of knowledge noninferentially, for example, taking something for granted or being instructed to believe something to be true, with the result that we are unable to justify that knowledge, reason is still in play. To be capable of making a claim about something or to even to believe it:

'requires that we *understand* it: that we have at least a rough practical mastery of its inferential role, the know-how to discriminate some things that follow from it and others that don't, and some things that would be evidence for it and others that would not'.

<div align="right">Brandom (1995: 905)</div>

Thus, Brandom makes the basis of McDowell's claims about the unboundedness of the conceptual clear: when we acquire something noninferentially we use the space of reasons to identify what is propositionally contentful, and to articulate inferentially and socially what does and does not follow from our understanding of those propositions.

In demonstrating the link between communicative social practice and the space of reasons, it becomes clear that we use concepts to act and communicate inferentially, that is, they are able to respond differentially to actions, events and thoughts. Responding differentially in Brandom's terms means knowing what follows from adopting a particular position or accepting a specific belief.

Conclusion

This paper has argued that the main problem in post Lave and Wenger VE is the disappearance of any discussion of the relation between theory and practice. It has traced the roots of this problem to the legacy of Kant's conception of this relation in cognitive psychology, and to Lave and Wenger's critique of the latter's specific conception of the relation between theory and practice. The net effect of the Lave and Wenger critique has been to assert that the concepts developed through theoretical and everyday practices are equivalent forms of knowledge; to either gloss over or leave in a very underdeveloped state the discussion of the pedagogic strategies required to assist learners to mediate between theory and practice; and to shift the focus of research away from the relation between the vocational curriculum and vocational practice towards workplace learning.

The paper has argued that the basis of an alternative practice or activity based conception of the relation between theory and practice can be found in the work of

Vygotsky, McDowell and Brandom. The paper has maintained that it is possible to develop a holistic theory of the relation between mind and world that does not force us to follow Lave and Wenger abandon the distinction between theoretical and everyday concepts. That this holistic conception of the relation between mind and world means that the distinction between theoretical and everyday concepts does not reflect a dualism, rather it reflects the different outcomes that flow from the specialised activities in which we engage. And that when we learn to mediate theoretical and everyday concepts by using the social practice of giving and asking for reasons to locate the mediated outcome in the space of reasons.

Implications for vocational curriculum

The conclusions presented above have a number of implications for vocational curriculum. It implies a series of shift in the principles that informs the design of vocational curricula. The shifts are from:

❑   a curriculum based on the notion of representation (i.e. concepts as abstractions from the world) to a curriculum based on the notion of inferentialism (i.e. concepts as cultural tools that allow us to act in the world through giving reasons);
❑   a focus on the acquisition of representations (i.e. fixed meaning) to a focus on conceiving of theoretical concepts as cultural tools that reposition us in relation to practice and other concepts in different ways (i.e. developmental conception of meaning and practice);
❑   a view of the purpose of theoretical concepts as abstractions from the world (i.e. disconnected from practice) to conceiving of them as cultural tools that we can use to inform our goal-orientated practice.

Implications for vocational pedagogy

The preceding analysis also has a number of implications for vocational pedagogy. It implies a series of shift in the principles that informs our understanding of the relation between theory and practice. The shifts are from:

❑   conceiving of practice as un-mediated (i.e. pre-conceptual) to grasping the way in which practice is already mediated (i.e. the unboundedness of the conceptual);
❑   conceiving of practice-based learning (i.e. know how) as requiring a different pedagogy from theoretical learning (i.e. know what), to grasping that all forms of learning presupposes the social practice of reasoning;
❑   conceiving of theoretical concepts as cultural tools that we apply in practice to seeing such tools as resources to appraise practice critically.

References

Anderson, J. Ryder, L. Simon, H. (1996) Situated Learning and Education. *Educational Researcher* 25 (4), 5-11.
Bakhurst, D. (1991). Consciousness and Revolution in Soviet Philosophy: From the Bolsheviks to Evald Ilyenkov. Cambridge: Cambridge University Press.
Beckett, D. (2004). Embodied competence and Generic Skill: The emergence of inferential understanding. *Educational Philosophy and Theory*, 36 (5) 497-508.

Beckett, D. and Hager, P. (2002). *Life, Work and Learning: Practice in postmodernity*. London: Routlege.

Billett, S. (2003). Vocational Curriculum and Pedagogy: An activity theory perspective. In T. Griffiths (Ed.), EERJ European Educational Research Space: vocational and lifelong education research. [Special Issue]. *European Educational Research Journal*, 2 (1), 6-21.

Billett, S. (2001) Knowing in practice: re-conceptualising vocational expertise.*Learning and Instruction*, 11 (6), 431-52.

Brandom, R. (2000). *Articulating Reasons: An introduction to inferentialism*. Cambridge, MA: Harvard University Press.

Brandom, R. (2000) Facts, Norms and Normative Facts: A Reply to Habermas *European Journal of Philosophy*. 8 (3), 356-374.

Brandom, R. (1995) Knowledge and the Social Articulation of the Space of Reasons. *Philosophy and Phenomenological Research* 55, 895-908

Cladis, M. S. (2001) Introduction and Notes. In. Durkheim, E. (2001) *The Elementary Forms of Religious Life.* Translated by Cosman, C. OUP: Oxford.

Derry, J. (2003). *Vygotsky and Philosophy.* Unpublished PhD Thesis, Institute of Education, University of London.

Dreyfus, (1992)

Durkheim, E. (2001) *The Elementary Forms of Religious Life.* Translated by Cosman, C. OUP: Oxford.

Durkheim, E. (1955) *Pragmatism and Sociology*. Ed Curvillier, E. and Allcock, J.B. CUP: Cambridge.

Edwards, R. and Usher, R. (2000). *Globalisation and Pedagogy*. London: Routledge.

Eraut, M. (2004). Informal Learning in the Workplace. *Studies in Continuing Education,* 26 (2), 247-73.

Eraut, M. (2003). Transfer of knowledge between education and workplace settings. In Rainbird, H. Fuller, A. and Munro, A. *Workplace Learning in Context*. London: Routledge.

Evans, K. Hodkinson, P. and Unwin, L. Eds (2002) *Working to Learn*: *Making learning Visible* Kogan Page: London

Evans, K. Kertsch, N. and Sakamoto, A. (2003). Learner biographies: exploring tacit dimensions of knowledge and skill. In Rainbird, H. Fuller, A. and Munro, A. *Workplace Learning in Context*. London: Routledge.

Fuller, A. and Unwin, L. (2003) Expansive learning environments: integrating organizationla and personnel development. In Rainbird, H. Fuller, A. and Munro, A. *Workplace Learning in Context*. London: Routledge.

Guile, D. (2005). Knowledge, Mediation and Activity: a critique of the 'knowledge economy' thesis and its implications for a social theory of pedagogy. Unpublished PhD Thesis, Institute of Education, University of London.

Hodkinson, P. and Hodkinson, H. (2003) The complexities of workplace learning: problems and dangers in trying to measure attainment. In Rainbird, H. Fuller, A. and Munro, A. *Workplace Learning in Context*. London: Routledge.

Lave, J. (1988). *Cognition in Practice: Mind, mathematics and culture in everyday life*. Cambridge: Cambridge University Press.

Lave. J. and Wenger. E. (1991). *Situated Learning: Legitimate peripheral participation*. New York: Cambridge University Press.

Kant, I. (1973) *Critique of Pure Reason* [*CPR*] London: The Macmillan Press Ltd. (Norman Kemp Smith trans.).

McDowell, J. (1994). *Mind and World.* Cambridge, MA: Harvard University Press.

Muller, J. (2003). Intimations of Boundedlessness. In Morais, A, Neves, I. Davies, B. and Daniels, H. (eds). *Towards a Sociology of Pedagogy*. London: Peter Lang.

Onstenk, J. (1998). New structures and new contents in Dutch vocational education. In: Nijhof, W.J. & Streumer, J.N. (Eds.). *Key Qualifications in work and education.* Dordrecht: Kluwer Academic Publishers, pp. 117-132.

Rainbird, H. Fuller, A. and Munro, A. *Workplace Learning in Context*. London: Routledge.

Rose, G. (1981) *Hegel Contra Sociology*. London: The Athalone Press.

Schmaus, W. (2004) *Rethinking Durkheim and His Tradition*. Cambridge: CUP.

Simon, H. (1979). *Models of Human Thought*. New Haven, London: Yale University Press.

Thornton, T. (2003) *John McDowell*. Chesham: Acumen Publishing.

Tuomi-Gröhn, T. and Engeström, Y (Eds.), *Between School and Work: New perspectives on transfer and boundary crossing*. Amsterdam: Pergamon.

Vygotsky, L. S. (1987). *The Collected Works of L.S. Vygotsky, Volume 1 Problems of General Psychology (Including the Volume Thinking and Speech)* (N. Minick, Trans., R.W. Reiber & A.S. Carton, Eds.). New York: Plenum Press.

Vygotsky, L. S. (1998). *The Collected Works of L. S. Vygotsky, Volume 5, Child Psychology (*R.W. Reiber Ed., Prologue by C. Ratner). New York: Plenum Press.

Wertsch, J. (2000) 'Vygotsky's Two Minds on the nature of Meaning'. In Lee, C. D, and Smargorinsky, P. (Eds) *Vygotskian Perspectives on Literacy Research*. Cambridge: CUP.

Winch, C. (2000) *Education, work and social capital: towards a new conception of vocational education*. Routledge: London.

Young, M. (2003) Vocational Knowledge. In Rainbird, H. Fuller, A. and Munro, A. *Workplace Learning in Context*. London: Routledge.