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Abstract

In recent years theories of situated cognition sharing the idea that learning and doing are inseparable as part of a process of enculturation, largely based upon the work of Vygotsky in developing a model of 'cognitive apprenticeship', have received much attention in education (Vygotsky, 1978) as an insightful model underpinning forms of learning and teaching. The master-apprentice relationship using techniques of apprenticeship such as modelling, scaffolding and reflection has since been used as a base for considerable research helping researchers and practitioners to understand teacher-student action across a range of different teaching situations (Collins et al., 1989; Hennessy, 1993; Jarvela, 1995; Rojewski et al., 1994). The focus of much of this research has explored the efficacy of the model when set against the question of how to improve forms of learning and teaching in particular settings.

In the UK, within the context of a post 16 teaching environment in business education, assessment processes are based upon students developing higher 'levels of response' (Needham, 2003). This process of assessment developed from Bloom's Taxonomy, first published in 1956 and subject to more recent revision (Anderson and Kratwohl, 2000) assumes that learners can develop higher order cognitive skills within the context of the taxonomy. This paper summarises the findings from a small-scale research project which analyses current research as well as the reflective diaries of a group of experienced business studies teachers who discuss how they have each developed teaching pedagogies that enable them to the raise marginal levels of response of their students. Subsequent analysis exemplified through this paper helps us to understand the limitations of the Vygotsky model as well as the efficacy of learning and teaching techniques. The paper's sting in the tail links cognitive processes to Heidegger's technological enframing (Heidegger 1962,1977)!

This paper not only attempts in its own way to connect a variety of theories using a range of research methods but also seeks to challenge current research practices and theoretical standpoints by drawing upon philosophy to challenge thinking about the inter-relationship of science and human beings, something that Vygotsky aspired to in his own work!

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As an ecclectic study drawing upon critical language analysis and de-construction, Bloom's Taxonomy, and Schönian reflection-in-action it is, paradoxically, probably in the very spirit of the father of cognitive apprenticeship at the centre of this study, Vygotsky. Although at times we, rather adventurously claim a lot, the work is still in its infancy, and currently evolving. Our starting point has been an attempt to re-read the original dialogue from Vygotsky in the context not just of the late modern world, but also of the many ways in which his work has been re-framed. This paper reflects the current state of development of our thinking, which is our defence if you disagree or wish to contest our findings thus far!

For anyone perusing contemporary literature concerning everyday or 'situated' forms of learning, traditionally associated with the master-apprentice relationship in the workplace, and associated 'domain based' knowledge (subject knowledge) the name Lev Vygotsky is hard to miss. For the most part his seminal work presented as 'Thought and Language' in the Standard English translation of *Myshleni i rech*, first published in 1934 (although *rech* might ordinarily be rendered as 'speech'), appears in the modern literature as a source of legitimacy and authority by many researchers. It is perhaps a calibration of the power of the original work and of Vygotsky's thought more generally that following its original publication in 1934 it was suppressed; not for twenty years could the publication be read openly in Russia. Here was a dissenting authority and one, according to Jerome Bruner (1985, p.72) that helped to 'foment' the nascent 'cognitive revolution' which 'historians of science' connect with 1956, the year of the re-publication of *Myshleni i rech*. 'Mind in Society' first published in 1972 ten years after 'Thought and Language' appeared in English translation and is a work of equal genius. It was adapted from two principle works; including, 'Tool and Symbol in Children's Development (1930) and the History of the development of Higher Psychological Functions; the latter was published in Moscow in 1960. Bruner (1985, p.72) likens the genius at work to that of 'Wittgenstein: at times aphoristic, often sketchy, vivid in its illuminations'.

However, with your palette wetted, and before venturing much further, in the spirit of Vygotsky,(1986, pp.1-11) we ought first perhaps to reflect on a suitable approach to reading his work. At first sight this might seem an odd question. Many articles within the guise of educational research, such as those variously itemised within the abstract, draw upon Vygotsky as a seminal original source both as a base of knowledge, and also a way of legitimising research. At a very early stage in this research it was clear that the widespread referencing of Vygotsky seemed to place it within a different context to that probably intended by the originator of the work!

Vygotskys' work, which brings together psychology, sociology and elements of philosophy, led to the author's notion of the zone of proximal development (ZPD), located within situated forms of cognition representing a zone of learning. This whole process has been called cognitive apprenticeship. ZPD is thus an account of how people can reach that 'higher ground' from which to reflect more abstractly upon the nature of things with the 'assistance of others' (Vygotsky, 1978, p.85). What is at stake is the seamless web of social activity mediating the use of 'tools' that is itself mediated by signs? The logic of the inter-relationship the author represents as follows (*ibid.*, p.54):

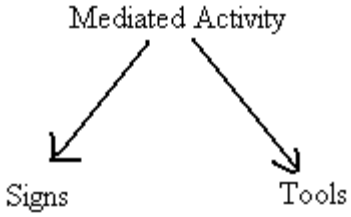

Figure 1
Vygotskian mediated activity

Vygotsky's work (1978/1986) which frames forms of situated cognition mediated by 'signs' and by 'tools', within the context of socio-historic events. In our abstract we refer to the master-apprentice relationship using techniques of apprenticeship such as modelling, scaffolding and reflection. For example, as we confer while writing this article, we are attempting to model through complex social interaction testing each other's understanding of theory. This process relies upon our forms of expression, the tone of our voices, and the way in which we express our frustration and these are all mediated by the use of signs. Equally, the tools connecting forces of production identified by Vygotsky within his Marxist setting which in a traditional context might be a pen, as well as our limited skills and knowledge are all means of production of this paper. Scaffolding is a metaphor for the complex social interaction and mutuality of support taking place between us as we construct and develop our dialogue.

> Similarly as we work, we continue to interconnect reflection-in-action with reflection-on-action through knowledge-in-action. This interelationship is Schön's attempt to rationalise the art of practice which emerges as a clear link between Vygotsky and Schön (Schön, 1984, 1987).

In the short space of this paper it is barely possible to scratch the surface of a prolific writer. Vygotsky's work is located just after the Russian Revolution and stretched from the 'Psychology of Art' (1968) through to the Essays in History of Behaviour (1930) which he wrote in collaboration with one of his students, Luria. He was not averse to applied philosophical inquiry; for example, his 'A Study of Emotions', is as much a critical response to Cartesian dualism as it is an attempt to create the grounds for eliminating the latter.

In 'The Psychology of Art', according to one his translators, Alex Kuzlin (1986, p. xxxix), 'emphasized that psychological inquiry is akin to criminal investigation, relying upon indirect evidence; in such roundabout investigation, works of art, manifestations of cultural-anthropological data play no less import role than direct responses'. A central element in Schön's work was also his appreciation of the art of professional forms of practice. Here also lies one of Vygotsky's obvious sources of intellectual passion; the development of psychological methods of enquiry, which is evident in both *Myshleni i rech* and Mind in Society. This shows that he not only sought to challenge psychology theory but also the very means by which such projections were developed.

For the purpose of this research we have centred our attention upon post 16 business education within the UK taught at what is known as AS, generally the first year of the course, and A2, the final year. As a new and integrated curricula area business studies attracts a range of new and exciting classroom practices within the context of a continually changing business environment. Although knowledge is at the heart of the curriculum, success in public examinations relies upon effective interpretation and application of that knowledge using higher order learning skills, the form of which depend upon the linkages formed through the master-apprentice relationship.

The Levels of Response Concept Developed Through Business Education

Business education in the UK prior to 1980 was always viewed as a distinct collection of subjects such as accounting, economics, commerce as well as what were considered to be office skills such as office practice, shorthand and typewriting. The rapidly changing employment market as well as the decline in the need for keyboard skills made many question the value of what were on the one hand, a distinct collection of narrowly focused academic subjects, and on the other narrowly focused workplace skills that schools often rarely had the resources and ability to deliver, particularly with the spiraling costs of ICT equipment. There were also issues of curriculum relevance. Keyboard skills and office practice had little academic focus and were skills rather than academic subjects. What was the point of learning about accounts when students had only a narrow understanding of the ways in which organisations managed, ran and applied accounting knowledge? Similarly, what was the point of studying economics when few people ever became economists? It could be argued that both the subject areas and the skills failed to take into account 'organisations' and decision-taking by people within such organisations.

As a result business studies as an academic subject evolved as a post 16 area little more than 20 years ago with the establishment of the Cambridge Business Studies Project. Although the initiative never became large it terms of student numbers, it marked a significant development in thinking about business education, with thought applied in the development of teaching materials, tutor resources, coursework questions and learning pedagogy. From the outset it was clear that business studies encapsulated and brought together many different areas within an organisation such as human resource management, finance and marketing, against the vagaries of the business environment.

Over the short period of its life, the teaching of business studies has gone through a steep learning curve. For example, initially resources for the classroom were static and very teacher and knowledge-centred. Against criticisms of 'lack of rigour' and, in order for the subject to be viewed equally in pecking order by university admissions tutors, it had to prove its worth. In other words, it was important not to be perceived as an easy option, particurly by students for whom it was the third or fourth post sixteen option. Initially examinations were heavily content driven with marks allocated for points, and associated marks for embellishment. Appropriate though this was, it did not account for critical thinking; nor did it fully get to grips with and assess the intellectual energies of individual learners. As a result each of the UK awarding bodies in turn sought other forms of assessment, which eventually led to what has become known as

'levels of response' marking. This directly refers both to the lower and higher order skills extracted from Benjamin Bloom. The introduction of this form of marking not only involved considerable in-service commitments both for teachers and examiners alike, it also prompted many teachers to re-consider their existing classroom pegagogies, as they thought about how they would need to adapt their teaching styles and practices in order to stimulate their students higher order intellectual skills in a way that would help them to perform well in public examinations.

Bloom's Taxonomy

What are the skills and forms of knowledge – the 'cogs' – that students require for higher levels of performance in AS/A2 Level Business Studies? In 1956 Benjamin Bloom and some colleagues at the University of Chicago identified what became known as 'Bloom's Taxonomy'. The taxonomy is helpful in creating a lens that provides a more precise focus on the 'cogs' that students need to perform at the highest levels. These 'cogs' appear in examination literature and assessment schemes, in a way that illustrates how they have been adapted from Bloom. The emphasis upon evaluation reflects the inherent difficulty associated with this concept and its direct connection with higher levels of student performance in examinations.

Figure 2
The Cogs of Cognition adapted from Bloom's Taxonomy

The 'Cogs'	Forms of Response / Examination Cues
Knowledge rote memory – *e.g.*, of facts, terms, procedures.	• Making observations, recall, mastery of subject matter, knowledge of major ideas • **Cues**: list, define, describe, identify, collect, show, label, tabulate, name, quote ...
Comprehension an ability to translate, paraphrase, interpolate, extrapolate	• Understanding information, interpretation, translating knowledge into new context, prediction, ordering, grouping, comparing, contrasting • **Cues**: describe, summarise, interpret, predict, distinguish, discuss …
Application a capacity to transfer and apply knowledge in unfamiliar settings	• Use information, methods, concepts, solve problems using knowledge and skills • **Cues** apply, demonstrate, calculate, illustrate, examine, discover, solve, modify, complete, calculate …
Analysis the ability to break down information into its integral parts and to identify the relationship of each part within a *structure*	• seeing patterns, identification and organisation of parts, recognising hidden meanings. • **Cues**: analyse, separate, order, explain, connect, classify, compare, arrange.
Synthesis the ability to combine existing elements together to create something new	• Using old ideas to create new ones, for example business planning, generalising, making connections between knowledge gained from different domains of business. • **Cues**: combine, integrate, rearrange, design, plan, formulate, prepare, generalise …
Evaluation the ability to make judgement about the value of something by comparison with a standard	• *compare and discriminate between ideas* – what the similarities/ differences *and the basis for such discrimination* • *assess value of theories and presentations* – desirable, appropriate, good/bad *on the basis of who, what, where, how, why* • *make choices based on reasoned argument* – What are your premises? What is the precise subject – theme, form of thinking, feeling – of your argument? What is the precise object – thing to which actions, feelings are directed? Identify strengths/ weaknesses of theoretical positions. Recognise sources of opinion/ anecdotes etc • *verify the value of evidence* – sources of triangulation, authority/legitimacy of the sources used • **Cues**: assess, decide, rank, grade, convince, judge, explain, recommend …

Methodology

This research has comprised a number of phases. The first phase comprised its theoretical development. By its very nature, and because Vygotsky draws upon so many different disciplines, the theoretical base has similarly had to do so.

In attempting in this small piece of research to preserve the eclecticism and concomitant insights drawn of Vygotsky's original approach we were confronted with the problem of methodology. There was always a danger that in selecting one approach we might inadvertently obscure insights derived from others. Conversely in adopting a combined form of enquiry, especially when aligned with conceptual eclecticism, an obvious difficulty arises concerning assertions of truth derived from the study. Venturing into new territory open up by the possibility of a rereading of Vygotsky in this way marks this out as a pilot study, which perhaps raises more questions than answers.

At the heart of the study and given Vygotsky's observations the research methodology focuses upon issues associated with interpreting language. The lead into both the construction and development of each case study, and the analysis of each has involved using analysing the social interaction of the respondents and their discourse. One of the problems with the analysis language there are many avenues for misinterpretation and for covering over the experiences of human beings.

The philosophical element of the study relates to the issue of 'truth' for teachers as human beings. This was resolved by adopting a pre-philosophical framing of truth, or as the Ancient Greeks would say, *aletheia*, as 'unconcealment' of the presence of beings (Heidegger 1962). For example, we say that 'she/he had real presence in the classroom'? As we analysed each of our case studies, it was clear that as we looked at the discourse we had to consider issues of 'unconcealment'/concealment related to human beings. For example, the teacher/student with real presence might conceal a personal identity crisis. For our study we saw two other distinct advantages in adopting such a framing. As Martin Heidegger shows (2001) 'language is the house of being' which fits with Vygotsky's (1978) and his analysis of 'Thought and Language'. Out attempt to analyse discourse within the framing of truth as unconcealment/concealment created a way for us both to maintain the integrity of Vygotsky's original work opened up the possibility of standing inside/outside modern philosophical conceptions. At the same time, and taking into account the interplay of art and science within the context of reflective practice we hope to provide a feel, through our theoretical interpretations, of Vygotsky and Schön's work.

The second phase of the research was the construction of three case studies (Needham 2000). It has, however, been widely observed that it can be difficult to get agreement on what constitutes a case study. Lincoln and Guba (1985) stated:

> While the literature is replete with references to case studies and with examples of case study reports, there seems to be little agreement about what a case study is. (*ibid.*, p.360)

Since then there has been some progress towards identifying the factors which define a case study. There is widespread agreement that a case study is of 'real life', is holistic and it enables the investigation of the relationships between the

component parts of the case. In his classic book on case study, Yin (1994) points out that a case study is an empirical enquiry which:

> allows investigation into a contemporary phenomenon within its real-life context, especially when the boundaries between the phenomenon and context are not clearly evident. (*ibid.*, p.13)

The investigation can be explanatory. As Robson (1993) remarks, the case study answers 'why' and 'how' questions. Sturman (1994) broadly agrees:

> Human systems develop a characteristic wholeness or integrity and are not simply a loose collection of traits … to generalise or predict from a single example requires an in-depth investigation of the interdependencies of the parts and of the patterns that emerge. (p.61)

So does Stake (1995), who describes doing case study as 'coming to understand the activity [of a single case] within important circumstances' (*ibid.*, p.xi):

> The case is an integrated system. The parts do not have to be working well, the purposes may be irrational, but it is a system. (*ibid.*, p.2)

A number of methods have been used to collect and record data in order to in triangulate data (Cohen, Manion and Morrison, 2000). The three teachers targeted were well known to the researchers for their professionalism and good practice. A questionnaire was distributed to the participants, who were at the time coached, a non-standard research method, about processes and practices of reflection. The teachers were asked to write a diary (Hopkins, 1993) which includes their thoughts and reflections on what, how and why they interpret ideas and knowledge within the context of their everyday teaching. They were asked to discuss successful experiences they have had with their students that helped to raise levels of response, encouraged to reflect upon instances where they had encountered difficulties in raising level of response and finally they were asked to discuss the extent to which reflection raised issues within their own teaching.

There is always a danger that disputes occur in language over language. Norman Fairclough (1989) suggests they are frequently political. We needed an approach to our enquiry that examined the inter-relationship of forms of social interaction in the classroom centring upon attempts by the teacher to help students with their learning and the language they use. In working with this group of teachers over the past three years we had been able to make many observations of their work with children. 'Critical language analysis' (*ibid.*, pp. 5-16) was the obvious choice to complement our observations. It provided once again not only the basis for rereading Vygotsky in the light of more recent scholarship concerning socio-linguistics that connects directly with neo-Marxist analyses of society but also a direct focus on reflective diaries of three teachers from our group.

In adopting critical language analysis (CLA) the approach follows the logic of 'description' of what is spoken or written which is 'interpreted' in terms of both classroom social interaction and any discourses that are both structured by and reproduce structure social interaction in the classroom. The final step of beginning to offer an 'explanation' of what had been unconcealed/concealed points once more to the sting in the tail of our paper. As we uncovered the various discourses we attempted to find out what lies behind the discourses.

At this stage in our paper we have extensively discussed the notion of unconcealment/concealment. In doing so we are trying to bring into the open questions concerning the psychology of interaction between human beings as

teachers with the students in their classrooms as take on the difficult class of raising the levels of response of their students. In the cognitive apprenticeship literature where research has taken place across a range of different teaching situations (Collins *et al*., 1989, Hennessy, 1993, Jarvela, 1995, Rojewski *et al*., 1994). any notion of 'human being' was notable for its absence! In its place we have variations on that most modern of inventions, the individual for example, the teacher, student, learner, expert, and so on. As Alisdair MacIntyre (1984, p.61) in his seminal contribution, 'After Virtue', has argued: 'When the distinctly modern self was invented its invention required not only a new social setting but one defined by a variety of not always coherent beliefs and concepts'. In attempting to uncover the psychology of human beings our enquiry seeks to dismantle surface apparatus that has been allowed to build up over the experience of being human. Deconstruction (Caputo, 1987, p.64; Derrida, 1978) helps us to challenge and question the work of 'signs' and 'tools' at the heart of our re-reading of Vygotsky in the late modern world of the business studies teachers.

Analysing samples of existing research data

Analysing recent research that claims to have its roots in Vygotsky's work provides and interesting insight into the socio-linguistics of classroom interaction and interpretations of the notion of cognitive apprenticeship. Ferdinand Saussure is usually seen as the founder of semiology; 'a science that studies the life of signs within society' (Haramblos *et al*., 2000, p.906); his seminal contribution in the, '*Course in General Linguistics'*, first published in English in 1959, post-dated Vygotsky by almost three decades is widely used in linguistics where it has become an accepted base by some for analysis of language.

If we interpret the notion of improving levels of response with business students in Vygotskian terms, (Vygotsky, 1978, p.86;) the ZPD 'is the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers'. 'Human learning', he says, 'presupposes a specific social nature and a process by which children grow into the intellectual life around them' (*ibid*., p. 88). On this basis, as he suggests, ZPD 'enables us to propound a new formula, namely that only "good learning" is that which is in advance of development' (*ibid*., p.89).

In this context our analysis of recent research centring upon the notion of 'cognitive apprenticeship' and situated forms of learning raises questions about whether social relationships and the analysis of discourse have been taken into account. For example, one area that has not been analysed by recent research is that of power relations within the classroom and their influence upon both teachers and learners as they attempt to gain higher levels of learning. Michel Foucault (1991, p.27) says: 'there is no power relation without the corresponding constitution of a field of knowledge, nor any knowledge that does not presuppose and constitute at the same time power relations'. As a result as we interpret and analysis the work of others and as we look at socio-linguistic analysis knowledge/power is a key element.

As we analysed other research drawing upon Vygotsky's work four questions emerged. These were:

- What can we learn from existing educational research relating to cognitive apprenticeship?
- To what extent does the knowledge that has been developed reflect Vygotsky's central thesis?
- How are the discourses characterised?
- To what extent are they inter-connected with other forms of educational discourse?

The analysis of the literature was intended not to provide a fully comprehensive review but rather to illuminate in concrete terms the range of interest in 'situated forms of learning'. These largely reflected mainland European and Anglo-American interpretations of Vygotsky's work. Our questions create a comparative lens through which we later review the discourse created by our small group of experienced teachers.

For example, as we review other literature we find that:

Hamilton, (1987) discussed the inter-relationship of community work and training in practice in Scotland using the apprenticeship model. David Stein's study (1998) in the USA focused upon the development of classroom activity in and through 'situated learning' using the tools of 'cognitive apprenticeship' Elizabeth Atkinson (1989) reflects upon 'Making it happen in the Primary School' through the reading of real books mediated by a ZPD model'. The facilitation of higher order learning in and through vocational education is discussed within the context of situated learning by Sandra Kerka (1997) in the USA. Rjewski and Schell's (1994) detailed study of the development of higher order skills focused upon special needs students in Georgia. Sara Henessey's (1993) extensive review of pedagogical interventions undertaken in the UK was designed to raise performance in mathematics, science and technology.

As we answer each of our questions in turn:

Cognitive apprenticeship is viewed as a socially-mediated form of learning through each of these papers in which teachers 'scaffold' support using language as part of teacher-student interaction, for individuals and groups of learners. Each of the papers presents cognitive apprenticeship and the associated situated forms of learning as a successful basis for the education of young people. A number of these papers use the metaphor of scaffolding which is seen to fade as learners become more competent. It has been difficult to find reference to how the teachers meaningfully established scaffolding and fading as a basis for supporting students in different settings presented in this literature. This has particular relevance to the focus of the primary research undertaken through this study with business studies teachers.

When initially looking at these papers there appeared to be a strong connection between different pieces of research presented and Vygotsky's original thesis. However, on closer inspection it was apparent that each of the papers had in some way re-framed the original work. For example, all of the literature centres upon the social setting that we call an 'individual' rather than problems concerning the psychology of human beings, intended by Vygotsky. The word or term 'development' is used by Vygotsky in his original thesis within the context of psychological understanding. His was constantly searching to improve and further develop his methodology in ways that connect the psychology with the social setting which is not apparent in each of the papers.

The discourses presented in the papers serve to create their own normalised truths. In other words the notion of an acceptable understanding in each of the social settings creates a situation where the respondents are encouraged to enter into a reality in which situated learning is seen as an effective and engaging experience for both students and teachers. The interpretations within the research seem to create stereotypical expectations for teachers driving home the benefits from the research. Teachers are often illustrated as the 'angels' of the transformation. There seems to be a haloed outcome from each of the research that fits a series of high-order expectations.

From looking at the literature there seems to be a direct connection between each of the pieces of research and their dialogue and other pieces of research upon which they draw. For instance, the master/apprentice model which is sometimes interpreted as the 'expert/novice' relationship takes no account of the multiplicity of interpretations of expert/master or apprentice/novice. The discourses also reflect attempts through discourse to reflect current thinking by politicians and others trying to influence educational thinking.

Analysis of the empirical data

As we analysed the empirical we were conscious of the need to use our data both as a source of reflection to improve our understanding of Vygotsky and all of that he represents, and also to provide a base for comparison of the literature we have discussed. Each of the respondents was clearly driven by a moral imperative to raise the performance of their AS and A2 students. This was seen on the one hand in terms both of process, what they each do in their classrooms, and on the other in terms of product; outcomes in terms of examination results. For the purpose of this research, we have itemised each of the respondents by their initials, CB, IS and DG.

For example, CB asked her students to produce spider-diagrams, "at the beginning of the lesson, to show what they knew about the topic". She then says that "at the end of the lesson, it was evident that students developed powers of analysis; they could clearly see what they had learned in the lesson and the relationship between the new information and the old". IS discusses how he tried to get a student to think for herself. Although she "was unhappy about this and needed to be forced", he points out that her "in-class responses between September and now are immense". The moral imperatives in each of the instances were set against the need to create a mechanism or 'relationship' that would enable students to 'engage' with raising their levels of response.

The key challenge for each respondent was how they could develop their teaching to provide a suitable methodology that would "engage" their students in terms of motivation and, implicitly at least, take them into Vygotsky's 'zone of proximal development'. Each of the teachers provided a different 'take' of their professional 'know how' based upon Schönian knowledge-in-action and reflection-in-action which is referred to by Schön as the 'art of practice'. Simply looking at the discourse of situated learning does not provide the answer or create an understanding about how teachers create forms of scaffolding that bring students closer to the ZPD. In other words the literature fails to take account of their professional 'know how'. In our research, and although we selected 3 reflective practitioners, they were not 'telling us how to teach' through their feedback, but

instead provided us with a series of tips, anecdotes and tactics used across a range of situations. Our analysis of their comments, was not simply based upon the tips themselves, but also upon the 'art of practice' that lies hidden behind these tips.

For example, IS admitted to 'feign surprise' when certain students answered questions. He then asks them how they arrived at the answer in order to find out "the thinking they use to get to the answer". He found that some students took delight in explaining why he was wrong in certain situations. CB provides a simple scenario and then asks students to develop a solution. She says that "effective methods can be wacky and therefore students never forget it". DG discusses how he works with an organisation outside school. Using visitors he changes taught lessons to meetings in a formal setting. This develops a focused discourse which students can use in their own writing. In each of these instances the teachers were reflecting upon the subject, actively using strategies to improve levels of response and the object, the goal. As DG states, he uses this strategy to "strengthen a student's portfolio from a D to a B". Each of these points is not telling us to how to teach, or the 'art of teaching', but are each useful in their own way, as advice for other practitioners. What they fail to take into account are the nuances and subtleties of the master/apprenticeship in terms of 'the art of practice'. Research into the relationship therefore highlights the outcomes from the 'art of practice', but not the practice itself. The interconnections of subject and object are identified by virtue of reason.

Each of the respondents identified a number of issues and potential barriers connected with their own attempts to address their own moral imperatives. For example, CB points out that "if work is structured and students have to read and extract information, they are reluctant to read, and therefore only write basic bullet points." She discusses her frustrations when students only read to provide basic knowledge and understanding. DG talks about some of the frustrations when students fail to submit coursework as well as the limited amount of time he can give to each individual. IS discusses the frustrations of having students who fail to accept that they might have been wrong "when a situation develops". Even though he tries to help some of his tutees, he hits a "metaphorical brick wall". As we looked through these barriers, we were conscious that many seemed to raise a number of questions. For example, how do teachers construct their identity in different situations and to what extent is such construction determined by the social setting? Similarly, there seems to be a clear identification of the frustrations associated with the discourse and social setting of young people that teachers have to come to terms with? Again, these questions are not raised in the research literature cited.

It was clear that as teacher's reflected, they tried to come to terms with the frustrations and demands and expectations placed upon their role as well as their identity within the classroom. IS said that "my reflection is tempered by the knowledge that I am physically unable to do all of my jobs as well as I would like or wish to". CB says that "reading students' answers makes you question your own teaching". Similarly DG indicates that "reflection itself drives you to question your actions and to self-analyse". He poses questions "was this the best way I could do it? Could I improve what had been done? Could I learn from my mistakes?"

It was apparent that social interaction within the classroom is mediated by a complex inter-relationship with a 'body of knowledge' and the acquisition and development of skills required to interpret, evaluate and understand information

presented to students in various formats. Our research took into social interactions within the classroom, and not simply strategies designed to effect outcomes through the master/apprentice relationship.

At this stage in the research we have:

- referred to Vygotsky's original work;
- critiqued a range of other literature within the context of our reading and interpretation of Vygotsky; and
- undertaken our own analysis of 3 mini-cases, based upon reflection, with an emphasis upon the social setting of the teachers role within the master/apprentice relationship.

The final part of this paper involves looking behind the discourses and dominant forms of social interaction.

The sting in the tail

This paper has attempted to look at the degree to which modern interpretations of the concept of cognitive apprenticeship and situated forms of learning are interpreted within the eclectic and socio-linguistic framing of the theory originator, Lev Semyononvich Vygotsky (1986-1934). If we, like Vygotsky used to, now cross disciplines into philosophy, we create an opportunity for ourselves to stand outside our research and the comments and theories that we have critiqued and produced. Given its very nature, this is at the very least a highly technical discourse.

According to Martin Heidegger (1977), by standing outside what we have developed, we can view what we have created as 'technology' in its essence. This, as Heidegger cryptically acknowledges is nothing technological! Technology within the context of his interpretation is about the power of reason. For example, the respondents in this study represented the art of their practice in terms of subject, the act of doing in the classroom and the object, raising marginal levels of achievement. This process of 'technology' provided the respondent with a rationale, but also a narrowly focused way of viewing the world (enframing/*gestell*) which as we have seen blocks out other ways of 'revealing' the world. Although as Vygotsky intended, his work was based upon concern for an 'art', which transcends logic in socio-linguistic circumstances, the irony is that within the context of philosophy the classroom is set within a technological frame (Flint, 2003). This technological frame casts human beings as objects and subjects available for use for a required purpose.

Postscript

Bix Beiderbecke was one of the great jazz musicians of the 1920's; he was also a child of the Jazz Age who drank himself to an early grave with illegal Prohibition liquor. His hard drinking and beautiful tone on the cornet made him a legend among musicians during his life. If he had lived longer, who knows how jazz may have flourished. In the same vein, Vygotsky died prematurely, of a different kind of consumption to that of Bix, at the age of 37. In the Stalinist era of the USSR, much of his work was banned from publication until 1956. Since then many researchers, like us, have drawn upon his seminal contributions to social-

psychology. In this context, his demise brings out the stark contrast of the frailty of human life when matched with the huge contribution that some human beings can make to the society from which they originate.

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Bionote

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