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Theories of Learning and Pedagogy: issues for teacher development

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ABSTRACT The authors argue that since learning is the central concern of teachers they need to be equipped with a well-informed understanding of learning that takes account in particular of its socially situated dimensions. Learning is a phenomenon detachable from context and transferable elsewhere only under specific conditions. Nor is learning a purely individual accomplishment, being achieved alongside others in definable circumstances and in relation to particular cultural communities. Our account of this situatedness of learning is presented in terms of two well-known examples, Brazilian street vendors and English girls at home and at nursery school. The authors present a view of pedagogy consistent with the theoretical account of learning and based on four elements: situated practice, overt instruction, critical framing and transformed practice. This view is not so much prescriptive as a means of providing a vocabulary for critical discussion of teaching and learning in practice. Such a perspective inevitably entails a critical but constructive view of the crude assumptions about learning embedded in the National Curriculum in England and Wales and its associated testing. The article draws out implications for teacher development at a time when there are particular constraints on pedagogy. Centralised, highly specified curriculum and its associated assessment procedures limit the possibilities. Perhaps most damaging, however, are the limitations imposed by narrow orthodoxies on teachers' capacities to adopt imaginative, problem solving approaches to teaching in the practical situation. The approach in the article represents no criticism of teachers as conscientious professionals. The authors locate the problems for the advancement of pedagogy within the wider political and social circumstances of teachers' work.

Introduction

Learning is the central business of schooling and the abiding concern of teachers. Yet no school of thought or discipline has told us definitively what it

is, nor how it is acquired. Indeed, we do not know whether we can separate what is learned from how it is learned. Nevertheless, some perspectives are available from psychology, sociology, philosophy and other disciplines that offer useful insights. This article draws on concepts of learning that are broadly agreed across a range of perspectives and disciplines. Notably, there has been a general move from individualised notions of learning to the social and the situated; it is upon these relatively recent developments in the theoretical field that this article draws.

Dimensions of Learning: an approach through examples

We approach the task of elucidating the situatedness of learning via concrete illustrations or stories of how learning fails to transfer across contexts, in particular the home and the school. This approach, it may be noted, is itself consistent with a social and situated view of learning.

Example 1: street mathematics and school mathematics

This example comes from research by Carraher et al (1985) in Recife, Brazil. Their work demonstrated that street mathematics and school mathematics are not one and the same thing. That is to say, that the cognitive demands of tasks that are on the surface identical are in practice very different. Their work also showed that lack of ability is not the correct explanation for failure in school mathematics in the cases observed.

In broad terms, the researchers posed as customers in a street market where relatively unschooled children aged 9-15 were working as street vendors alongside their family members. An example of 63 reported interactions is as follows:

Customer/examiner: How much is one coconut?

Child/vendor: Thirty-five.

Customer/examiner: I'd like three. How much is that?

Child/vendor: One hundred and five.

Customer/examiner: I think I'd like ten. How much is that?

Child/vendor: [Pause] Three will be 105; with three more, that will be 210.

[Pause] I need four more. That is... [Pause] 315... I think it's 350.

Customer/examiner: I'm going to give you a five hundred note. How much do I get back?

Child/vendor: One hundred and fifty. (Carraher et al, 1985, p. 23)

Other interactions involved weights and measures using fractions such as calculating the cost of 1.2 kg from the cost of 1 kg. Across the 63 street vending transactions a correct answer was given in 98% of cases.

These same children then participated a few days later in a formal test away from the street vending context. This test modelled the street customer/vendor transactions in the sense that the children were given

exactly the same 63 sums as they had accomplished in the marketplace. In the first instance these sums were given as verbal problems which addressed all the arithmetical problems dealt with in the marketplace. For example, using the above illustration, the children were asked how much one coconut costs and were then asked how much 10 would cost. Then they were asked how much change they would give from a 500 note. The success rate for correct answers fell from 98% to 73%.

A further formal test was carried out a few days later using the same sums. This test was different again. This time only the computational symbols (figures) and operations (+, -, x, ÷) were presented. The number of correct answers given fell to 37%. This demonstrated that there was a statistically significant difference in the success rate across the three contexts.

These two formal test situations are what the researchers referred to as 'school mathematics' in that they used school-type tasks in a classroom-type context. The contrast is therefore broadly between street mathematics and school mathematics. The major differences between these two contexts were as follows:

- street mathematics was oral rather than written;
- street mathematics was conducted in a concrete, practical social situation whereas school mathematics was abstract and symbolic;
- street mathematics was used as a means to an end in the sense that the children were involved in making a living. School mathematics on the other hand was presented as a series of discrete tasks as ends in themselves.

What they were being asked to demonstrate in the school situation was the symbolic analogue of the real-life situation rather than the practical skills of the street – the analogue underlines the point that the two activities are related but not one and the same thing.

Example 2: young children learning

This example comes from research conducted in London by Tizard & Hughes (1984). Their work demonstrated there can be significant differences between the level of cognitive demand in conversations that take place at home and in school, with the home conversations showing more reciprocity.

In broad terms, the researchers recorded conversations of four-year-old girls at home with their mothers and at school with their nursery teachers. An example of a conversation at home is as follows:

CHILD: Is our roof a sloping roof?

MOTHER: Mmm. We've got two sloping roofs, and they sort of meet in the middle.

CHILD: Why have we?

MOTHER: Oh, it's just the way our house is built. Most people have sloping roofs, so that the rain can run off them. Otherwise, if you have a

flat roof, the rain would sit in the middle of the roof and make a big puddle, and then it would start coming through.
CHILD: Our school has a flat roof, you know.
MOTHER: Yes it does actually, doesn't it?
CHILD: And the rain sits there and goes through?
MOTHER: Well, it doesn't go through. It's probably built with drains so that the water runs away. You have big blocks of flats with rather flat sort of roofs. But houses that were built at the time this house was built usually had sloping roofs.
CHILD: Does Lara have a sloping roof? [Lara is Beth's friend]
MOTHER: Mmm. Lara's house is very like ours. In countries where they have a lot of snow, they have even more sloping roofs. So that when they've got a lot of snow, the snow can just fall off.
CHILD: Whereas, if you have a flat roof, what would it do? Would it just have a drain?
MOTHER: No, then it would sit on the roof, and when it melted it would make a big puddle. (Tizard & Hughes, 1984, p. 124)

This conversation illustrates the child initiating a conversation on a topic she was curious about; she explores an abstract topic (the reasons for the design of roofs); she is persistent and logical; she demonstrates an ability to pursue relatively abstract knowledge; and she offers a counter-example. The child leads and the mother responds to the child's questions.

By contrast, the following conversation that takes place at school illustrates the child's reluctance to say anything spontaneously; the one-sidedness of the conversation; and that the teacher's questioning takes the form of assessing what the child knows which, the researchers observed, was typical of a nursery school exchange.

TEACHER: What's that going to be, Joyce?
CHILD: [No reply]
TEACHER: How are you making it?
CHILD: Rolling it.
TEACHER: You're rolling it, are you? Isn't that lovely? Oh, what's happening to it when you roll it?
CHILD: Getting bigger.
TEACHER: Getting bigger. Is it getting fatter?
CHILD: Yeah.
TEACHER: Is it, or is it getting longer?
CHILD: Longer.
TEACHER: Longer. Are my hands bigger than your hands?
CHILD: My hands are little.
TEACHER: Your hands are little, yes.
CHILD: It's getting bigger. Getting long. And long. Look.
TEACHER: Mmmm. What's happened to it, Joyce?
CHILD: Got bigger.

TEACHER: It has. My word. (Tizard & Hughes, 1984, pp. 190-191)

A further example shows what Tizard & Hughes also call a typical conversation, where the teacher tries to extract the correct answer; the teacher wants to turn an interaction initiated by a child into a learning opportunity. Note that the teacher tries to introduce the word 'half' but fails to notice that the child began with this word!

CHILD: Can you cut that in half? Cut it in half?

TEACHER: What would you like me to do it with?

CHILD: Scissors.

TEACHER: With the scissors? [Child nods] Well, you go and get them, will you?

CHILD: Where are they?

TEACHER: Have a look round. [Child goes over to the cupboard, gets some scissors] Where do you want me to cut it?

CHILD: There.

TEACHER: Show me again, 'cause I don't quite know where the cut's got to go. [Child shows teacher where she wants paper cut] Down there? [Child nods; teacher cuts child's piece of paper in half] How many have you got now?

CHILD: [No reply]

TEACHER: How many have you got?

CHILD: [No reply]

TEACHER: How many pieces of paper have you got?

CHILD: Two.

TEACHER: Two. What have I done if I've cut it down the middle?

CHILD: Two pieces.

TEACHER: I've cut it in...? [Wants child to say 'half']

CHILD: [No reply]

TEACHER: What have I done?

CHILD: [No reply]

TEACHER: Do you know? [Child shakes head]

OTHER CHILD: Two.

TEACHER: Yes, I've cut it in two. But... I wonder, can you think?

CHILD: In the middle.

TEACHER: I've cut it in the middle. I've cut it in half! There you are, now you've got two. (Tizard & Hughes, 1984, p. 194)

Reflecting on these conversations we can draw out the following differences between interactions at home with mother and in school with teacher.

- The mother–daughter relationship is intimate and emotionally close; the teacher–child relationship is marked by social unease and defensiveness on the part of the child.
- The conversation with the mother arose spontaneously and was initiated by the child out of curiosity; by contrast the conversations with the teachers

were interrogative and one-sided with the teacher asking the questions and the child invariably finding difficulty in responding.

- The conversation with the mother at home comes out of a shared history; at school the conversations were 'of the moment', revealing the relatively transitory nature of child-teacher relationships.
- The topics of conversation at home are embedded in a shared culture and shared experiences (e.g. cooking, cleaning, shopping, eating meals, going on outings); at school the topics of conversation are disembedded, dealing with theoretical ideas. The teachers are conscientiously trying to derive generalised principles from the concrete that will apply across other situations.

These differences cannot be explained in terms of the one-to-one relationship of mother to daughter. Teachers also enjoy one-to-one relationships often without the depth of shared meanings. Nor is the depth and richness noted in the mother-child relationship confined to family life. For deep shared meanings are also found in social situations such as the military.

What Can Be Derived from These Stories?

Taking the above examples from Recife, Brazil and London, England together, it is possible to discern some features of note. First, it is apparent that important learning is taking place in natural or 'real-life' contexts. On the other hand, it is difficult to see that the intended learning in the contrived or artificial situation of the classroom is happening. It might well be that children are learning social incidentals like obedience or how to cope with routine tasks that they find meaningless. Indeed children learning how to 'do' school work may be a major part of what school teaches (Scriber & Cole, 1981). Such learning experiences might well be useful in their later life in school and out but they were unintended. Moreover, the teacher has little, if any, control over this peripheral learning.

Second, of particular note in the Brazilian studies, learning in the street context does not readily transfer to the classroom. The street vendors show high computational ability in the meaningful context of the marketplace. But they were unable to reproduce these abilities to the same extent in the classroom. What they were being asked to demonstrate in the school situation was the symbolic analogue of the real-life situation rather than the practical skills on the street. Of course, it is just conceivable that the street child vendors acquired their skills in a context other than the street but it is a fair assumption that these highly developed skills were learned in the situation in which they were displayed.

Similarly, in Shirley Brice Heath's seminal ethnographic study (Heath, 1983) we see how learning in the 'home' communities of Roadville and Trackton – the fictitious names given to the two 'non-mainstream' communities she studied – is 'situated' in the sense that it is achieved in

specific circumstances. And, because it is offered within contexts where its outcomes are in one way or the other in use, it is highly effective. Yet the youngsters from Roadville and Trackton who were highly competent operators within their 'home' community were unable to translate their ways of knowing into the school's ways of knowing.

A reasonable deduction from the discussion so far is that learning, to a considerable degree, is tied to its context. The pedagogic problem that flows from this concerns the circumstances under which transfer from one context to another is possible. In considering this problem we must first note that literal transfer never occurs since each situation is unique when considered as a whole. Rather, 'transfer' means that one *transforms* a situation to be manageable using old habits or procedures. Put otherwise, there is a degree of mutual adaptation of person and environment. If this mutual adaptation falls outside familiar bounds, one might have to think about how to transform the situation into a manageable one. This view of transfer slides between sheer habit and sheer abstraction. In daily life we encounter situations that demand more or less transfer from our previous experience.[1]

Understanding Learning

Developing an ability to act in novel situations on the basis of understanding is a fundamental aim of education though not the whole of the story, as we shall see below. Yet, as just indicated, a fair deduction from the examples presented above is that an ability to act competently in one situation does not transfer to an ability to act competently in a new and different situation even when, on the surface at least, the required understandings are the same in each context.

Traditionally, this problem has been understood as one of an inability to *apply* knowledge gained to new and different tasks (Dewey, 1963). For example, Bloom's taxonomy was a classical attempt to erect a hierarchical conceptual structure of learning in terms of knowledge and skills at different levels of transferability (Bloom, 1952). For teachers, the solution was one of disembedding knowledge taught in school, that is not tying it to any context. This approach was based on a notion of learning that saw knowledge as the possession of the individual. It was argued that knowledge acquired independent of context could be applied to any situation. But, as knowledge acquired devoid of context is less likely to be used in *any* context, this approach proved fruitless. Against this background of understanding learning the problem of application remained a mystery.

Educators, however, became aware of a corollary of the 'problem of application'. The corollary is that knowledge gained in the context in which it is needed is applied within that or similar contexts with relative ease. Situated learning perspectives developed from this other side of the problem of transfer. These more recent perspectives on learning provide an alternative explanatory structure within which to resolve the apparent contradiction of being unable to display in a new context what one is capable of displaying in

the context in which it was acquired. From a situated learning perspective, an ability to understand something is not grounded in individual accumulation of knowledge but is instead a product of the social context in which the learning took place. This shift from the notion that knowledge is the possession of the individual to knowledge as residing in the social context not only demands a reframing of our understanding of learning but also explains why the transfer of understanding from one context to another frequently fails.

These new insights potentially provide teachers with more productive ways forward. The problem shifts from being one of 'application' to one of 'transfer'. The new pedagogic orthodoxy was to situate learning in meaningful contexts (e.g. Lave & Wenger, 1991). However, this is not a panacea. With these new insights came new blind spots. For instance, some researchers have found that formal mathematical reasoning had all but vanished from some children's curricular experiences and in its place was put situated learning activities such as grocery shopping (e.g. Walkerdine, 1988). If school learning is located entirely within the lived world of daily experience then it will sacrifice the opportunities that schools provide for abstract reasoning and reflective activity. To ignore the problems of generality and transfer is to ignore what education stands for, confining learners to their local culture.

But there are instances where transfer across different social contexts does occur to a greater or lesser degree. As the above examples demonstrate, transfer may not occur as efficiently as educators might like to think it does, however it nevertheless does occur and this needs to be explained just as surely as the failure to transfer has been explained by the situated learning theorists. What seems to be needed is a theory of learning that conceptualises individual thinking (in-the-head learning) in a way that is compatible with insights from situated learning theorists. This would offer a principled way of understanding why transfer sometimes occurs across settings and practices. Such a theory would lay the basis for a pedagogy that bridges the gap between 'knowledge in the world' and 'knowledge in the head'.

We do not mean here to adopt a naive contrast between internal and external views of thought. We do not equate a situated view as 'learning in context' and a traditional view as 'learning in-the-head'. Both are misleading descriptions. Learning is not located either inside or outside an individual or inside or outside an individual's skull. For example, bicycle riding is not an ability that is located only in one's head. It takes a bicycle, a person, and a road to allow bicycle riding to happen. Conceived in this way, learning is an affair of people and environments. By the same token, thinking is not in the brain cage; having a brain is a necessary but not sufficient condition for this function. Thinking, or responding thoughtfully or intelligently, is a matter of organism and environment and the relationship between the two. We prefer a Deweyan understanding of learning, in which problems in the environment are met by constructive human responses making for increased social well-being and increased conscious control of one's actions in adapting to and altering one's environment. This perspective stresses the social circumstances in which

learning occurs and sees the acquisition of knowledge as part of the problem solving dynamic. This contrasts with a more Cartesian view which dichotomises thought and action, mind and body.[2]

A Theory of Teaching or Pedagogy

We have so far argued that learning is an altogether more complex matter than is commonly supposed. We now consider the relation between the theoretical perspectives offered above and the practice of teaching. Teaching is by definition the promotion of learning and ought therefore to be informed by the best of our knowledge about learning. Further, if teaching needs to become very much more sophisticated there are implications for teacher education and teacher development. As things stand neither the common or garden practice of teaching nor the United Kingdom's official curricular and assessment policies show much sign of acknowledging the complexity, indeed the mystery, at the heart of learning. We must emphasise that this is not intended as a deficit view of teachers but a critique of the current prescriptive policy context in England and Wales that constrains their work. There is therefore a very big set of tasks ahead. Our purpose in this section and the next, in view of the pedagogical implications of the understandings offered above, is to pose some questions for teacher education and teacher development.

As noted at the beginning of this article, learning is the central business of schooling. Schools are social institutions set up in order to 'fast track' learning. This means what is taught in schools must have maximum transferability elsewhere. One of the main concerns of pedagogy is the application of principles governing this transfer. Yet in the examples presented above it is clear transfer is fraught with difficulties.

Teaching must respect the nature of learning. It becomes otherwise a sideshow in learners' lives. There are four aspects to the agenda here. We follow the New London Group (1996), an international consortium of academics researching literary pedagogies, in using four aspects of teaching under which to discuss the issues. These aspects of teaching are: *situated practice*; *overt instruction*; *critical framing*; and *transformed practice*. These aspects of teaching are interdependent, non-hierarchical and non-sequential in nature. Elements of each may be present in any one episode of teaching and one or another may be dominant at any one time. Taken together, they allow us to consider ways in which teaching needs to respond to the new understandings of learning we have discussed above.

Situated Practice

If learning is essentially situated or contextual, teaching must faithfully represent those contexts in schools. This is 'situated practice' (New London Group, 1996). Traditionally, didactic teaching has conveyed the results of

human enquiry, its products, propositions or 'facts', without initiating learners into the contexts and processes through which that learning has been achieved. It has transmitted 'propositional knowledge'. On the other hand, and equally traditionally, progressive teaching has offered free rein to children's interests without analysing precisely what thereby is learned and how it comes into use in their lives. The didactic classroom is an austere one; one authority has even called it 'monastic' (Oakeshott, 1971), from which all other worlds are banished. Communication and learning are pursued in predominantly symbolic and abstract forms. The progressive classroom by contrast celebrates experience and groupwork but all too often without explicit structure and purpose (Galton et al, 1980, 1999).

What is lacking at both ends of this didactic/progressive spectrum is a sense of learners' engagement in projects of importance for their flourishing as human beings, in short, for their education. Situated practice calls for the modelling in classrooms of the contexts in which 'real-life' learning is achieved.

The challenge for teachers here is to construct learning environments that model the contexts in which original human enquiry is conducted and learning achieved (Bruner, 1977). In situated practice learners become immersed in the kinds of social situations in which learning is achieved. Their learning is meaningful because it is fully related to the context in which it is produced.

Overt Instruction

The second aspect to the development of teaching concerns the systematic improvement of the didactic process. Overt instruction has a legitimate place in any pedagogy. To be efficient, however, it must make explicit the essential structures of its subject matter, minimising the tendency for extraneous 'noise' to interfere with the key symbols or ideas and their relation inside a coherent way of understanding and acting in the world. The acquisition of these latter symbols or ideas is what makes transfer possible (Bruner, in Kalantzis & Cope, 2000).

Traditionally, teaching has depended upon overt instruction at the cost of embedded, participative, socially situated learning. Progressive teaching on the other hand has tended towards the experiential, the situated and the social dimensions of learning often at the cost of appropriate use of explicit instruction. The issue for teaching is to find the fulcrum between these opposing perspectives. Learning is related to context but overt instruction can make explicit the abstractions that empower transfer.

The pedagogic theory in the argument so far is thus:

- To the degree that learning is context-bound, it is necessary for teachers to embed learning in real-life, or simulated real-life, experiences. In other words, teachers must draw on lived experience of pupils in order to make learning meaningful.

- To the degree that learning is *not* context-bound, explicit teaching of abstractions is applicable. In other words, it is necessary for teachers to extract from the contexts of practice the general structures and principles that can apply elsewhere.

However, while these statements express the fundamentals of a theory of instruction, they are hardly adequate as a theory of pedagogy. For pedagogy must also account for the *educational* value of the teaching process. There are educational problems with both situated practice and overt instruction. One problem for situated practice is that of efficiency. There can never be sufficient time and resources to permit a faithful recreation of all the relevant contexts of the history of human achievement. 'Teaching by telling' (overt instruction) clearly has its place to the extent that verbal interventions can be meaningful. Similarly, a technical problem for overt instruction lies in the identification of the abstractions available from any given learning in context.

These problems though formidable are in principle soluble. Still larger issues remain on the pedagogic agenda, however. Principal among the educational problems arising for situated practice is that it works against the *critique* of what is learned. It may be argued that education is essentially about self-awareness and self-critique. If this is so, a pedagogy that confines itself to immersing students in one world-view, thereby limiting awareness and critique of its historical, cultural, political or ideological dimensions, will be educationally flawed. In learning a language, for example, one is not at the same time learning to become conscious of the deeper assumptions built into its structure. On the contrary, the learner is assimilating, at least for the time being, the view of the world encapsulated in the language itself. This limitation is serious in a globalised world of multiple literacies and multiple cultures; a world whose very survival may depend upon sufficient understanding of the idea that no one world-view can claim hegemony over all others. It is for this sort of reason that 'critical framing' is a necessary feature of pedagogy.

Critical Framing

This third component in the model of pedagogy involves pupils standing back from what they are studying and viewing it critically in relation to its context. As pupils reflect on how their own understandings sit within the wider world of meaning making, they begin to engage with alternative perspectives. What do the different components of learning, whether achieved through situated learning or overt instruction, add up to in the context of the larger understanding of oneself that is the aim of education? Peters (1966) argued that 'cognitive perspective' is the essential ingredient in any educational project; without some overarching view of things teaching can achieve learning outcomes aplenty but to no *educational* effect. This is what critical framing drives at; there are many things one can learn but they only become educative

when they integrate to become part of a larger understanding, a larger world of meaning.

Any educationally defensible theory of pedagogy must show how situated practice and overt instruction are to be complemented by critical framing. What aspects of the teaching offered raise fundamental, critical questions concerning the value of what is learned?

It is not of course suggested that responses to this sort of question will be the subject of separate 'lessons' or the province of any one subject or teaching approach, whether situated or overt. It may well be that critical framing is to be achieved as much in the 'how' of teaching as in the 'what' and as a result of a general spirit of reflection inherent across the whole curriculum. It may equally well be that critical framing can result from some particularly catalytic situated practice, for example from in-school democratic processes like school councils; or that overt instruction in the form of Socratic dialogues may do the trick. These are contingent, practical matters and not issues to be resolved a priori, from first principles. All the same, what must be held on to is the principle that critical framing is an indispensable aspect of pedagogy and reasonable measures must be taken to promote it.

Transformed Practice

Enabling pupils to put what has been learned to work in new situations is an important part of any pedagogy. It is this that helps pupils to develop an ability to act in novel situations on the basis of their understanding and to adapt or transform knowledge already acquired to solve hitherto unmet problems. Transformed practice, the fourth component of our pedagogic model, is about teachers providing pupils with just such opportunities, opportunities that will ultimately help them put knowledge gained in school to work in more worldly settings. In England and Wales severe constraints exist, imposed on teachers by central government in the form of highly prescriptive policies for the teaching of literacy and numeracy. These restrict the possibilities for transformed practice.

However, becoming involved in the more 'creative' aspects of classroom life, such as producing and editing a class magazine, redesigning the classroom layout and their equivalent in the 'everyday curriculum', are examples of embryonic ways in which pupils are being engaged in making flexible use of knowledge gained elsewhere. The expectation is that pupils will bring their own interpretations to the problem and in the process transform their understandings. In other words, rising to challenges of this sort not only demands the application of knowledge gained in one setting to new situations and novel problems; at its best, it leads to deepening and broadening understandings, and with this come new insights and transformed knowledge and practices.

Transfer, taking a meaning to another real-world context, and making it work, is the first major feature of transformed practice. The New London

Group adds 'voice'. This means addressing one's own particular interests in a social and political environment where pluralism may be expected. There will be accompanying competition and strife. The demand on pedagogy here seems to be that it prepares learners to be active in advancing and safeguarding their own interests in the world while recognising that there are other competing and legitimate interests also to accommodate. The curriculum must empower learners to be active. This is a demand on the curriculum contrasting with other legitimate demands promoting socialisation and accommodation to existing power structures.

This critical aspect is developed by the New London Group under the heading '*intertextuality and hybridity*'. This entails making the connection between different cultures and recognising the influences of cultures one upon another. This demand on pedagogy and the curriculum implicates teachers in a wide, indeed global, analysis of the setting for their work.

Finally, the New London Group identifies *meaning making* as 'designing that changes the designer'. Learning becomes transformation, with the pupil becoming a new person by being able to do new things in new environments.

Transformed practice carries us far from the classroom, yet more deeply into it. For it can be shown that each and every lesson takes place in a context that is part of a much larger whole. In today's globalised world, failure to be aware of this makes teaching both less interesting and more risky.

Teacher Development

It will be apparent from all of our discussion that we believe there is much hard work for teachers and those who support them to do in developing the arts of teaching. The discussion has intimated that a continuous balance has to be found between *situated practice* and *overt instruction*. No formula can be stipulated in advance for how this balance is to be found; it is a matter, like so much else in education, of principled judgement. Moreover, *critical framing* and *transformed practice* have irrefutable claims upon teaching; teaching must work towards the critical response, the real-life meaningfulness and the global connectedness of what is learned.

There are many obstacles in the way of teachers even beginning to take up such an agenda. The dulling effect of the daily grind is one factor. Much teaching is understandably routine, habitual and unreflective. This is to a degree an inevitable feature of any settled practice. But there are also ingrained assumptions and traditions that stand in the way of imaginative change. For example, the deeply held assumption that teacher is always right, though laughable in itself, has a daily expression in many classrooms. This is no criticism of teachers' individual integrity as professionals. Rather, the reasons for this sort of thing sit deeply within the culture of schools and the traditions of teaching within them. Only through probably painful and probably slow-moving educational processes do such things change. By considering accepted, habitual practices in relation to their effect on pupils' learning there is a chance

that change will be principled and lasting. The close consideration of how teaching works from deeper assumptions and thereby deeply affects pupils' learning ought to be at the heart of teacher development programmes.

In addition, there are many external pressures on teachers and schools, pressures which all push towards standardised forms of teaching. The result of all these pressures is all too often to minimise the part to be played by teachers' *in situ* judgement. The most graphic example in the current scene in England and Wales is in the National Literacy and National Numeracy Strategies. Here detailed prescription of teaching methods alongside detailed prescription of content militate against the teachers' own deliberation on the quality of learning and against their ability to reflect at a deeper level on teaching approaches and their appropriateness. So instead of teaching being governed by the quality of the learning experience it provides, both teachers and pupils are swept along by routines built into required teaching strategies. The complexity of learning is stripped away and instead is taken as a given process of transmission. An undue reliance on overt instruction results and the 'delivery' metaphor predominates.

A well-founded development programme for teachers in England and Wales would certainly entail a critical look at the reasons for the move towards central prescription over the past quarter-century. What are the perceived educational problems? What are the criticisms of the teaching force? How far have political solutions (centralised curricula, standardised assessment methods, ranking of schools, inspection methodologies, etc.) addressed the issues? What should be the professionals' response to all this? We suggest that there is indeed a set of political questions here and that they need to be addressed in appropriate ways. Our argument in this article, however, has stressed the need for learning to be placed at the centre of teachers' work and to be placed at the centre of any development programme for them.

The development of practice requires a cutting edge of problem solving and pragmatic experimentation in the schools themselves. Externally imposed change is unlikely to be informed by well-developed theoretical principles. Nor is it likely to benefit from the automatic commitment of the teachers. Commitment is to be obtained mainly by granting teachers the time and space to engage authentically with their tasks as educators. The time is surely near for a thorough re-evaluation of the role of teachers in their own development. If teaching is essentially not something that can be 'done to' pupils, teacher development is not something that can be 'done to' teachers. Both require by definition the informed and voluntary commitment of the person. We suggest that teachers are more likely to be motivated intrinsically by putting learning at the centre of their agenda than by extrinsically rewarding or penalising them according to some superficial measure of 'results' such as those provided by nationally standardised pupil assessment regimes or crude school inspection data.

For such reasons, the collective experience of the teaching profession, an experience accumulated through the generations and sifted into commonly

held notions of 'good practice', needs to be harnessed to theoretical ideas more secure than 'common sense' provides. Teachers need the time, space and resources to consider how their pedagogy works. There is in our view no substitute for critical enquiry in the educational setting itself. While psychological, philosophical and other theory can provide potential frameworks for teachers' own analyses of their work, it is only in the practical context that the issues come alive. Teacher development must place the analysis of practice as it affects learning at the top of the agenda.

Putting learning in the forefront means also putting one's own learning under inspection. In this article we have put forward some basic concepts but we would be sorry to think that they were to be applied only to children. Teachers, it must be hoped, are also learners who will go on learning about education throughout their professional lives. How do teachers learn? So far as their professional work is concerned it is possible to say that teachers learn about their subjects, what they teach, and about the educational processes in which they are involved, including especially about learning itself, broadly how they teach. Learning on both these fronts is clearly central to professional development.

Concerning curriculum content, it is relevant to ask how far teachers are enabled to keep abreast of rapidly expanding knowledge in their own subject areas. This problem takes a still more difficult form in primary education, where teachers tend to teach wide ranges of subjects. All the same, all knowledge grows at an alarming rate, even within subjects the layperson might think relatively narrow like scientific specialisms or mathematics. A response to this agonising issue is that while knowledge grows greatly in terms of information, its conceptual base is more stable. That is, the key ways of understanding and the techniques of enquiry that characterise a subject remain relatively stable over time and change only as 'paradigm shifts' (Kuhn, 1970). Overt instruction deals with this conceptual base, in terms of which information is generated. It may be, then, that teaching itself is a discipline that causes one constantly to isolate the essential structures of knowledge so that its surface features become intelligible. If there is any truth in this view, teachers need to be in close touch with those working at the forefront of knowledge production. This may not mean direct personal contact of course. But teacher development, in its concern for the quality of learning, must surely see to it that teachers are in touch, for example, in curriculum development teams. How far the established machineries for National Curriculum development meet such a criterion is a matter for another discussion in another place.

Concerning teaching methods, we may observe that teachers are here of all places most obviously members of 'communities of practice'. If, say, history teachers are members of the community of practice of historians, they are more obviously members of the community of practice of history teachers. Of course, how these two communities interact is a crucial issue, as noted above, beyond our present focus. What is to the point educationally though is that

communities of educational practice need above all to be self-critical, reflective communities. Again, this does not mean reflection as remote theoretical discussion but more what Schön (1987) calls 'reflection-in-action'. Teacher development needs to reflect this priority by valuing school-based enquiry and qualitative, critical accounts of teaching practice.

Concluding Remarks

How can teachers become better teachers? The question is deceptively simple. It would be all too easy to suggest ways of making them better technicians and implementers of the educational status quo. Teachers themselves naturally welcome all the help they can get in coping with the seemingly ever-increasing demands upon them. And it is true that teachers do need to be supported by all available means to deal with every bureaucratic demand placed upon them, even while we contest those demands in other arenas.

Our contention here has been that learning must be at the centre of teacher education, an indispensable element in any professionally responsible programme. We argue that by giving their attention to the nature of learning, teachers can improve their practice and thereby the quality of learners' experience. It follows from this that learning must be at the centre of teacher development. This means that teachers must reflect on their practice. The article has offered a way forward in terms of a conceptual framework for this reflection.

But teacher development can only take place within its own social and political context. In the article this has been shown to present considerable practical difficulties including the boundaries set by the current orthodoxies. These include the centralised curriculum and its assessment, the wider competitive environment and the demands it makes for instant results, extrinsic motivation such as performance-related pay and other such employment conditions.

All of that said, the fundamental constraints on teacher development are surely those set by our own limited capacity to envisage alternatives to what is taken for granted. Those who support teachers as well as teachers themselves seek the freed imagination, to see alternatives to conventional assumptions. Learning theory and its implications for pedagogy may be a good place to look.

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Notes

[1] We are indebted to an anonymous referee for this subtle point.

[2] We are indebted to an anonymous referee for this important philosophical point.

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