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# Learning How to Learn and Assessment for Learning: a theoretical inquiry

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## Learning How to Learn and Assessment for Learning: a theoretical inquiry

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This paper stems from the ESRC TLRP Learning How to Learn-in Classrooms, Schools and Networks Project, and explores how Assessment for Learning (AfL) relates, conceptually, to learning how to learn (LHTL). The term LHTL was intended to draw attention to a primary focus on learning practices, and we have related the processes of AfL to LHTL. A third and more common term 'learning to learn' (L2L) has recently come to the fore in the teaching and learning practices of schools. This paper explores the relationships between all three, in three main sections. First, the meaning of the concept LHTL is explored. This is approached initially using the analysis of Dearden, followed by an exploration of the links with other research in the literature on learning. This exploration examines the construct L2L and argues against its implication that there is a distinct capacity with generality of application across all forms of learning. The second section considers the ways in which teachers and schools might give more priority to pupils' capacity to LHTL, drawing on some research projects that demonstrate improved pupil outcomes, and hence support the rationale for the emphasis on learning practices. The third section examines the problem of assessing LHTL. An attempt to construct an instrument to assess LHTL did not succeed, but did serve to expose both the practical and the theoretical problems in characterizing pupils as having 'learned how to learn'. The overall conclusion is that emphasis should be placed on practices that have potential to promote autonomy in learning, a common theme in the literature at all levels, and one reflected in our empirical work on teachers' attitudes and practices.

Keywords: Assessment; Learning autonomy; Learning How to Learn; Learning practices; Strategies

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#### Introduction

The choice of the phrase 'Learning How to Learn', rather than Learning to Learn, in the title of our Project was deliberate. It drew attention to our primary interest in the development of pupils' learning *practices*—the 'how to' of learning. The specific aims of the Project also reflected this (see the Introduction to this special issue). This focus is consistent with the Project's starting point in 'Assessment for Learning': a label for a group of practices that have been shown to help pupils to improve their learning (Black & Wiliam, 1998; Black *et al.*, 2003; Wiliam *et al.*, 2004). However, a clear understanding of the meaning of Learning How to Learn (LHTL) was not something with which the Project started. Rather, as indicated by our first aim 'to develop and extend recent work on Assessment for Learning into a model of learning how to learn', such a conceptualization was developed as a Project outcome. The significance of the 'how to' in the Project's title arose from our interest in the development, by teachers and pupils, of valuable learning practices and in the implications for teaching and learning of such development.

As Marshall and Drummond (2006) argue, teachers' conceptions of learning are central to understanding and enacting these practices. This requires us, in turn, to try to articulate what we understand from learning theory about learning how to learn and how Assessment for Learning (AfL) relates to it. We found LHTL to be a slippery and contested concept with many subtly different meanings. The same is true of Learning to Learn (L2L).<sup>1</sup> What we comment on below are those ideas from philosophy, psychology, sociocultural theory and educational research which have relevance to our work. We are mindful, however, that, in an article of this length, we will not do justice to the various perspectives involved.

#### The importance and meaning of Learning How to Learn (LHTL)

The concept of learning to learn has recently become prominent in the discourses of educational policy and practice because of its perceived potential to underpin lifelong learning. The rationale for the Learning How to Learn Project, given in the proposal to the ESRC Teaching and Learning Research Programme, began by stating that: 'Lifelong learning is a pervasive concept in knowledge economies'. As knowledge now advances rapidly, raising educational standards means that at school pupils need not only to learn but also, as the phrase 'lifelong learning' implies, to develop those capacities and habits that will enable them to continue learning throughout their adult life. Similar perceptions provide a rationale for other current initiatives such as the Campaign for Learning's Learning to Learn Project,<sup>2</sup> an ESRC seminar series on Learning to Learn coordinated by researchers at Newcastle University (see Moseley *et al.*, 2005), and the Assessing Learning to Learn Project in Finland (Hautamäki *et al.*, 2002). It is also the stimulus for the determination in 2005 of the European Commission to develop a European Indicator for learning to learn skills.<sup>3</sup>

However, whilst it is undeniable that a focus on improving learning practices in schools may be beneficial for pupils, in these initiatives there is little discussion of how

actions on learning to learn in school relate to learning in later life. This is essentially an empirical question but, before such research can proceed, it is essential that the conceptual basis be clarified. We argue below that such clarification highlights the importance of promoting pupil autonomy.

Concern for learning to learn led David Miliband, in 2004, then Minister for School Standards in England, to set up a Learning Working Party. This was chaired by David Hargreaves and its aim was to 'clarify the concept of learning to learn' and to elucidate the link to learning more generally, explore its components, advise on how evidence might be evaluated and progression demonstrated, and how good practice might be identified. The outcome was a DEMOS pamphlet (2005) and a Specialist Schools Trust pamphlet (Hargreaves, 2005). Both of these support in general terms the approach we take in this paper.

A central feature of our argument is the need to distinguish between Learning to Learn and Learning How to Learn. Interest in, and debate about, learning (how) to learn, is not new. Dearden, around 40 years ago, discussed definitions of the various terms in use. He put forward the idea that:

Learning how to learn is at one stage further removed from any direct specific content of learning. It might therefore reasonably be called 'second-order learning'. There could be many such comparably second-order activities, such as deliberating how to deliberate, investigating how to investigate, thinking out how to think things out, and so on. (Dearden, 1976, p. 70)

He then explored the possibility that LHTL might be a 'super-powerful unitary skill employable in all first-order learning whatsoever' (p. 70). This view, implicit in the common invocation of 'Learning to Learn', Dearden rejects on the grounds of 'the enormously divergent variety of first-order learning'. This echoes the work of contemporary learning theorists who discuss the learning of writing, reading and numeracy as separate and distinct processes (see Wood, 1998). Such work supports Dearden's conclusion (1976, p. 70) that LHTL marks out 'a family of structures of second-order learning having wide first-order application', a conclusion which distinguishes LHTL from the meaning frequently given to L2L.

However, this begs the question of the meaning of 'second-order learning'. The notion of a family is central to Dearden's argument. Some members of this family may be less desirable than others; for example, anything that encourages rote learning without attempting understanding. Other members may be more desirable, and this leads Dearden to point out that giving salience to LHTL usually leads on to a list that privileges certain practices. Dearden also recognized the problem of generalizability, in that the diversity of learning tasks raises the problem of whether the learning processes are generic or context specific: the notion of a family could accommodate either view.

Although he considers a number of definitions and ideas of LHTL, Dearden's leading candidate for priority is 'learning autonomy'. He argues not merely that this deserves pride of place in the LHTL family, but rather that emphasis on LHTL is justified as an educational policy because of its value for promoting learning autonomy, the latter being seen as above LHTL in the hierarchy of aims. This links to one of the outcomes of our research on teachers' views of Assessment for Learning, for they see promoting learning autonomy as both important and difficult (James & Pedder, under review). We shall argue below that learning autonomy is a common feature in the LHTL practices which we have explored.

Dearden's argument leaves open the question of how in practice LHTL may be developed although, as we will show later, there is plenty of robust advice from a range of research studies. The view we develop here about the concept of LHTL leads to a concern for ways of working that might improve learning, what we call 'learning practices', rather than to an exclusive focus on the psychological processes which might underpin such practices. However, first, it is worth looking at some of the evidence from learning theory that might give us an insight into some of the processes and the extent to which they allow us to talk about a construct of 'learning to learn' (L2L).

#### Reflections on learning theory

Surprisingly, there is little discussion of what the term 'learning to learn' means in the contemporary literature on learning.<sup>4</sup> A contemporary definition from Finland defines 'learning to learn' thus:

The ability and willingness to adapt to novel tasks, activating one's commitment to thinking and the perspective of hope by means of maintaining one's cognitive and affective selfregulation in and of learning action. (Hautamäki *et al.*, 2002, p. 38)

This definition conflates several different issues. First, it appears to set out 'learning to learn' as a distinct 'ability', seeing it as something that can be used in different situations, implying a notion of a general-purpose ability. Second, it also incorporates affective elements such as 'willingness' and 'hope'. Third, it adds in the idea of 'self-regulation'. Fourth, it mentions only the individual learner ignoring social or collaborative dimensions of learning. Fifth, the authors imply, elsewhere, in proposing an instrument to assess L2L, that learning to learn requires conscious attention. Below, we examine the extent to which these ideas are grounded in existing research.

#### 'Learning to learn' or 'learning'?

The question addressed here can only have meaning within a constructivist view of learning, for in any behaviourist view new learning, where it happens, is response to stimulus which is no more than automatic.

In most discussions of learning, problem solving is seen as central to learning. It is both part of the process of learning and of demonstration that it has taken place. Some, in the situated learning tradition, talk of problem solving as 'facing dilemmas' that, when they are resolved, result in learning (Lave, 1988). The focus of the learner is on solving problems; the learning that results is viewed from this perspective as merely incidental.

By contrast, Bereiter and Scardamalia (1989, pp. 364-366) discuss 'learning as problem solving', where the goal is to learn and only incidentally to solve a problem. This is the situation in most school situations; for example, science teachers typically set problems so that pupils can learn the concepts required for the solution. Bereiter and Scardamalia extend this discussion to argue that pupils will not necessarily learn such concepts unless they are trying to learn; they must invest effort into solving the 'given' problem, and transfer their learning to those unassigned problems associated with their understanding. These writers use the idea of *intentional learning* to characterize the situation where pupils are trying to learn and teachers are helping them to do this. This contrasts with the situation in much of schooling where teachers and pupils focus on 'doing tasks' rather than learning. Here, the short-term goal of, say, producing a summary, dominates rather than the long-term one of, say, integrating information in reading and writing. Even where the teacher is emphasizing learning, it may be that the pupils' views of learning render this ineffective. Thus pupils might solve physics problems by substituting numbers in a formula without even trying to understand the concepts represented by the terms of the formula. As Doyle and Ponder (1977) demonstrated, a 'reduction' of the goal can be a coping strategy for pupils, with which teachers often concur because it lessens the perceived risk of failure to both.

The repertoire of strategies that the intentional learner employs includes the kinds of things considered as part of the learning process. For example, cognitive psychologists, discussing the learning of young children, show how these learners need to be taught how to rehearse and structure learning so that they can recall objects (Wood, 1998). Similarly, sociocultural theorists talk of adults helping learners by structuring tasks so they can be undertaken successfully—what they refer to as 'metacognitive support' (Rogoff, 1990, p. 94). Some of the strategies used by intentional learners are of this higher-order kind. This therefore leads us to the question of whether this is so for LHTL.

#### Learning to learn as a higher-order entity?

In so far as learning theorists recognize distinct second-order learning, they use the idea of *metacognition*, which refers to thinking about learning. Some distinguish two elements (Brown, 1981; Phye, 1997):<sup>5</sup>

- Knowledge about cognition, i.e., knowing what you know and don't know (such as relating what you are learning to what you already know, realizing when you understand something, or not).
- Self-regulating mechanisms, i.e., planning what to do next, checking the outcomes of strategies employed, and evaluating and revising strategies.

Successful learners can monitor their own understanding in these ways and being able to do this distinguishes, for example, weaker from stronger readers, younger from older children, poor from good memorizers, and also people with greater from those with lesser knowledge of a topic being studied (Resnick, 1989, p. 9).<sup>6</sup>

In reviewing frameworks of thinking skills, Moseley *et al.* (2005) regard metacognition as an important feature of those frameworks that are all embracing. In formulating an integrated framework for understanding thinking and learning, the highest order are what they refer to as reflective thinking and strategic management of thinking.

However, although there is some higher-order entity that might be important to L2L, this cannot be seen in isolation from the more general features of learning. Thus, when Bereiter and Scardamalia (1989) discuss intentional learning, they see the need to go beyond the development of learning or study skills and invoke the need for the learners to take responsibility, in the sense of consciously choosing the strategy and direction, for their own learning, and to involve peers in so doing. This implies taking an approach to L2L, not so much as a separate entity, but within a context that incorporates general principles of effective learning.

Resnick (1989) points out that successful learners *try* to learn and are conscious of the strategies they employ, i.e., they are intentional learners. A central feature of intentionality is that learners take responsibility for their learning. This is usually referred to as 'agency', and acknowledges that learning is a knowledge construction process that learners have to undertake for themselves; you can support learners but you cannot do the learning for them (Bruner, 1996). As they become more skilled in a topic or area, levels of support can be withdrawn; this is equally true for higher-level 'strategic thinking and reflection' as it is for the lower-level processes. Often it is the teacher who enacts these higher-level skills by, for example, deciding the main ideas, framing questions to direct attention, evaluating and interpreting texts and so on. But pupils also need to be engaged at this higher level by being given opportunities to think strategically and reflect on their learning.

This evidence does not point to a distinct and separate L2L ability. The strong message from this discussion, and that relating to both the distinction of 'learning' from 'learning to learn', and the extent to which learning to learn is a higher-order entity, is that a separation of learning to learn from the learning process itself is both hard to justify and unproductive. We see the need for a range of elements of learning to be part of any approach to L2L. This does not imply that we should discourage children from thinking about how they learn, and about the process of learning, but rather that we should not try to separate it out as a particular ability or skill.

#### Conscious or unconscious learning?

Although we have emphasized 'intentional learning', it can be argued that LHTL may be acquired and deployed either unconsciously or consciously. In learning, there may be no 'explicit' awareness, although there may be 'tacit' awareness, suggesting a marginal consciousness that may or may not be brought into focus on demand. As Wood (1998) puts it: 'Both the reader and the writer ... are usually unaware of the nature of their expertise' (p. 208).

Consciously learnt expertise can become unconscious, and indeed must do so to reduce the reliance on working memory. As Pellegrino *et al.* (2001) express it:

Once the components of the skill are well-represented in long-term memory, the heavy reliance on working memory and the problems associated with its limited capacity can be by-passed. As a consequence, exercise of the skill can become fluent and then automatic. (Pellegrino *et al.*, 2001, p.85)

Many skills, particularly those learnt in early childhood, are learnt unconsciously in social and practical contexts. These are often learnt by imitation, are embedded in experience and action, are learnt in social and community action and discourse, and are acquired to meet a desire to satisfy felt needs. It can follow that their deployment is limited to the particular contexts of need in which they were developed.

All of this could be seen as 'natural' learning. Schools have to promote learning that is often different and unfamiliar from those practices that pupils bring with them into the classroom, whilst also introducing knowledge and understanding that does not stem from everyday life and which may be conceptually complex. For the more sophisticated skills that schools ought to develop, their pupils often experience no other need than their desire to conform in 'doing school', i.e., merely to do what the teacher wants. Other obstacles are that in many cases effective learning practices have to be developed consciously, that pupils' experiences of relevant contexts is weak, that involvement in social/communal action and discourse is frequently absent, and that pupils may have no interest in what they are invited to learn.

#### The social and collaborative dimension of learning

It is important not to see learning only in terms of individual minds, but also to recognize the importance of the social element in learning (drawing on Vygotsky and the like). Even such processes as metacognition are developed through collaborative activities. Wood (1998) makes the point that self-regulation is learned through discourse and social interaction, and, like Rogoff (1990), sees adult support serving to mediate metacognition. Classroom approaches, such as 'reciprocal teaching', are ways pupils can internalize self-regulatory activities (Brown & Campione, 1990).

Collaboration is an important element of the learning process because peer scaffolding is also important to learning and, as Shayer (2003) argues, peer-to-peer mediation requires of teachers a different skill from normal instruction. In another TLRP Project (*SPRinG*), the Project team argue that effective group interactions encourage pupils to think about their understanding and that this in turn requires social, communication and problem-solving skills (to be developed in that order).<sup>7</sup> Some of the problem-solving strategies involve being able to be autonomous and plan and organize, work out a timescale, brainstorm, and to decide what needs to be done collectively and individually. Teachers encourage pupils to reflect on the skills they are developing and, through the modelling of reflection, to take responsibility for their own learning. Such an approach is not just to improve individual pupils' reflection, but for them to become 'meta-cognitively wise' about group working.

Here, attention is drawn to the importance of both the way collaboration helps learning—'collaborating to learn'—and of 'learning to collaborate'. This is a helpful reminder that metacognition, and its centrality to LHTL, needs to be understood interpersonally as a collaborative process between learners, and intrapersonally, at the level of the individual learner. It follows that considering L2L in isolation from other aspects of learning is likely to produce a narrow conception and might lead to a limited focus on study skills, and to neglect of fundamental changes that may be needed to the learning environment.

In summary, pupils' learning is more productive if it is reflective, intentional, and collaborative, practices which may not come naturally but which can be taught and can lead to pupils taking responsibility for their learning. Within this collection, it is hard to locate a clear boundary between 'learning to learn' and 'learning' itself, a difficulty which reinforces for us our interest in LHTL conceptualized as *learning practices*. It also returns us to the issue of pupils' autonomy.

#### Development of effective learning practices (LHTL)

A strategy to help schools achieve the aim of helping pupils become more effective as learners should start from established understanding of how children learn and of the skills and practices that they may already possess when they enter school. This principle is contravened when, for example, a teacher, teaching to the test, might ask pupils to memorize decontextualized and abstract ideas. Such an approach, by emphasizing extrinsic success on 'performance tasks', gives little support for the development of genuine understanding and risks damaging good habits of learning.

In facing the agenda for choice, about what to teach and in what order, some of the more elemental skills would have to be given priority. Indeed they already are, at the infant and junior stages, in that the focus is on such basics as oracy, reading and writing skills. When it is necessary to move to the diversity of the special disciplines of secondary education, there is additional need both for the subject knowledge that is specific to each discipline, and for skills which might help enrich these sophisticated levels of learning.

Facing the choices that all of this implies, schools vary in their responses. Some may take responsibility for developing their own strategic responses. Others may follow the wave of the English Government initiatives (the Key Stage 3 Initiative in Teaching and Learning, and the Primary National Strategy), so putting responsibility on the shoulders of those designing these initiatives. From either perspective, a key premise underpinning school decision-making should be the need for innovations to be developed and validated on the basis of evidence that they actually raise standards of achievement. There are several examples of such innovations: three will be considered briefly.

#### Evidence of effective learning practices

The first is the cognitive acceleration work associated with Shayer (1999). This approach implements a scheme of specially designed lesson formats that involve pupils in responding to experiences that challenge their ways of reasoning and thereby developing a set of reasoning skills. The work is conducted through inter-pupil

discussions, so the social skills of learning in a community are also used and developed. The evidence for the success of two such schemes, in the contexts of science and of mathematics classrooms respectively, shows that it leads to subsequent and very significant gains in GCSE grades across many school subjects. Although this evidence is not in question, some of the theoretical underpinning of the work has been the subject of controversy; nevertheless, it is grounded in a clear framework of learning<sup>8</sup> and many schools adopt this approach because of the evidence from the results.

A second example is the work on 'Talk Lessons' developed by Neil Mercer and colleagues (see Mercer, 2000, pp. 149-159). The core activities here are group tasks in which pupils practise ways of collaborating in discussion, to develop reasoning and problem-solving. However, a second and prior component is lessons by the teacher designed to raise pupils' awareness of how they talk together and how language is used to develop reasoning in tackling a problem. The talk is governed by a set of ground rules, concerning: offering supported opinions; questioning ideas; involving everybody; everybody accepting responsibility, these being required in order to support the development of self-awareness among pupils. This resonates with the 'meta-cognitively wise' idea in the TLRP SPRinG group work project noted earlier. Pupils who have engaged in the Talk Lessons Programme out-perform, in problemsolving tasks, comparable classes not so engaged (Mercer et al., 2004). The relevant element here is developing self-awareness to help pupils to learn more effectively in and from collaborative discussion. Early results from SPRinG<sup>9</sup> also indicate that involvement with the Project's group work practices had positive effects on pupils' academic progress in comparison with usual classroom practices.

The third example, the work now variously called formative assessment or Assessment for Learning (AfL), is different in character. As noted earlier, what emerged from a review of literature (Black & Wiliam, 1998) and from the King's, Oxfordshire, Medway Formative Assessment (KMOFAP) collaborative project with schools, was a collection of practices, which have been acceptable to teachers in part because they are seen as enrichment of their normal teaching (Black *et al.*, 2003), whilst also producing improved pupil performance on a variety of test instruments (Wiliam *et al.*, 2004). In consequence, the work has been both successful and influential, albeit with an initial approach that was diverse and pragmatic (but see Black & Wiliam, 2005). However, the success must have arisen because, whilst is was not explicitly designed in the light of theories of learning, the Project did promote good learning practices—the description of the work as a Trojan Horse reflects this characteristic.<sup>10</sup>

#### Assessment for learning and LHTL

While a full analysis of how Assessment for Learning supports LHTL is beyond the scope of this article, it is possible to show how it encourages some of the aspects of learning we have been discussing so far. For example, one AfL practice developed was the improvement of classroom discourse through encouraging teachers to frame their

questioning so that it explores key features of learning, and to encourage all pupils to contribute and share ideas whether or not they are confident that they are correct. The underlying principles are that conceptual change must evolve from the learner's pre-existent understanding, that the learner must be actively involved in the learning, and that such involvement ought to take place in social and community discourse. When a teacher has created a good climate to encourage this, then pupils themselves can ask questions of each other and the focus can move from the teacher to the pupils. Another practice calls for emphasis on giving comment-only feedback on written work, with the requirement that pupils respond to the comments by further work. This approach helps, alongside the enhancement of oral feedback, to stimulate teachers to be better at scaffolding their pupils' learning; it also shifts the perspectives of pupils away from a competitive ego-involvement towards task-involvement (Dweck, 2000) and thereby to focus on their learning-an expression of the intentionality discussed earlier. A third practice, the development of peer- and self-assessment, is a key to enhancing metacognition, self-direction, and, through peer discussions, the social dimension of learning. It also requires the learners to exercise a degree of autonomy from the teacher as *the* assessor and judge of quality. These practices contribute to shifts in conceptions of roles for both teachers and learners.

The AfL approach is more eclectic than the other two approaches discussed above. In contrast with the cognitive acceleration (CA) initiative, it does not target specific reasoning skills, although many of the practices in the set-piece lessons of CA have much in common with the formative practices of AfL. In a different way there is strong overlap with the Talk Lessons; these lessons could indeed be seen as a powerful way of strengthening the development of peer-assessment practices in enhancing pupils' capacity to learn. What was significant in the KMOFAP Project was that part way through the teachers involved asked the King's academic team supporting them to give them a seminar on learning theories, and took a lively interest when this was provided. Much the same happened subsequently in the Learning How to Learn Project and stimulated the early development of a 'theory' workshop on 'how people learn', which is downloadable from the Project's web site (www.learntolearn.ac.uk).

Whilst it is hardly possible to imagine a successful programme for developing LHTL that would have nothing in common with this collection of formative assessment practices, it is also impossible to assert that it is the optimum programme, or that it cannot be enriched or augmented by other innovations. Indeed, it might be profitable to explore the numerous research results relevant to classroom learning that might provide such enrichment.

#### Reflection on evidence

The discussion in the first main section of this paper reviewed the findings of a diverse variety of studies, most of which presented empirical evidence that new learning practices could produce enhancement of school learning. In this present section, we have presented three further studies which also show empirical evidence of learning gains, secured within the normal work of classrooms. Yet whilst they were diverse in their

theoretical or pragmatic origins all three aimed to develop methods that are not specific to particular learning tasks, with emphasis on what Dearden terms 'secondorder learning'.

These three studies support our earlier conclusion that a common characteristic of practices that improve learning is summed up by the term 'learning autonomy' and that this term expresses a central feature of LHTL. In saying this, it is not implied that 'learning autonomy' is a single unitary concept, but rather that the term best represents a variety of overlapping and effective learning practices. In particular, it implies that the learner can not only give meaning to the learning, but that she can also create new learning tools.

We recognize that many of the issues raised in this paper about L2L as a separate entity, and about the relationship between first-order/second-order constructs, general *vs.* domain specific learning, and issues related to assessment, have been previously rehearsed in relation to many of the meta-constructs within the psychology literature (see Schraw & Impara, 2000). This paper is distinctive in the context in which issues arise and in the particular theoretical direction we take. The emphasis is mainly developmental, because it starts from a concern with improving pedagogy, which translates into a concern with learning practices, which in turn produce movement from inter-personal experience to intrapersonal change. In this perspective, learning autonomy naturally emerges as a key criterion.

#### Can LHTL development be assessed?

Given our scepticism about the notion of a construct of L2L, separate from learning itself, our initial intention to construct an instrument to assess pupils' development in L2L or LHTL faced several obstacles. The attempt in the Finnish Project (Hautamäki *et al.*, 2002) resulted in a battery of 40 scales which correlated so closely to standard measures of scholastic achievement that the aggregated scores seemed to amount to no more than another measure of general intelligence.

Since pupils may claim to be working in a certain way whereas in practice they are not, so giving false positives, it seemed essential to base an assessment not on selfreport but on seeing how pupils tackle particular tasks. Such tasks would have to be novel so that pupils could not respond directly from earlier experience. However, if LHTL encompasses a range of skills and practices, any particular task can only call on a sub-set of these. Furthermore, if, say, metacognition were chosen, it would still be hard to choose one of the many different ways in which it might be operationalized.

Any such choice would involve a specific activity in a specific context, which raises the difficulty of generalizing across a range of school backgrounds. To avoid such difficulties would involve assessing several learning practices across several contexts, requiring long testing times leading to an instrument which schools could not use in normal practice.

Nevertheless, an attempt was made with a test based on what pupils will actually do in contexts unfamiliar to them. The instrument comprised two similar examples of a task. For the first, the teacher guided the pupils through the activity ending with a plenary discussion of it. For the second, attempted about a week after the first, the teacher gave some guidance so that the task was made clear, but gave no guidance about how to complete the task. What the pupils were asked to do was designed to provide evidence that learning was brought about during the task by appraising each pupil's work overall, including evidence of the way they expressed, in writing, their critical reflection on their work. Two examples, one on drawing and one on writing a set of instructions, were trialled with 79 pupils aged 5, 10, 13 and 15 years.

Many difficulties arose. Whilst two of the four teachers involved did find the work of value, and none expressed concern about the time needed for the activity, it was thought that to increase the length of the test to enhance validity would inhibit its use by schools.

Informal discussions with some pupils made it clear that there were many false negatives, and one teacher judged that the results for her pupils also included many false positives. Such effects might occur through superficial connections that the pupils might make between the two tasks, so that success in the second might not be evidence of having learned how to learn. The numbers of pupils who showed clear evidence that they had learned new learning practices were very small. Finally, the fact that any particular test exercise was seen by colleagues as idiosyncratic was evidence of the problems of generalizability, across activities and contexts, and of validity.

So, the attempt was abandoned. This does not establish that the task is impossible, but that it would be difficult to produce an instrument that is both valid and practicable. A better alternative might be to develop critical indicators to identify LHTL achievement during normal classroom work, and for teachers to use these in a running record of their pupils' work, over time and across a variety of contexts. In effect this is the approach that has been adopted within the Project for the analysis of video data of classroom practice. The items relating to classroom assessment practices in the Staff Questionnaire, which derive from existing research (see James & Pedder, under review), have also been used as the basis for analysis of the videos (see Marshall & Drummond, 2006). In this way it is possible to triangulate evidence of teachers' values, self-reports of practices and researchers' observations of practice.

#### Conclusions

The assumption made about LHTL in this Project is that it is best seen in terms of a collection of good learning practices. In selecting these practices, we have judged that the evidence from a variety of empirical and theoretical studies supports the view that emphasis should be placed on practices, in both individual and collaborative contexts, that seem to have potential to promote pupils' autonomy in learning. This would seem to be the most secure foundation for lifelong learning. We believe that further understanding and insight in L2L and LHTL is to be attained by engaging in development and research into a variety of such learning practices and into teachers' capacity to implement and support them. Insofar as teachers are also learners, and their schools can be described as learning organizations, we believe that these insights may be equally applicable to learning at these levels also.

However, two caveats have to be entered. This first concerns the generalizability of any LHTL practices. To say that LHTL describes a collection does not imply that any particular practices within that collection apply across all situations. For example, our experience of exploring with schools the AfL practices described above shows that teachers find them effective across a range of school subjects, and in primary and in secondary subject contexts, but that they need some adaptation for optimum effect in each. A rationale for reconciling these generic and subject specific features has yet to be developed.

A second caveat concerns pupils' motivation in relation to their interest in the subject matter involved. Apart from attention to the effect of different types of feedback on ego and task involvement, we have regarded this aspect as outside the scope of this paper. We do not thereby imply that it is unimportant.

#### Notes

- 1. Throughout this article, the initials L2L are used as an acronym for learning to learn, and LHTL for learning how to learn, the different meanings of which will become evident as the argument develops.
- 2. See www.campaignforlearning.org.uk/pdf/L2L/LearningWorkingGroup.pdf for a summary.
- See: www.iea.nl/fileadmin/user\_upload/administrative\_docs/46th\_GA/EU\_Lifelong\_Learning \_Policies.ppt#424,20,Learning to Learn skills.
- 4. For example, it is rarely found as a topic or in the index of books on learning.
- 5. Wood (1998), for example, only uses the term 'self-regulation' to cover these kinds of elements, drawing on Vygotsky and the idea of 'inner dialogue'.
- 6. This is explained by Feuerstein's idea of 'cultural deprivation' of some learners, who require enrichment; cited by Shayer (2003, p. 481).
- 7. The principles of group work can be found on the SPRinG web site: http://creict.homerton.cam.ac.uk/spring/princip.doc.
- 8. It has a strong Piagetian approach and emphasizes concrete preparation of pupils to understand the problem tackled, cognitive conflict to challenge thinking about the problem, metacognition to reflect on the problem-solving process and bridging from other examples to the context in question.
- 9. See the research briefing at: www.tlrp.org/pub/documents/BlatchfordRBFinal\_001.pdf.
- 10. The practices developed from this work have been turned into workshop materials for teachers by the LHTL Project team (see James *et al.*, 2006, and the associated web site www.learn-tolearn.ac.uk).

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