Handout 3.3 Designing challenging tasks for sustaining pupils' progress

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Teachers allocate tasks to children with the intention of promoting learning. Such classroom work (and homework of course) is expected over a period of time to sustain students' learning progress, to deepen their understanding and to equip them to apply their understanding to an ever-increasing range of settings. These intentions are exactly in line with what Ofsted inspectors look for in their classroom observations.

Unfortunately, inspectors often report that they do not find what they are looking for. On the contrary, they frequently report observing children doing work that is inappropriate to their sustained progress. It is difficult to say exactly how much classroom work is inappropriate. It seems unlikely that with 30 children in a class working across a wide curriculum even the best teachers will get every task just right for every child every day. That said I think it is safe to assume that the gap between this ideal and common practice is considerable. Some years ago I carried out research on the question of how far classroom work was pitched at the right level of challenge to sustain learning progress. I used the term 'match' to describe work that was just at the right level and 'mismatch' to describe work that was either too hard or too easy to the degree that learning progress was not possible. I found that 40% of the work in literacy and maths in key stages 1 and 2 was too easy for high-attaining children. With these tasks the youngsters were coasting. At the same time, and in the same classrooms, 40% of the work given to low attaining children was too difficult for them to the degree that it was making no contribution to their progress or understanding.

Clearly, mismatched work is very common and far too common for the liking of inspectors. The challenging question is how can we reduce the incidence of mismatched tasks and increase the incidence of appropriate work? The case studies show that this is no easy problem and we can anticipate no quick fix. In one perspective the problem lies in classroom cultures in which the metaphor of work leads to children and teachers assuming that attentive busyness means learning is taking place. A related problem is that I feel that we as teachers do not have a rich enough understanding of the relationship between classroom work and the learning it is assumed to promote. I suggest that there are several different learning processes involved as youngsters acquire the kinds of expertise we demand of them. Each of these processes calls for a different type of intellectual engagement and therefore requires teachers to design different kinds of challenging tasks.

In the following section I describe a typology or taxonomy of classroom tasks which is derived from our understanding of complex learning. I then go on to show how each type of learning calls for a different type of task challenge and task design.

Complex learning

We do not need to get into deep or abstract theory to see that the skills and competencies that children develop in school might start in very simple forms but very soon get absorbed into very complex forms of organised knowledge. In regard to writing, for example, the earliest stages can involve the laborious copying of letter shapes but these activities soon become automatic and then absorbed to become some small, taken-for-granted aspects of story writing.

Organised bodies of knowledge have been called 'schemas'. A fluent writer in key stage 2 might be said to have a schema for story writing. She knows what story writing entails and can bring her knowledge of letters, words, scribing, punctuation, structure, plot and specific content to bear on any nominated theme for a story.

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In developing this schema the learner has, in terms of complex learning theory, engaged in several different learning processes. There has been a gradual or incremental accumulation of all sorts of bits of knowledge and skill including, for example, shaping letters, knowledge of punctuation and of particular facts for the content of the story. There has been practice of individual skills in, for example, moving from the very slow copying of the letter 'a' to the fluent and automatic scripting of 'a' anywhere it is needed in the text. Such practice calls for lots of guided repetition.

Once knowledge or skill can be exercised with fluency the learner's facility is deepened by using it in different settings or contexts. As we build the 'story writing' schema of young writers we ask them to apply their corpus of skills and knowledge to an ever increasing range of topics. Of course in this way not only do they extend their depth of understanding, they also accumulate additional knowledge and engage in further practice.

As we have seen so far, there are three distinct but interacting processes involved in complex learning: accumulation, practice and application. But that is not the whole story. Sticking with the development of the 'story writing' schema we can see that the schema itself can develop beyond the addition of new elements of knowledge. An early schema might run to the plan for a story as 'beginning, middle and end' but the developing writer will learn that if it suits their purpose a story might well start at the end, or indeed, anywhere. In complex learning theory this is termed 'restructuring' (of the schema). We see restructuring most clearly in the change of theories (whether these be of scientists or historians, etc) as new evidence or new experience causes us to revise our point of view. Restructuring thus becomes a fourth distinct process in the advance of complex learning.

It must be emphasised that none of these processes is superior to the others. They are interlinked and feed off each other. In real life they generally proceed simultaneously. As we practise, say, to play a piece of music, we might learn new elements (accumulation) or be forced to rethink (restructure) our whole perspective on the piece. What is important to emphasise here is that there are distinct processes involved in complex learning and, as I will show later, they can involve different challenges for the learner. In this way they have different task design implications for the teacher.

There is one further process involved in complex learning, that of revision. It is a fact that learning can be lost or at least greatly diminished over time. The loss process seems to operate on a 'use it or lose it' basis. In everyday life we tend to use important schemas routinely but for a student working in a modern wide-ranging curriculum this is by no means the case. As a consequence there is a constant danger of learning loss and a related need for revision tasks. I have summarised the task types in the following table.

Task types
incremental/accumulation
practice
enrichment/application
restructuring/rethinking
revision

Implications for task design

It is important from the start for the teacher to decide what the learning intentions are for any work to be done. We will make the most of complex learning theory if the teacher then decides which learning

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processes described above are implicated. If new skills or concepts or facts are to be introduced then we are looking to design incremental tasks. If an established skill is to be improved we are looking to design practice tasks. If new work is to be introduced and its use applied then we are looking at a two-phase task involving incremental and application elements.

We can now take a closer look at what task design involves.

The purpose of an incremental/accumulation task is to add new knowledge or skill. This might involve, for example, new vocabulary, a new maths technique, or some new facts in science or history and so on. The challenge is to make the new material as vivid as possible and to have the learner work intellectually to link the new knowledge to their old knowledge. This is best done through compare and contrast exercises: 'have you seen anything like this before, how is this the same/different?'. When learning some new concept, such as triangles and their properties, it is a powerful learning process to consider what is not the case. When learning awkward spellings we can require the learner to be thoughtful about this 'odd' word. Do we know other words like this? Can we put them together as a 'family'? Can we see a pattern or rule working here? In summary the key challenge in incremental tasks is to make the learner intellectually active in linking new material to what they already know.

An incremental task is not challenging if it does not demand that the learner works thoughtfully to link old knowledge to new knowledge. Such a task can be too difficult if the learner has no relevant knowledge to start with in which case the new material is being broached too soon. Incremental tasks can be too easy if the learner is already familiar with the so-called 'new' knowledge.

The purpose of practice tasks is to move a new skill from being laborious to being slick and automatic. The key challenge is, in essence, time-based. Can the learner speed up the skill or recall of familiar material? This calls for practice against the clock. It also calls for thoughtful activity. The advantage of being slick with basic skills and knowledge is that it frees the mind for higher thought processes such as analysis or planning next steps. Challenging practice tasks call on the learner to speed up thoughtfully. For example, when learning new vocabulary in a foreign language a good practice task sets ever shorter time limits for recall, but it also expects the learner to identify words causing particular difficulty and to give them extra attention in order to build better connections between the language terms. In short, practice should not be mindless repetition.

A practice task can be too difficult if it expects a learner to speed up a skill when they do not have the basic skill in the first place. Many practice tasks are too easy because they do not require the learner to speed up the skill. Many practice tasks slow down the learner's performance because they require pedestrian recording techniques. For instance, learners do not get slicker using number bonds if they have to laboriously record all their work using pencil and paper.

The purpose of an application task is to deepen the learner's understanding of the basic processes or concepts and the contexts in which the knowledge/schema can be used. This is a major challenge to teachers everywhere. It is well known that many students are quite good at acquiring basic skills but much less good at using them in new settings. For example, most children are good at the four rules in maths when doing school 'sums' but run into difficulty when they meet real world problems involving maths. We know that there are several reasons why youngsters fail on application tasks. Some fail because they do not have the knowledge or skill they are expected to apply. Many fail on application tasks because while they have the basic skills and knowledge they do not see the relevance to the problem to hand. Yet others fail because while they have the skills and see

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their relevance they cannot see how to unpack the new problem. Finally, some fail on application tasks because they become over-anxious to the degree that they adopt avoidance strategies.

Application tasks are not as frequent as practice tasks in classrooms which is a concern because they are most important to the development of understanding. They are too difficult when they are pitched beyond a learner's knowledge and skill, where the learner lacks problem solving skills or where they cannot manage anxiety. They are too easy where a learner can do them as a matter of routine in which case an intended application task turns out to be a practice task.

The intention of a restructuring task is to provoke a learner into rethinking their point of view (or theory). For example, most children in Years 1 and 2 think that the volume of a fluid changes when it is poured into a container of a different shape (such as from a tall thin jar to a short fat jar; technically we say that they lack the concept of the conservation of volume). If we want to challenge their perspective and move them towards a concept of conservation it is necessary to challenge their thinking. A good way of doing this is to ask them to take a good look at the volume in the first jar and then get them to mark where they think it will come to in the second jar. The liquid can then be transferred to the second jar when a discussion should be held about the difference between the predicted and actual levels. It is not necessary that the discussion resolves the difference in the first instance. Rather it is necessary only that it provokes some thoughtful consideration.

More generally, restructuring tasks pose the following types of questions: what do we think of this situation (be it a science/geographic/historical/literature/values issue)? Does what we think fit all we know about this or do some facts not fit? How would we get more facts/examples? Are there other possible points of view? How do we get facts that sink a point of view? Can we get to a point of view that at least fits more facts?

The common setting where we might readily meet most of these processes at work is in detective stories and these can form a good practice context but we cannot assume that a detective's skill will transfer to the key areas of the curriculum such as science and the humanities.

Well-designed restructuring tasks are rare in classrooms. They are too easy where the answer (or received wisdom) is already well known at the outset. Again such tasks then become, at best, weak practice tasks. They are too difficult if the learner lacks knowledge and experience in the issues the task raises.

I have summarised the task/challenge descriptions in the table below.

Challenge ***Changes form as tasks change purpose***	
task	**challenge**
incremental/accumulation	link new to 'old'
practice	speed based; reflection
enrich/apply	promote active knowledge base • application skills • 'can-do' attitude
restructuring	hypothesis testing
revision	all of the above

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