

Chapter 1: Effective teachers and learners

Section 1: Research into effective teaching and learning

This section focuses on:

- 1.1 The relationship between teaching and learning;
- 1.2 Process and product variables;
- 1.3 Research into effective teaching;
- 1.4 What pupils think makes an effective teacher.

1.1 WHAT IS THE RELATIONSHIP BETWEEN TEACHING AND LEARNING?

Effective teaching leads to effective learning

‘Teaching and learning are two halves of one verb – nothing’s been taught till it’s been learned.’ This time-honoured observation is now something of a cliché, yet it remains true. Expressed, examined, and now quantified in ever more complex ways, the crucial linking of specific teaching practices and behaviours to learning outcomes for pupils is central to current thinking about what teachers do in the classroom. As John Bryson observes:

‘Students’ learning rather than teachers’ teaching is increasingly seen to be at the crux of the education process: the emphasis has moved from inputs to outcomes.’ (Bryson, 1998)

1.2 WHAT ARE PROCESS AND PRODUCT VARIABLES?



Optional Task

Make a list of the two kinds of variables. How can you incorporate both aspects into your teaching?

Academic	Affective
eg. number bonding	eg. increase self-esteem

There should, however, be **some** relationship between the inputs made by teachers and the progress of learners. There is a long research tradition of examining the link between what happens in classrooms and the learning outcomes for pupils. This has often been described in terms of the relationship between **process variables** and **product variables** (eg. Brophy and Good, 1986). The process variables – those things that teachers and learners do (discussed in some length later in this section) – include teachers’ enthusiasm, their instructional techniques, use of praise and how pupils involve themselves in the lesson. Chris Kyriacou (1997) identifies **product variables**, or important educational outcomes, as increasing the pupils’:

- knowledge and skills;
- interest in the subject or topic;
- intellectual motivation;
- academic self-confidence;
- autonomy;
- social development.

However, you can see that there is a problem with these educational outcomes – although the outcomes may all be desirable, they cannot all be measured easily. We can test **academic** or ‘cognitive’ variables more easily than **affective** or ‘non-cognitive’ variables. In recent years, what pupils learn has tended to be defined in terms of their performance in official tests and examinations.

Some would argue that the recent focus has been rather narrow, but the great strength of this concentration on measurable academic performance has been that it has enabled effectiveness to be measured within and across schools. The setting of targets for school improvement has consequently been made simpler. It is certainly true, however, that some of the other important but less easily measured ‘product variables’ can be neglected.

The linking of teaching and learning, and the measurement of effectiveness in terms of pupils’ assessed performance, have been central to successive governments’ attempts to raise educational standards. The relationship between **quality of teaching** and **quality of learning** is fundamental to the focus of school inspections.

‘Teaching is fundamental to the quality of education provided by the school and the main avenue through which the school contributes to pupils’ attainment, progress and attitudes. The effectiveness of teaching and the consequent rate, breadth, depth and consolidation of pupils’ learning are intrinsically connected.’

(OFSTED Handbook for Inspecting Schools, 1999)

Pupils can certainly learn many things outside school and without the aid of teachers – if you can’t programme that new video recorder or send a text message on a mobile phone, ask a passing 13-year-old – and prepare to be patronised! But the purpose of systematic teaching is to foster the learning of important skills, knowledge and attitudes which would otherwise not occur, or would happen less rapidly. In this sense **all** teaching should be about accelerating pupils’ learning. The litmus test of your, and any other individual’s, teaching is whether this happens.

1.3 WHAT RESEARCH INTO EFFECTIVE TEACHING MIGHT I READ?

It is useful for you to know what research has been done in this area. What follows is a brief discussion of some of the various aspects that have been looked into and some points for you to consider for your own teaching. There have always been attempts to identify and classify attributes of effective teachers. That individual teachers vary considerably in their effectiveness in the classroom has never been in question, even among those who argue that teachers are only one factor that might affect how pupils progress at school. Teachers vary in their knowledge, their skills and their commitment. It has always been recognised that pupils make different amounts of progress with different teachers.



Think About

‘Effective teaching is what promotes and supports effective learning in a systematic and sustained fashion.’

What do you think are the elements of ‘effective teaching’ that support and promote effective learning?

Images of teachers



Optional Task

Consider the factors affecting pupil progress.

How many factors can you identify?

Rank them in order of importance.

Which directly affect your work as a supply teacher?

What implications does this have for what you do in the classroom?

The prevailing styles of working by different teachers in their classrooms have often been described in terms of the more obvious 'personality' characteristics of the teachers. There is a tradition in literature and in films of the charismatic teacher as the heroic figure, from Muriel Spark's *The Prime of Miss Jean Brodie* and H G Wells' *Goodbye Mr Chips* to Richard Dreyfuss' role as teacher in *Mr Holland's Opus* or Robin Williams in *Dead Poets Society*. And there are many literary or visual representations of stereotypical figures of fun – the incompetent, ineffectual and irascible teacher – the Wackford Squeers of Dickens' *Dotheboys Hall* for example, or Mr Penny, the headmaster in Edward Blishen's *Roaring Boys*.

It is often asserted that teachers are 'born rather than made' – Mrs Smith is 'a born teacher'; Mr Jones is 'not cut out for it'. Personality, or however else we might define the deep-seated and persistent underlying characteristics that we identify in people, can hardly be ruled out entirely as a factor in developing a teaching approach or various teaching strategies. It would be difficult to deny that teaching comes more readily and intuitively to some people than to others, but the overwhelming evidence is that effective teachers do not conform to a particular personality 'type'. There is no single, simple 'effective teacher personality' – successful teachers can have very different personal attributes and styles of working with their pupils.



Optional Task

Consider further the idea that teachers are 'born rather than made'.

List the characteristics that you think effective teachers have. Try ranking yourself against them on a scale from 1–5

(1 = definitely me; 5 = not like me at all).

What do you need to work on in areas you ranked 4 or 5?

Do teachers make a difference?

Since the mid-1970s, there have been numerous research projects in the UK, the USA and elsewhere that have sought to investigate the effects of teachers' classroom practices and their impact upon pupils and students. Though teachers' statements of values and general principles and claims about what they do are certainly not irrelevant, researchers have tried to go beyond the level of ideals and study actual classroom practice. Many of these studies have tried to examine the connections between:

- what teachers **actually do** in the classroom;
- what pupils and students **actually do** in the classroom;
- what the **educational outcomes** for learners are.

Research into teachers' effects upon pupils' learning



Think About

What are your views on 'formal' versus 'informal' approaches? When might each be appropriate?

In the mid-1970s, there were concerns about schools themselves and their impact upon pupils and their learning. Initially, the main focus was upon primary schools, where there was considerable public controversy over the relative merits of 'formal' and 'informal' teaching, traditional versus 'child-centred' approaches. Neville Bennett carried out a study into the effects of primary teachers' approaches to classroom teaching and, although the methodology of this research was seriously questioned, it had considerable public impact. It contributed to debate, and raised some serious questions about how much time pupils actually spent 'on task', at a level that met their immediate learning needs.

Further large-scale systematic investigations followed in both primary and secondary schools. The ORACLE (Observational Research and Classroom Learning Evaluation) study, based at Leicester University, also investigated primary teachers' classroom behaviour and its effects upon pupils' academic progress. ORACLE tried to identify the most successful types of teacher, but no single type emerged as absolutely the most successful. ORACLE did, however, identify a number of behavioural features exhibited consistently by more successful teachers.

ORACLE found that successful teachers engaged regularly in:

- high number of interactions with pupils;
- higher level questioning of pupils;
- regular constructive feedback;
- encouragement of pupils to think things out for themselves;
- strong organisation of classroom routines.

Factors affecting pupil progress

An investigation into pupils' experience of twelve London secondary schools led by Michael Rutter (Rutter et al., 1979), and a study of junior age pupils (ie. key stage 2 in current terminology) in some fifty London primary schools (Mortimore et al., 1988), reported on the school factors that affected **pupil progress**. Though looking at different ages/phases, their key findings had much in common and were very influential. The importance of these studies was that they both looked at the 'social context' of learning, and challenged explanations that relied on social background to account for differences in schools' success, or lack of success, with their pupils.

Schools matter

Neither study suggested that social background was irrelevant to schools and their pupils' subsequent achievement, but both switched the focus to those **process** factors that differentiated the more successful schools from the less successful. Michael Rutter's team found that secondary schools in broadly equivalent social environments could have very different effects upon their pupils' educational attainment. Similarly, the primary school study also reached the same conclusion – to use the title of their published work, *Schools Matter* (Mortimore et al., 1988).

Schools do make a difference to the learning and subsequent opportunities of all their pupils. They concluded that:

'By attending a more effective school all pupils will benefit, even those who are at an initial educational disadvantage because of their particular background characteristics. Effective teachers tend to be good for all their pupils.'

Schools Matter showed the clear differences between schools' progress in increasing knowledge acquisition, understanding and skills. The successful schools fostered a climate of learning in which the clear focus was upon *'fostering pupils' cognitive development'* (p192). Such schools also demonstrated positive outcomes relating to pupil attendance, behaviour, self-concept and attitude. The study also concluded that the effective primary classroom tended to have similar features, many of which reflected the ORACLE findings (above).



Think About

As a supply teacher, you will probably have experience of working in a range of schools. What factors do you think constitute an 'effective' school?

Schools Matter found that effective teachers typically:

- created a work-centred environment and moderated pupils' noise and movement;
- often engaged and interacted with the whole class;
- organised pupils' activities throughout the day;
- had a clear focus on an area of the curriculum for sessions;
- provided stimulating learning activities that were challenging, with high expectations;
- used higher-order questioning of pupils;
- consistently praised pupils for their achievements.



Think About

'Effective teachers maximise the learning of those for whom they are responsible.'

What does this mean in terms of what teachers do?

The review of school effectiveness research carried out for OFSTED by the University of London Institute of Education emphasised the consistent evidence in study after study. The key factor in effective schools is a *'concentration on teaching and learning'* involving:

- maximising learning time;
 - academic emphasis;
 - focus on achievement.
- (Sammons et al., 1995, pp13–14)

I.4 WHAT DO PUPILS THINK MAKES A 'GOOD' TEACHER?



Optional Task

Make a list of the characteristics of a 'good' teacher from your experiences as a learner, either at school or in higher education.

An illuminating source of information on effective teaching lies in asking the beneficiaries. What is again striking about the different studies that have been carried out into pupils' perspectives on their teachers, is the degree of consistency in the main findings over decades. As long ago as the early 1960s, one researcher asked over 800 children in primary schools and more than 500 secondary school pupils to write about 'a good teacher' and 'a poor teacher'. The good teacher was typically described as one who:

- is firm and keeps order in the classroom;
- explains the work you have to do and helps you with it;
- is friendly with children in and out of school.

(Taylor, 1962, summarised in Kyriacou, 1997, p10)

The three key themes of **order**, **learning** and **positive social relationships** reappear in one guise or another in study after study.

Brown and McIntyre (1993) enquired into secondary pupils' ideas of their 'best teachers' and what characteristics they showed. They reported these positive characteristics as falling into ten categories.

Ten categories of 'best' teacher characteristics

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. Creation of a relaxed and enjoyable atmosphere in the classroom. 2. Retention of control in the classroom. 3. Presentation of work in a way that interests and motivates pupils. 4. Providing conditions so pupils understand the work. 5. Making clear what pupils are to do and achieve. | <ol style="list-style-type: none"> 6. Judging what can be expected of a pupil. 7. Helping pupils with difficulties. 8. Encouraging pupils to raise their expectations of themselves. 9. Developing personal, mature relationships with pupils. 10. Teachers' personal talents (subject-related or other) utilised. |
|---|---|

(Brown and McIntyre, 1993, pp28–29)

Another extensive study of pupils' perspectives on secondary schools (Rudduck et al., 1996) reported on how pupils experienced school life. One finding was that pupils preferred teachers who set clear expectations for work and behaviour, but who did so in the context of relationships that respected the pupils. They drew four broad conclusions about what pupils valued in terms of effective teaching.

Pupils value teachers who provide:

1. lessons that are well-prepared and are seen to be well-prepared, so that pupils know they have learned something, and can see that their teachers have put effort into preparing the lesson for them;
 2. lessons that have a clear focus, and a content that finds some way of engaging with pupils' everyday experiences;
 3. lessons that have some variety of pace and activity (including opportunities for practical and/or interactive work); it may be useful to think of lessons as needing a strong sense of 'form' (an important but elusive word that suggests an appropriate matching of content, style and sequencing); they need to be well-structured, without waste of time but with passages of intense focus balanced by well-controlled and clearly signalled moments of respite;
 4. signals to pupils that the teacher enjoys teaching the subject and enjoys teaching them.
- (Rudduck et al., 1996, p176)

Morgan and Morris (1999) interviewed pupils in ten Welsh secondary schools about what made some teachers better than others. Pupils valued teachers who could explain work well and gave good feedback on their learning, encouraged them and helped with difficulties, made lessons interesting with some variety of approach, and could maintain good discipline yet show a sense of humour. Again, they offered a common view of good teachers as in control, promoting learning, but able to share a joke.

As one girl commented:

'Strictish but not soft – not afraid of class, strict enough to make us learn, have a laugh.'

(Morgan and Morris, 1999, p45)

The apparent paradox of liking being 'made to learn' or 'made to work' emerges often in pupils' responses in the many studies investigating their perspectives on teachers. As long as:

- teacher expectations are not too unrealistic in terms of pupil capability;
- tasks are sufficiently demanding to give a sense of real learning;
- teachers are seen to be approachable;
- teachers show some sense of humour;

then, it seems, pupils want to rise to meet the challenge of interesting work. The evidence from pupils is an important contribution to understanding what makes for teacher effectiveness. It makes it clear that **most pupils do prefer to learn and to succeed**, and emphasises that **teachers and learners who work together produce the best learning outcomes**.

'Made to learn'



Optional Task

Consider what pupils think makes an effective teacher. List your strengths and the areas you need to work on.

Chapter 1: Section 2: The OFSTED model and teacher effectiveness

This section focuses on:

- 2.1 What OFSTED inspectors report on;
- 2.2 What inspectors evaluate in terms of effective teaching;
- 2.3 What inspectors evaluate in terms of effective learning.

2.1 WHAT DO OFSTED INSPECTORS REPORT ON?



Reading

OFSTED *Handbook for Inspecting Primary and Nursery Schools: How well are pupils taught?*
www.archive.official-documents.co.uk/document/ofsted/inspect/primary/30107.htm

OFSTED *Handbook for Inspecting Secondary Schools: How well are pupils or students taught?*
www.archive.official-documents.co.uk/document/ofsted/inspect/secondary/29503.htm

There is one important source of guidance on effective teaching that is relevant to all teachers. When OFSTED inspectors report on the quality of teaching, it is to be '*judged in terms of its impact on pupils' learning and what makes it successful or not*' and '*how well pupils learn and make progress*' (the OFSTED *Handbook for Secondary Schools* includes '*and students*').

The OFSTED handbooks for inspections indicate a clear model for evaluating effective teaching and learning. What is also noticeable is that, with only the most minor of adjustments, this model of good teaching applies across the age phases; the underlying principles hold, even if their actual application is related to the age of the pupils taught.

OFSTED inspectors report on the quality of teaching under these headings:

- teachers' knowledge and understanding;
- effectiveness of teachers' planning;
- management of pupils;
- teaching of basic skills;
- use of time, support staff and resources;
- effectiveness of teaching methods;
- teachers' expectations;
- quality and use of ongoing assessment;
- use of homework.

This list of categories for reporting is both a clear indication of the underlying model of effective teaching and a practical checklist for self-evaluation of teaching.

The quality of teaching is judged in terms of its impact on pupils' learning and what makes it successful or not. Inspectors must include evaluations of:

- how well the skills of literacy and numeracy are taught;
- how well the teaching meets the needs of all its pupils, taking account of age, gender, ethnicity, capability, Special Educational Needs, gifted and talented, and those for whom English is an additional language.

2.2 WHAT DO INSPECTORS LOOK FOR IN TERMS OF EFFECTIVE TEACHING?

In making their judgements, inspectors should consider the extent to which teachers:

- show good subject knowledge and understanding in the way they present and discuss their subject;
- are technically competent in teaching basic skills;
- plan effectively, setting clear objectives that pupils understand;
- challenge and inspire pupils, expecting the most of them, so as to deepen their knowledge and understanding;
- use methods that enable all pupils to learn effectively;
- manage pupils well and insist on high standards of behaviour;
- use time, support staff and other resources, especially information and communication technology, effectively;
- assess pupils' work thoroughly and use assessments to help and encourage pupils to overcome difficulties;
- use homework effectively to reinforce and/or extend what is learned in school.

2.3 WHAT DO INSPECTORS LOOK FOR IN TERMS OF EFFECTIVE LEARNING?

Inspectors consider the extent to which pupils:

- acquire new knowledge or skills, develop ideas and increase their understanding;
- apply intellectual, physical or creative effort in their work; are productive and work at a good pace;
- show interest in their work, are able to sustain concentration and think and learn for themselves;
- understand what they are doing, how well they have done and how they can improve.

All the above help us to identify the processes, qualities and contexts that can enable teachers to have positive relationships with their pupils, and consequently be 'effective' teachers.

Chapter 1: Section 3: The Hay McBer model of teacher effectiveness

This section focuses on:

- 3.1 The background to the research;
- 3.2 The measures of teacher effectiveness;
- 3.3 The professional characteristics of effective teachers;
- 3.4 The teaching skills effective teachers have;
- 3.5 The classroom climate effective teachers create.

3.1 WHAT DID HAY McBER INVESTIGATE?



Reading

Hay McBer (2000) *Research into Teacher Effectiveness: A Model of Teacher Effectiveness*. The full report is vast, but a 70-page version of the report is available online at the DfES website: www.dfes.gov.uk/teachingreforms/leadership/mcber/index.shtml

A four-page summary of the Hay McBer model of 'characteristics of an effective teacher' is available online at the NUT website: www.data.teachers.org.uk/nut/pdfs/effective.pdf

See also the 'Transforming Learning' (part of Hay McBer) website for teachers, though much of the site and its materials are only accessible to registered fee-paying users: <http://haygroup.datagate.net/teacher/>

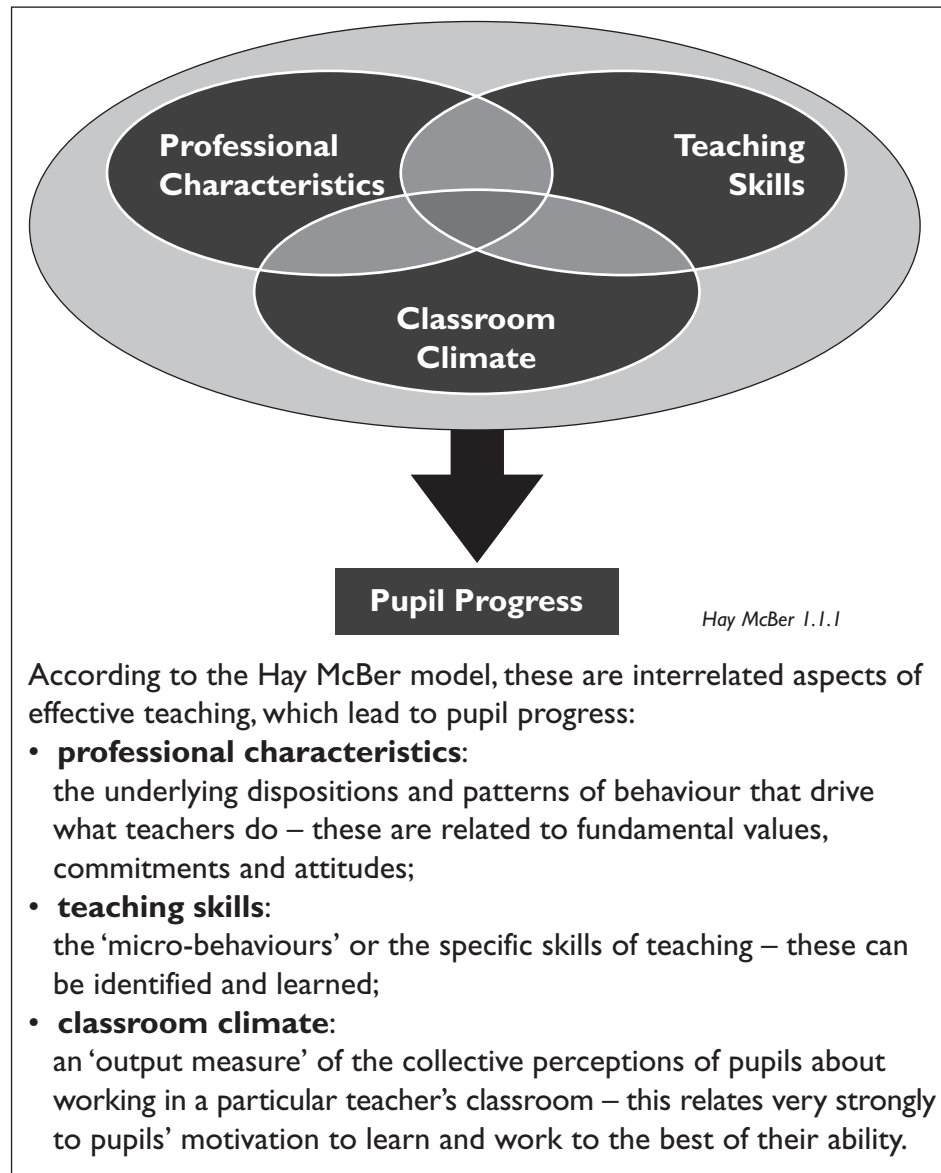
In June 1999, the Department for Education and Skills (DfES) commissioned management consultants Hay McBer to investigate the characteristics of effective teachers on the basis of interviews, questionnaires, observation and focus-group discussions. Though the original application of Hay McBer's research was designed to inform the standards for threshold assessment, Hay McBer produced a model of teacher effectiveness at three different stages of professional expertise, based on an analysis of what effective teachers do in practice. The report (Hay McBer, 2000) identifies the key factors in effective teaching and describes how the model is exemplified by successful teachers at three levels of professional development:

- **main professional grade;**
- **through the threshold;**
- **outstanding teachers.**

According to the research done by Hay McBer into effective teaching, there are three main factors **within teachers' control** that significantly influence pupils' progress:

- **professional characteristics;**
- **teaching skills;**
- **classroom climate.**

3.2 WHAT ARE THE MEASURES OF TEACHER EFFECTIVENESS?



According to the Hay McBer model, these are interrelated aspects of effective teaching, which lead to pupil progress:

- **professional characteristics:**
the underlying dispositions and patterns of behaviour that drive what teachers do – these are related to fundamental values, commitments and attitudes;
- **teaching skills:**
the 'micro-behaviours' or the specific skills of teaching – these can be identified and learned;
- **classroom climate:**
an 'output measure' of the collective perceptions of pupils about working in a particular teacher's classroom – this relates very strongly to pupils' motivation to learn and work to the best of their ability.

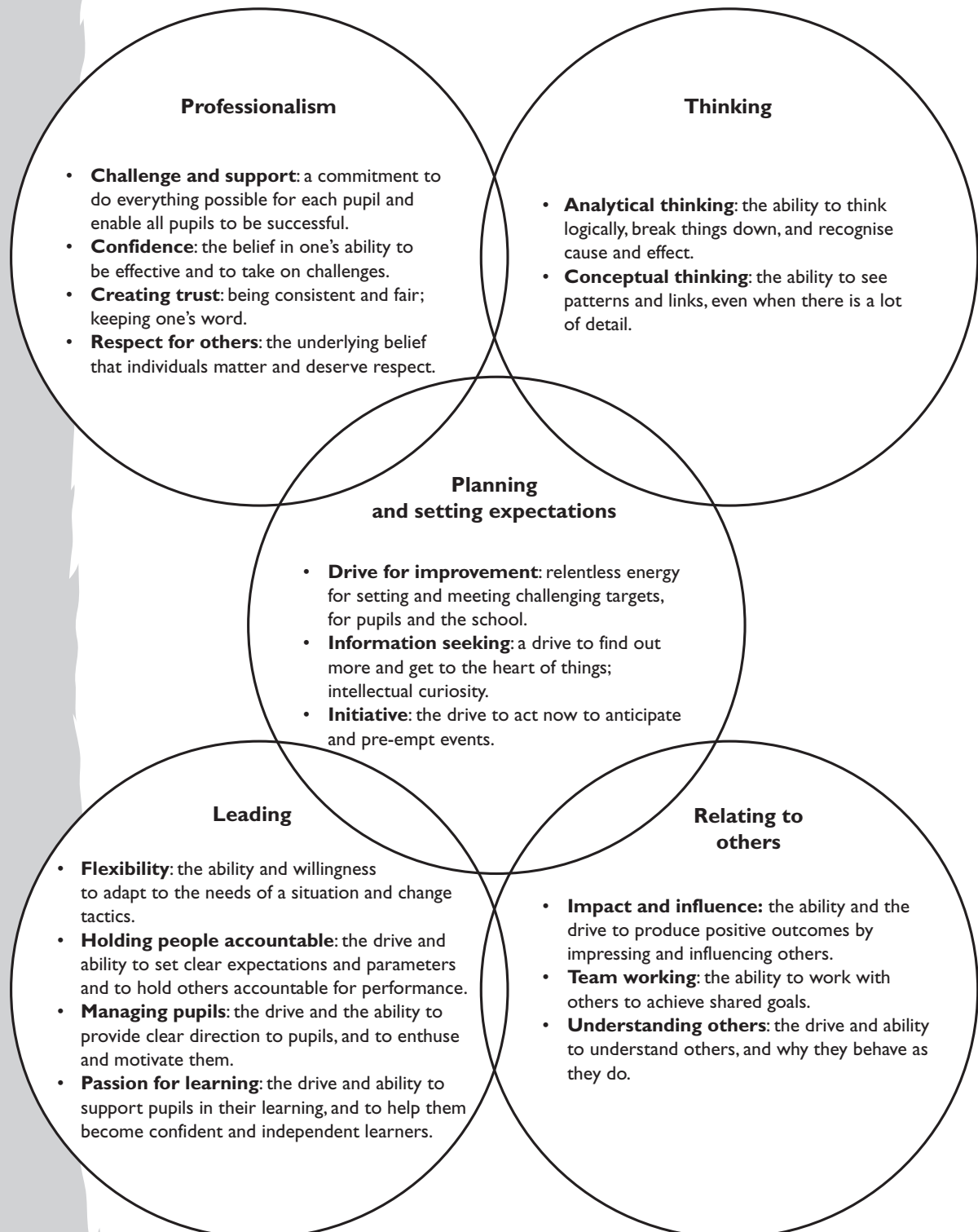
30% variance in pupil progress

Hay McBer found that teachers' effectiveness could not be predicted on the basis of data such as age, experience, qualifications and background. Effective teachers could be found in all kinds of schools and came from diverse backgrounds.

On the basis of some complex statistical analysis of pupils' attainment, the report concludes that over 30 per cent of the variance in pupil progress could be related to measures of the three interrelated factors shown in the diagram above. The full explanation for this can be found in the appendix to the full Hay McBer report.

3.3 WHAT ARE THE PROFESSIONAL CHARACTERISTICS OF EFFECTIVE TEACHERS?

Professional characteristics, Hay McBer argue, fall into five clusters, each of which has key characteristics.



For more information, see section 1.3 of the Hay McBer report

3.4 WHAT TEACHING SKILLS DO EFFECTIVE TEACHERS HAVE?

The Hay McBer research into teaching skills began with using the OFSTED inspectors' categories (outlined in Section 2) for assessing and reporting on teachers' classroom performance. Teaching skills are essentially described under headings used by OFSTED. After outlining key characteristics of effective teachers in each skill area, the report provided a series of questions in which the guidance for judging and improving teaching is very clear.

These sets of questions can act as a useful checklist for appraising and developing different areas of your teaching. A blank column has been added for you to make notes on your own performance against these key questions.

High expectations

Effective teachers communicate high, clear and consistent expectations with an appropriate level of challenge to all pupils.

Key questions	Examples of how I do this
Does the teacher encourage high standards of effort, accuracy and presentation?	
Does the teacher use differentiation appropriately to challenge all pupils in the class?	
Does the teacher vary motivational strategies for different individuals?	
Does the teacher provide opportunities for students to take responsibility for their own learning?	
Does the teacher draw on pupil experiences or ideas relevant to the lesson?	

Planning

Effective teachers have a clear plan and objectives for each lesson. They communicate these clearly to pupils at the start of the session. They focus on pupils' learning outcomes. Learning activities have clear instructions.

Key questions	Examples of how I do this
Does the teacher communicate a clear plan and objectives for the lesson at the start of the lesson?	
Does the teacher have the necessary materials and resources ready for the class?	
Does the teacher link lesson objectives to the National Curriculum?	
Does the teacher review what pupils have learned at the end of the lesson?	

Methods and strategies

Effective teachers use a variety of teaching strategies and techniques. They teach actively, interact a lot with pupils, and monitor their understanding. They keep pupils engaged and on task in class, small group and individual activities.

Key questions	Examples of how I do this
Does the teacher involve all pupils in the lesson?	
Does the teacher use a variety of activities/learning methods?	
Does the teacher apply teaching methods appropriate to the National Curriculum objectives?	
Does the teacher use a variety of questioning techniques to probe pupils' knowledge and understanding?	
Does the teacher encourage pupils to use a variety of problem-solving techniques?	
Does the teacher give clear instructions and explanations?	
Does practical activity have a clear purpose in improving pupils' understanding or achievement?	
Does the teacher listen and respond to pupils?	

Pupil management/discipline

Effective teachers have a clear strategy for pupil management and communicate clear and effective boundaries for pupils' behaviour. Pupils feel safe and secure, and maximum time is focused on learning.

Key questions	Examples of how I do this
Does the teacher keep the pupils on task throughout the lesson?	
Does the teacher correct bad behaviour immediately?	
Does the teacher praise good achievement and effort?	
Does the teacher treat different children fairly?	
Does the teacher manage non-pupils (support teachers/staff) well?	

Time and resource management

Effective teachers make full use of planned time, start promptly, maintain a brisk pace and finish with a succinct review of learning. They allocate their time fairly amongst pupils.

Key questions	Examples of how I do this
Does the teacher structure the lesson to use the time available well?	
Does the lesson last for the planned time?	
Are appropriate learning resources used to enhance pupils' opportunities?	
Does the teacher use an appropriate pace?	
Does the teacher allocate his/her time fairly amongst pupils?	

Assessment

Effective teachers make use of a range of assessment methods to monitor pupils' progress, their gaps in knowledge and areas of misunderstanding. They give feedback and encourage pupils to judge their own success and set themselves targets.

Key questions	Examples of how I do this
Does the teacher focus upon understanding and meaning, factual memory, skills mastery and applications in real-life settings?	
Does the teacher use tests, competitions etc. to assess understanding?	
Does the teacher recognise misconceptions and clear them up?	
Is there evidence of pupils' written work having been marked or otherwise assessed?	
Does the teacher encourage pupils to do better next time?	

Homework

The regular setting of homework, in primary and secondary schools, is an important part of the assessment process. Effective teachers ensure that homework is integrated with class work, is tailored to individual needs and is marked regularly and constructively.

Key questions	Examples of how I do this
Is homework set either to consolidate or extend the coverage of the lesson?	
Is homework, which had been set previously, followed up in the lesson?	
Does the teacher explain what learning objectives pupils will gain from homework?	

3.5 WHAT KIND OF CLASSROOM CLIMATE DO EFFECTIVE TEACHERS CREATE?

The Hay McBer research concluded that effective teachers create an environment that maximises pupils' opportunities and motivation to learn. Pupils look to the teacher to create a sense of security and order in the classroom, and want opportunities to participate in interesting activities. The report identifies key dimensions of classroom climate.

The Hay McBer key dimensions of classroom climate	
Clarity	How each lesson relates to the broader subject, as well as clarity regarding the aims and objectives of the school.
Order	Discipline, order and civilised behaviour are maintained in the classroom.
Standards	A clear set of standards as to how pupils should behave and what each pupil should do and try to achieve, with a clear focus on higher rather than minimum standards.
Fairness	The degree to which there is an absence of favouritism, and a consistent link between rewards in the classroom and actual performance.
Participation	The opportunity for pupils to participate actively in the class by discussion, questioning, giving out materials, and other similar activities.
Support	Feeling emotionally supported in the classroom, so that pupils are willing to try new things and learn from mistakes.
Safety	The degree to which the classroom is a safe place, where pupils are not at risk from emotional or physical bullying, or other fear-arousing factors.
Interest	The feeling that the classroom is an interesting and exciting place to be, where pupils feel stimulated to learn.
Environment	The feeling that the classroom is a comfortable, well-organised, clean and attractive physical environment.

The Hay McBer conclusions are clear and challenging, yet they are also optimistic:

'Teachers really do make a difference. Within their classrooms, effective teachers create learning environments which foster pupil progress by deploying their teaching skills as well as a wide range of professional characteristics. Outstanding teachers create an excellent classroom climate and achieve superior pupil progress largely by displaying more professional characteristics at higher levels of sophistication within a very structured learning environment.'
(para 1.1.9)

Analysing for practice

The importance of all these approaches to analysing effective teaching is not just that they have tried to identify the broad characteristics of the more successful teachers, but that they have helped to provide the evidence for guidance on developing some of the behavioural components of effective teaching. There is also some consideration of the 'affective' side of learning, and the social context in which it occurs.

The overriding purpose has not been to seek one simple model of teaching style to which all teachers should conform; rather it has been to point out the key features that were associated with success. As all the studies recognise, attitudes and values are part of a teacher's professional characteristics, too. If much of the practice of effective teachers can be analysed and broken down into specific behaviours that can be described clearly, then there is the possibility that some of these can be developed – modelled, taught, learned and even practised.



Optional Task

It may be useful for you to construct a checklist of the key dimensions of classroom climate, for your own use. You might list those identified and add dimensions of your own. Try to analyse, from previous experience, which ones you have used. Think of ways in which you could bring aspects of these dimensions into your own practice, and jot them down.

Chapter 1: Section 4: Thinking about pupils' learning

This section focuses on:

- 4.1 Accelerated learning;
- 4.2 Pupils' concentration spans;
- 4.3 High challenge, low stress learning;
- 4.4 Motivation, self-esteem and self-efficacy;
- 4.5 Strategies to improve pupils' self-esteem.

4.1 WHAT IS ACCELERATED LEARNING?

Teachers always operate on some model – implicit if not explicit – of how humans learn and how teaching can foster this. But ideas about the brain, learning, and how to promote it, are developing rapidly and teachers cannot easily keep track of changing ideas. Mike Hughes has written engagingly of the need for teachers to bridge the 'learning gap':

'The learning gap is the difference between what we know about effective learning and what is currently happening in the classroom.'
(Mike Hughes, 1999, p17)

The challenge is to try to close that 'learning gap' and search for ways to teach pupils and structure their learning that are as effective as we can make them.

'Accelerated learning' has become a popular term to describe a diverse collection of ideas about how human learning can be fostered. Though it has its origins in the 1970s in Georgi Lozanov's techniques of 'Suggestopedia', accelerated learning is not a single, unified, coherent theory. One of its strongest and most well-known advocates in the UK, Alistair Smith, describes accelerated learning as:

'an umbrella term for a series of practical approaches to learning which benefit from new knowledge about how the brain functions; motivation and self-belief; accessing different sorts of intelligence and retaining and recalling information.'
(Alistair Smith, 1996, p9)

A tremendous amount has been discovered about the brain in the last three decades. The US Congress declared the 1990s the Decade of the Brain in recognition of how rapidly brain research was advancing. Yet almost every discovery about how the brain works opens up new questions for enquiry; much of what is discovered remains puzzling and many theories remain very controversial. Despite some of the uncertainties of the theories built upon recent research and the ensuing debates about their implications, teachers can gain valuable insights into their teaching from investigations into human learning.



Reading

For an accessible, simplified presentation of some of the current ideas on the brain and their application to teaching and learning, see, for example:

Smith, A (1996) *Accelerated Learning in the Classroom*, and

Smith, A (1998) *Accelerated Learning in Practice*.

For a very instructive website on the brain – for teachers as much as its target audience – see Neuroscience for Kids:

www.soton.ac.uk/~jrc3/chudler/neurok.html

Behind the notion of accelerated learning lies a range of powerful ideas about learning and how it can best be promoted. Though it helps to have a basic grasp of some of the principles that are commonly appealed to by advocates of various forms of 'accelerated learning', it is for teachers to apply and test out these ideas in practice.

4.2 HOW DOES THE ABILITY TO CONCENTRATE AFFECT LEARNING?

Adults find it quite difficult to concentrate with unbroken attention for much more than about 20 minutes. For younger learners, the concentration span is much less. From studies of concentration a simple 'rule of thumb' has been advanced:

Concentration span = chronological age + 1 minute

There is also a more optimistic version:

Concentration span = chronological age + 2 minutes!

Either way, the message is quite clear. Although it is only a rule of thumb, it is a good guide as to how long learners can listen and pay attention. We also know two other key related factors about optimising the length of time spent on a learning task:

- concentration is normally strongest at the beginning of an activity;
- concentration on a demanding task can be increased by having 'brain breaks', where the demand is lower.

Learning sessions, whatever their timetabled length, need to be broken up into focused units of activity. There is no single correct or optimum length of time for activities. Nevertheless, there is clear evidence that learners concentrate and learn more from short, focused activities.

4.3 HOW DOES CHALLENGE AND STRESS AFFECT LEARNING?

'The brain responds best in conditions of high challenge with low stress, where there is learner choice and regular and educative feedback ... The enemy of learning is stress. The optimal conditions for learning include a positive learning attitude where challenge is high and anxiety and self-doubt is low.'

(Alistair Smith, 1998, p41)

There is physiological evidence that although stress may initially galvanise humans for action, it interferes with thinking. The difference for the learner is between what can be defined as anxiety-provoking stress and what can be defined as commitment-engaging challenge:

- a task perceived as involving a reasonable demand of knowledge, skill and effort is a **positive** challenge;
- a task perceived as imposing impossible demands is a **negative** stress.

Maximise challenge – minimise stress



Optional Task

Plan one or more activities that use group work to promote 'low stress' learning.

Give pupils opportunities to:

- problem solve and plan together;
- share responsibility/ideas;
- bounce ideas off each other;
- have control over their learning.

Somewhere along a continuum of demand placed upon the individual learner, the sense of challenge gradually transforms into stress.

'There is a massive difference between challenge and stress, but only a very thin dividing line; the problem for the teacher is that each child will draw it in a different place.'

(Mike Hughes, 1999, p30)

There are three related problems for the teacher in trying to set work to maximise challenge – and minimise stress – for the learner:

- the difference between reasonable and unreasonable demands of knowledge, skill and effort can sometimes be quite small;
- the cross-over line at which this happens varies between individuals;
- some learners perceive almost anything that they do not immediately grasp or recognise as highly likely to produce failure.

The first two problems require careful differentiation and checking of how pupils are coping. The third problem requires the teacher to build up the individual learner's confidence in his or her own capability. For such learners, almost everything asked of them can seem to be a potential threat. On the basis of experience, they have come to the point where, at least when it comes to learning in school, they suffer from a lack of **self-esteem** and **self-efficacy** and this leads to the further lack of **motivation**.

4.4 HOW DO MOTIVATION, SELF-ESTEEM AND SELF-EFFICACY AFFECT LEARNING?

Motivation, self-esteem and self-efficacy are three concepts which psychologists may use to explain some of the influences that affect how people approach their work. They can link together in important ways to help us understand the different ways learners may respond to the demands and opportunities of the classroom.

Motivation

Motivation is what drives us forward to undertake tasks and to persevere in the face of difficulties. Lack of motivation is commonly used by teachers as an explanation of a learner's failure to make progress, particularly when they believe that he or she has the capability to do what has been asked:

'Billy is just not interested in learning anything ...'

'Nasreen isn't bothered about school ...'

'Leroy only stirs himself for football ...'

'Emma will do anything but maths ...'



Think About

Consider some of the pupils you have taught who could be described in a similar way. What other factors may have contributed to this situation?

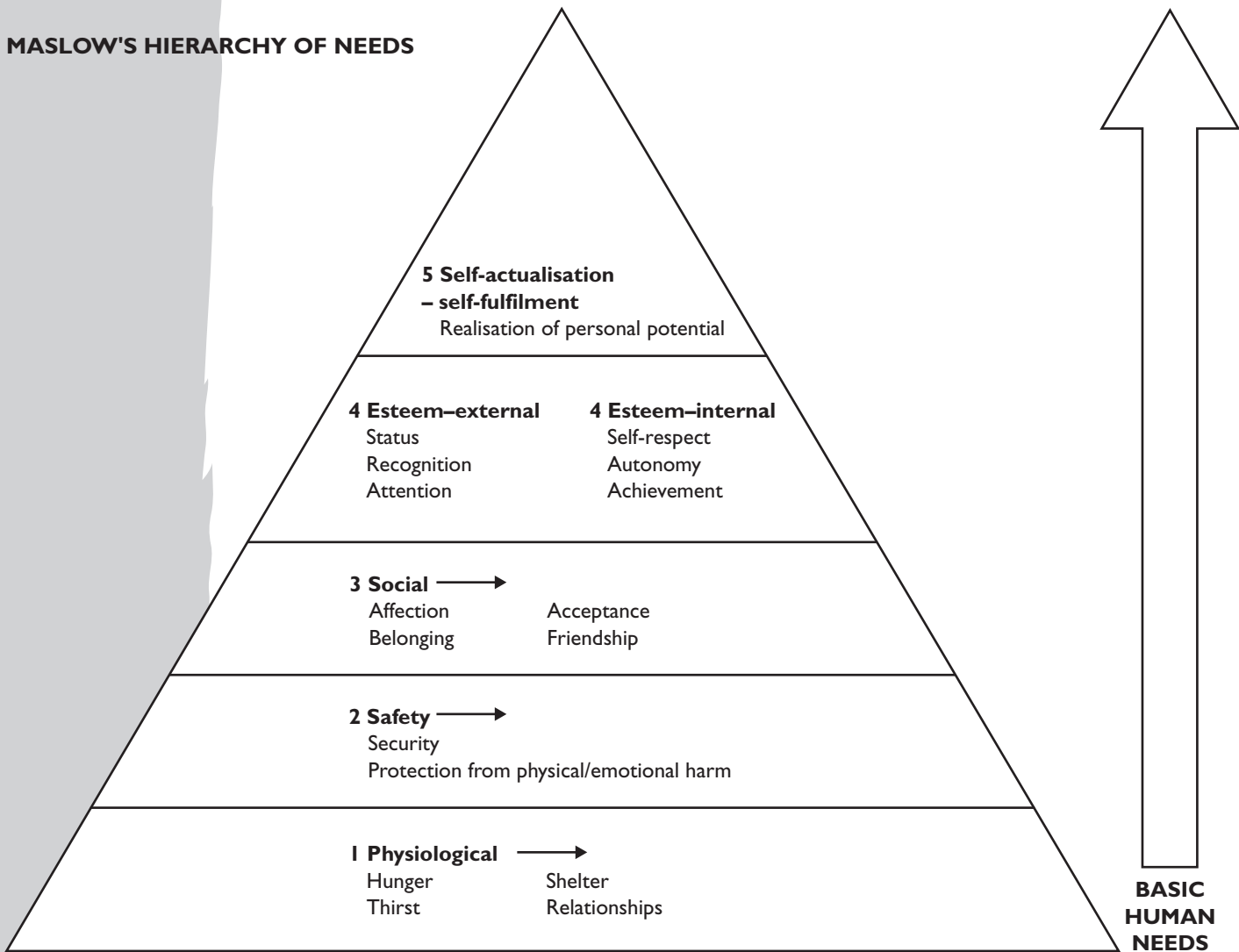
Statements like these are often followed by attempts to explain why pupils won't do much work, or will only work at certain activities, or with certain people. Such explanations are typical of teachers' everyday explanations of their work with pupils.

Do rewards motivate learners?

Lack of motivation is a problem often approached in terms of rewards and incentives. There is no doubt that extrinsic rewards can motivate behaviour, and reward systems have a place in encouraging learning and recognising pupils' achievements in schools. However, there is equally no doubt that reward systems cannot, in themselves, always sustain positive attitudes towards learning. Pupils' motivation and the challenge of motivating whole classes of diverse individuals is complex.

The American psychologist, Abraham Maslow, devised a model of human motivation that many people have found useful as a guide to explaining where barriers to learners' motivation may lie.

MASLOW'S HIERARCHY OF NEEDS



Based on Maslow (1970)

Maslow's notion of self-actualisation is an engaging and idealised concept of what it is to be human, even if it is difficult to apply with any precision. His underlying model of how humans are compelled to satisfy needs in some sort of prioritised order does, however, help us consider why somebody may not be motivated for learning at a given time. Pupils who are physically uncomfortable, hungry, insecure, or feeling isolated in the classroom are less likely to be motivated by the higher-order satisfactions of academic work.

Self-esteem and self-efficacy



Optional Task

Look at Maslow's pyramid.

Can you translate the five areas of work and conditions at work in your situation to fit the five areas that Maslow outlines? List the aspects that you think you need to work on to be more effective.

The Elton Report, DES 1989, para 78



Think About

Consider those things that can hinder successful learning for individual pupils.

What could you do, as a supply teacher, to counteract these?

The model also directs our attention to the needs we might have to address to bring the learner to the position where they can better make progress. Not all needs can be met by the teacher in the classroom, but barriers to learning can be recognised. Teachers' particular concerns in the classroom usually centre on pupils' self-esteem. This is an area in which teachers can make a difference to how pupils feel about themselves in relation to their learning.

Most of us respond to 'positive strokes', which give us a feeling of personal worth and acceptance, and we understand how praise for achievement enhances self-esteem. Success and recognition motivate learners to make further efforts, but repeated lack of success and negative messages about failures to achieve serve to inhibit learning. Learners who habitually feel that they fail can hardly be blamed if they try to avoid new challenges, or seek to discount, in advance, those negative feelings of failure by distancing themselves and opting out.

Lack of motivation and effort is related to the lack of a clear sense of self-efficacy. This is the belief people have in their own capacity to influence and shape positively what happens to them. It is a combination of confidence in one's own abilities and an acceptance of personal responsibility for making things happen in the world.

A strong sense of self-efficacy is a great motivating factor. If pupils lack the belief that they can learn, or believe – rightly or wrongly – that they cannot meet the demands they face, then the normal incentives to work hard are limited. At worst, such learners may have come to believe that whatever they do will make no real impact on their academic success. In the 1980s, the Elton Report into discipline in schools suggested that some pupils have come to see academic work as a competition that is 'unwinnable'; they have decided that the *'the best way to avoid losing in such a competition is not to enter it'*. There is nothing more dispiriting than a competition that seems 'unwinnable' from the outset.

It may be short-sighted, but these pupils can be viewed as doing no more than trying to limit the stress of task uncertainty, anticipated failure, and further blows to self-esteem. Their sense of self-efficacy, at least in academic learning, is limited. The overall effect will compound underachievement as negative beliefs about learning outcomes become self-fulfilling (see Chapter 2).

Personal belief in self-efficacy develops and is enhanced through the repeated experience of progress and some measure of success. It does not require an unbroken record of non-stop achievement, but it does require that successes clearly outweigh failures. Constant failure leads to an aversion to taking risks in learning; regular success leads to a willingness to accept risk and to rise to challenges.

Personal self-efficacy also requires the learner to develop a sense of increasing personal competence. It is therefore important that the success is genuine and represents incremental progress. Self-esteem and motivation are really only enhanced when praise is deserved; learners, even young children, are not boosted for long by unfocused praise that is earned too cheaply. Consistent challenge supports a learner's sense of progress; 'easy' work eventually becomes demotivating.

4.5 WHAT STRATEGIES CAN I USE TO RAISE PUPILS' SELF-ESTEEM?

Examples of how teachers raise self-esteem

Showing that you care

- Be interested in them as individuals by talking to them informally.
- Make sure pupils understand that what they do is important to you.
- Show appreciation if a pupil helps you or another pupil.
- Give them time – be available when they need you.
- Take their feelings and emotions seriously.
- Always discuss behaviour in terms of the behaviour and not the individual pupil.

Be a good role model

- Behave how you expect pupils to behave, eg. always be polite.
- Show tolerance towards different backgrounds, values and ideas.
- Listen to the ideas of others and expect to be listened to.
- Define the limits and rules clearly and implement them fairly.

Setting realistic but demanding challenges

- Prepare differentiated work. Set work that ensures individual progress. Have high, but realistic, expectations of individual pupils.

Arranging opportunities for success

- All pupils are good at something. Ensure this is acknowledged, on their work, verbally in one-to-one situations but also in the context of the whole class.

Reinforcing personal responsibility

- Give pupils responsibility for their personal organisation. Foster independent learning by encouraging them to be responsible for their own learning and learning success.

Praising pupils' achievements

- Use phrases that build up their self-esteem – incidentally, as well as formally in connection with their work.
- Emphasise the positive.
- Give rewards as part of a fair system that is understood by all.

Giving feedback

- Give specific and descriptive feedback.
- Avoid broad-brush statements such as 'Well done' or 'Could do better'.
- Identify how the work could be improved and what the pupil needs to concentrate on next time.

Strengthen the 'can do' factor

- Pupils who lack confidence may need tasks broken down into smaller steps.
- Use prompt-sheets to support learning.
- Think carefully about pairing and grouping pupils to ensure dominant pupils do not overwhelm those who might lack confidence.
- Give encouragement and help.

This section focuses on:

- 5.1 The nature of intelligence;
- 5.2 Different learning styles;
- 5.3 The VAK model;
- 5.4 Multiple intelligences;
- 5.5 Promoting thinking skills.

5.1 WHAT IS INTELLIGENCE?

Teachers have always been concerned with the great variations in pupils' apparent abilities to make progress in their learning. Teaching has also been caught up in the fiercely fought debates of psychologists about the nature of 'intelligence' and how it should be measured. The main issues are:

- whether it is a general mental capacity or a cluster of varying semi-autonomous factors;
- the extent to which it is genetically determined or developed by the environment;
- the nature of its distribution among different population groups.

These controversies have caused enormous argument, but there is another tradition of psychological investigation that is likely to be more productive in guiding teachers towards improving the learning of pupils and students. Since the 1940s there has been considerable interest in examining the differences between learners at a process level. Rather than seeking to compare some absolute measure of ability, researchers have attempted to examine the differences between learners in terms of the way they approach academic and other tasks. This has led to notions of learners having particular thinking and learning styles.

5.2 WHAT IS MEANT BY 'LEARNING STYLES'?

The significance of ideas on learning styles for teaching has been argued passionately by Robert J. Sternberg, IBM Professor of Psychology and Education at Yale University, in his book, *Thinking Styles (1997)*:

'As a society, we repeatedly confuse styles with abilities, resulting in individual differences that are really due to styles being viewed as due to abilities ... Many of the students we are consigning to the dust heaps of our classrooms have the abilities to succeed. It is we, not they, who are failing. We are failing to recognise the variety of thinking and learning styles they bring to the classroom, and teaching them in ways that don't fit them well.'



Reading

For a well-researched American model of learning styles, see the model developed by Ken and Rita Dunn:

www.learningstyles.net/main.html

See also Lemire (1996), Riding and Rayner (1998) and Seymour and O'Connor (1993).

Several researchers have developed different models to classify and explain how learners exhibit varying patterns of preferred thinking and learning styles. The model that Sternberg offers is quite complex. Research into learning styles is often very confusing because there is no agreed structure or taxonomy of styles. Perhaps because many of the models employ different terminology, it has taken a long time for this research to have a significant influence upon formal education. In practical terms, the most important thing to recognise is that there is evidence for significant differences in the way learners approach their learning, and that they can all benefit from experiencing different approaches to learning.

A quite simple and immediately applicable model has emerged from some of the ideas on sensory representational systems found in the theories of neurolinguistic programming. The senses of taste and smell are certainly not irrelevant to learning, but the senses of seeing, hearing and touching are key.

5.3 WHAT IS THE VAK MODEL?

The VAK model emphasises the preferences individuals have for visual, auditory or kinaesthetic learning.

VAK characteristics

- **Visual** – learners prefer to see information: they like reading text or looking at diagrams.
- **Auditory** – learners prefer to hear information: they like listening, talking.
- **Kinaesthetic** – learners prefer to learn by doing: they like moving, manipulating, touching.

Some aspects of learning styles may represent strong inherent preferences, but all learners can benefit from multi-sensory approaches to learning. This has important implications for teaching – teachers should acknowledge and cater for the distribution of preferred styles amongst learners, but pupils should nonetheless be encouraged to develop a range of approaches to learning.

Schools tend to emphasise the visual and auditory rather than the kinaesthetic. This may well make learning more difficult for those who would prefer a more physically active mode of learning, those who like to work with their hands and those who are inveterate fidgets in class. Teachers cannot offer every learner their preferred learning style at all times, nor would this actually be in the individual's interest. A variety of activities within a session can, however, better accommodate different learning styles. It can also provide breaks and shifts of attention, and prevent boredom. Teachers should therefore plan to use a variety of teaching approaches.

Practical examples of applying VAK learning styles

Encourage visual learning by:

- using visual representations to present information and ideas – posters, diagrams, drawings;
- encouraging visualisation – ‘Imagine you can see...’, ‘What do you think this would look like?’, ‘What would you see if...?’, ‘How might you draw this?’;
- using visual prompts for recounting or creating a story;
- asking pupils to see words and spellings with their eyes closed;
- encouraging visual association and organisation of ideas, eg. by using concept maps.

Encourage auditory learning by:

- practising active listening;
- encouraging auditory imagination – ‘Imagine you can hear...’, ‘What do you think that will sound like?’, ‘What would you have heard if...?’
- using sounds as prompts for recounting or creating a story;
- asking pupils to sound out words and break down spellings;
- using rhyme and rhythm as mnemonic devices.

Encourage kinaesthetic learning by:

- using physical representations to present information and ideas – objects that learners can manipulate;
- encouraging kinaesthetic imagination – ‘Imagine you can feel...’, ‘What do you think this would feel like?’, ‘What would you feel if...?’, ‘How might you act this?’;
- using ‘acting out’ as a prompt for recounting or creating a story;
- asking pupils to trace out words and spellings with their finger;
- encouraging physical associations and using body language to express ideas and emotions.



Reading

For further ideas on applying VAK to teaching and learning, see, for example:

Smith, A and Call, N (1999) *The ALPS Approach: Accelerated Learning in Primary Schools*.

Smith, A (1998) *Accelerated Learning in Practice*.



Optional Task

Think about the impact VAK theory might have on your teaching.
Plan a few activities that incorporate aspects of each style of learning.
What kind of resources would you need?
Try listing them.

5.4 WHAT DOES 'MULTIPLE INTELLIGENCES' MEAN?



Reading

For a very readable outline of Gardner's theory of multiple intelligences and some practical applications to teaching, see: Armstrong, T (2000, 2nd edition) *Multiple Intelligences in the Classroom*.

For some simple ideas on applying multiple intelligences to teaching in the primary school, see, for example:

Smith, A and Call, N (1999) *The ALPS Approach: Accelerated Learning in Primary Schools*.

For Gardner's own review of multiple intelligences and their application to education, see: Gardner, H (1993) *Multiple Intelligences: The Theory in Practice*.

There has long been dispute over whether the varying patterns of intellectual and other skills that humans exhibit ought to be regarded as a single dimension, commonly described as 'intelligence'. Howard Gardner, Professor of Psychology at the Harvard Graduate School of Education, has taken issue with the conventional model and developed a set of criteria for what determines different forms of intelligence.

He concluded that human beings have many different ways of representing meaning – many kinds of intelligence. Initially, in his groundbreaking book *Frames of Mind* (Gardner, 1983), he identified seven intelligences:

- **linguistic intelligence** – the ability to read, write and communicate;
- **logical-mathematical intelligence** – the ability to calculate and reason logically;
- **visual-spatial intelligence** – the ability to visualise, think in pictures and diagrams;
- **musical intelligence** – the ability to appreciate, make or compose music;
- **kinaesthetic intelligence** – the ability to use the body skilfully to solve problems, create products or present ideas and emotions;
- **inter-personal intelligence** – social skills and the ability to work effectively with others;
- **intrapersonal intelligence** – capacities of self-analysis, reflection and self-motivation.

Subsequently, Gardner suggested a further, eighth, intelligence:

- **naturalist intelligence** – the ability to identify life forms, eg. flora and fauna.

More recently, and somewhat controversially, Gardner has suggested there is possibly an **existential intelligence** – the ability to deal with existential questions: Why are we here? What will happen to us in the future? In Gardner's model, individuals have a profile of intelligences in which some capacities are more developed than others. Gardner argues that although individuals may have clear strengths and preferences, each intelligence can be developed through appropriate experience.

According to Gardner, in focusing almost exclusively on language and logic, while largely ignoring other forms of mental representation, the education offered in schools might be judged to be only 'half-brained'. Schools should therefore respond in these ways.

Implications of Gardner's essential principles for school learning

School responses

- Schools should value the range of intelligences.
- Learners should be able to use their preferred intelligences in learning.
- Learners should be helped to develop their less-preferred intelligences.
- Learning activities should appeal to different forms of intelligence.
- Assessment of learning should measure multiple forms of intelligence.

5.5 HOW DO I PROMOTE THINKING SKILLS?

Two key related themes underlie several important initiatives on improving pupils' learning in the classroom; both are related to making thinking and learning more explicit. Firstly, it is argued that learners should be helped to develop insights into their own learning processes; this 'thinking about thinking' is often referred to as **metacognition**. Secondly, it is claimed that specific 'thinking skills' can be taught and developed.

Drawing on some of the ideas of people like Edward de Bono in promoting 'lateral thinking', Martin Lipman et al.'s *Philosophy in the Classroom* (1980) and Feuerstein's et al.'s *Instrumental Enrichment* (1980), there has been a range of general projects directed at raising the quality of pupils' thinking. The *Somerset Thinking Skills Course* (Blagg et al., 1988) and the work of Robert Fisher (1995, 1998) develop these ideas. There have also been some specific subject-related initiatives – for example, CASE (Cognitive Acceleration through Science Education) and CAME (Cognitive Acceleration through Mathematics Education). In 1998 the DfEE commissioned a review and evaluation of research into thinking skills and related areas. It is not appropriate to go into the detail of these projects here, but the key points are:

- that pupils should be coached in the development of 'thinking skills';
- that pupils develop and use a variety of mental strategies;
- that pupils should be enabled to become 'active learners';
- that pupils should be encouraged to become 'reflective learners'.

These ideas are likely to become increasingly important in thinking about teaching. The basic principles come together neatly: pupils must learn about thinking and think about learning.



Reading

The full report *From Thinking Skills to Thinking Classrooms* by Carol McGuinness (1999) is available from DfES Publications, PO Box 5050 Sherwood Park, Annesley, Nottingham NG15. A four-page Research Brief No 115 is also available on the DfES website under 'research'.

www.scre.ac.uk/forum/index.html



Optional Task

Select one or two strategies from the list below and plan appropriate activities to develop pupils' thinking skills.

Strategies	Appropriate activities
Gathering and processing information	
Problem solving	
Sequencing and ordering	
Categorisation and grouping	
Discussion	
Brainstorming	
Devising questions to elicit specific information	

Useful reading and resources

- Armstrong, T (2000, 2nd edition) *Multiple Intelligences in the Classroom*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Bennett, N (1976) *Teaching Styles and Pupil Progress*. London: Open Books.
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- Gardner, H (1983) *Frames of Mind*. New York: Basic Books.
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- Smith, A and Call, N (1999) *The ALPS Approach: Accelerated Learning in Primary Schools*. Stafford: Network Educational Press.
- Sternberg, R J (1997) *Thinking Styles*. Cambridge: Cambridge University Press.
- Tharp, R G and Gallimore, R (1988) *Rousing Minds to Life: Teaching, Learning and Schooling in Social Context*. Cambridge: Cambridge University Press.

Useful websites

Please note that the websites referred to throughout the chapter have not been reproduced here. At the time of publication, the DfES is in the process of changing the stem of some of its website addresses from *www.dfee* to *www.dfes*. Should you be unsuccessful in making a connection with the address we have provided here, try typing in the alternative stem followed by the rest of the address. You may need Adobe Acrobat Reader™ to view/download any documents available on these websites.

<http://tec.camden.rutgers.edu/jalt/>

Journal of Accelerated Learning and Teaching.

www.newhorizons.org/

New Horizons for Learning.

www.21learn.org/

The 21st century Learning Initiative.

www.21learn.org/arch/articles/welham.html

Specific UK example of applying multiple intelligences theory to teaching a specific subject.

www.alite.co.uk/

ALITE (company headed by Alistair Smith promoting accelerated learning training and resources).