# 11
# Gifted and Talented Pupils in Primary Schools

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The following topics and issues are covered in this chapter:

- the nature and range of giftedness and talent in primary school children;
- personal and social characteristics of able children;
- general cognitive characteristics of able children;
- different categories of intelligence;
- recognizing high ability in English, in mathematics and in science;
- the acceleration/enrichment debate and the notion of 'stretching them sideways';
- activities outside of the class lesson for gifted and talented pupils; and
- further support and guidance.

This chapter is about the pupil who turns up from time to time in a primary school year group, for whom an intelligent and thoughtful teacher will recognize that the provision in one or more curriculum areas which is appropriate for the normal range of pupils in that year group is nothing like sufficiently demanding and challenging. The chapter starts by emphasizing the broad range of exceptional ability, giftedness and talent that teachers may encounter in their pupils. A number of models for describing the characteristics of such pupils are outlined. Within the core subjects of the curriculum – English, mathematics and science – in addition to exceptional achievement in conventional terms, there usually will be evidence of qualities that can be recognized in some way as being indicative of creativity.

## The Nature and Range of Giftedness and Talent

A quick glance along the section of the library that contains books about this subject reveals a variety of terms by which authors and teachers refer to pupils who do outstandingly well in school in one or more areas of the curriculum.

Various titles refer to children who are identified as 'able', 'more able', 'very able' 'of exceptional ability', 'gifted' and 'gifted and talented'. The last of these seems to be the current favourite. It is clear that none of these terms is used consistently within the profession with any real precision, and both authors and teachers will often use different terminology at different times to refer to the same pupils. In this respect, this chapter will not be an exception. The view is taken in the discussion that follows that there is little to be gained by trying to provide precise definitions of various degrees of high ability, or fine distinctions between giftedness and talent.

The opening sentence of this chapter provides my own pragmatic description of the pupils that are being discussed here. Primary school teachers have to cope all the time with a range of competence within every curriculum area they teach and they develop a variety of strategies for differentiating between pupils in their planning and teaching. They often group pupils within their classes according to their ability in certain subjects. For example, they might have a group of three or four high attainers sitting and working together in mathematics. They have in their resources additional material for these more able pupils, to ensure that they are challenged sufficiently and achieve their potential. But now and again they will come across a pupil for whom their normal stock of additional material seems hopelessly inadequate and insufficiently demanding. Such pupils are the main focus of this chapter.

Sometimes this type of pupil will be one who shows exceptional ability in just one particular curriculum area, such as mathematics or sport or music. At other times it might be a pupil who seems to show generally high ability across a range of academic subjects, with, for example, exceptional language skills, outstanding scores in mathematics tests and a knowledge of science that makes their teacher feel inadequate! Some pupils stand out because they are exceptionally creative. Creativity is an umbrella term, used in educational discourse to cover a broad range of behaviours, such as fluency in generating ideas, flexibility in thinking, the willingness to deviate from routines and stereotype procedures, or the production of original and nonconformist material. Porter (1999, p. 28) notes that for some writers 'it is the ability to think creatively that distinguishes giftedness from precociousness'. Again this creativity might show itself in just one area of the curriculum, for example in exceptionally imaginative use of language in written English or in creative problem-solving in design and technology. Or it might appear as a more general trait demonstrated in several areas of the curriculum in which a nonconformist and original thinker can be given the opportunity to break away from conventional approaches to tasks and to express their individuality. Then, in addition to exceptional cognitive abilities and subject-associated talent, a definition of giftedness might include 'a less easily acknowledged talent such as leadership, social maturity' (Hymer, 2002, p. 10). Freeman (1998, p. 2) notes that in formal school education, 'social or business talents are rarely considered'.

So, when we are thinking about provision in primary schools for the occasional exceptionally gifted or talented pupil, we have to start by recognizing that we are dealing with a very varied group of highly individual children. These are pupils who should demand of their teachers as much individual attention to

their special needs as those at the other end of the spectrum of school achievement, if they are to develop their gifts and talents to their full potential.

## Characteristics of Exceptionally Able Pupils

In spite of the range of curriculum contexts in which pupils' giftedness will manifest itself and the variety of individual needs that such pupils may have, it is nevertheless possible to identify some characteristics that are often associated with exceptionally able pupils and which are of relevance to the primary school teacher. These are discussed below in terms of personal and social characteristics, general cognitive characteristics, different categories of intelligence and subject-specific behaviours.

### *Personal and social characteristics*

We ought to mention this area to begin with, because there is a common misconception that gifted and talented pupils are more likely than others to be emotionally disturbed and introverted and to have ongoing social problems in relation to their peers. It may be the case that a number of high-profile adult geniuses, such as John Nash (Nasar, 1998), featured in the film *A Beautiful Mind*, have been emotionally disturbed and at times had desperate difficulty in forming normal human relationships. But it would be quite wrong to extrapolate such examples back to our expectations and perceptions of bright and creative children in primary schools. My experience of working with high-ability pupils in mathematics in primary schools would certainly contradict this view. These pupils have as often as not been stable young people, lively and extrovert, with a cheerful disposition and popular with their classmates. Freeman (1998, p. 27), summarizing the research findings in this area, assures us that very able pupils are emotionally normal: 'There is no reliable scientific evidence to show that exceptionally high ability *per se* is associated with emotional problems … in fact, some studies of the gifted have shown them to be emotionally stronger than others, with higher productivity, higher motivation and drive, and lower levels of anxiety.' Additionally, Freeman notes that most research studies have found that highly intelligent youngsters have better all-round social relationships.

Drawing on a number of checklists produced by other researchers and writers, Leyden (2002, p. 109) suggests that, along with a number of distinctive intellectual faculties, exceptionally able pupils in primary schools may show some of the following positive traits: curiosity, persistence, initiative, independence, close attention to detail, a highly developed sense of humour, high expectations, a wide range of interests and a preoccupation with matters of philosophical and universal concern. However, in a group situation they may want to be in charge and can sometimes be intolerant of less able pupils. On the negative side, their written work may not always be neatly presented and well organized, they may be restless and inattentive, they may exhibit nonconformist, uncooperative or unconventional behaviour, and at times may

appear hypercritical of teachers and other pupils. Most of these qualities may be true of a wider range of pupils, but they present a different kind of challenge for the teacher when they are combined with the greater ability, awareness and knowledge of the exceptionally able child.

### *General cognitive characteristics*

Most teachers will often recognize the exceptionally able child as much by their distinctive ways of thinking, reasoning and problem-solving, as by their actual achievement or output. In general, these cognitive characteristics are often a combination of high intelligence and creativity. The checklists provided by Shore (quoted in Montgomery, 1996, p. 53), Freeman (1998, p. 12) and Leyden (2002, p. 109), for example, would suggest that there is research support for associating the following generic cognitive behaviours with pupils who show high ability in a particular curriculum context:

- they will have excellent memories and knowledge and be able to draw on this impressively in solving problems;
- although they may spend longer on planning their approach to a problem or task, they will reach decisions more speedily and will often condense the steps in a solution to a problem;
- they will show high levels of analytical thinking in tackling a problem, showing awareness of what information is needed and what is irrelevant;
- they will tend to generalize methods and principles and apply them readily to new situations;
- they will show flexibility in their thinking and can often see and will opt for alternative, non-routine approaches to learning and problem-solving;
- they will show a tendency to embrace complexity as a way of making tasks more stimulating; and
- they may show an ability to concentrate on extended tasks over a period of time from an early age.

It will often be characteristics such as these demonstrated in one or more areas of the curriculum that may alert a primary school teacher to the possibility that a particular child has a need for special provision in order to ensure that these kinds of thinking and reasoning are given substantial opportunities to develop and to be employed.

### *Different categories of intelligence*

For many teachers, advisers and authors addressing the issue of curriculum provision for exceptionally able pupils, Gardner's model of multiple intelligences (Gardner, 1983) has resonated strongly with their experience of such pupils. Gardner has argued for there being at least seven distinct kinds of intelligence, which are relatively autonomous and independent of each other.

Any given exceptionally able pupil may then be identified as showing exceptional performance in one or more of these kinds of intelligence. In this model, human ability can be evidenced in the following ways:

- linguistic intelligence, which involves the use of spoken, written or signed language;
- logical-mathematical intelligence, which includes both analysis – systematic and logical reasoning – and synthesis – recognizing patterns and articulating generalizations;
- spatial intelligence, including the ability to interpret and manipulate spatial information in two and three dimensions;
- musical intelligence, which shows itself through the ability to discriminate sounds and to respond to ideas and emotions in both musical performance and musical appreciation;
- bodily-kinaesthetic intelligence, physical co-ordination in sports and gymnastics;
- interpersonal intelligence, showing itself in sensitivity to social cues and effective social behaviour; and
- intrapersonal intelligence, which is an awareness of yourself, your own needs and emotions, your personal strengths and weaknesses.

Subsequently, Gardner has expanded this list to cover comprehensively all human endeavour, including, first, naturalistic intelligence (which allows people to distinguish among, classify and use features of the natural environment), and then, later (Gardner, 2000), spiritual intelligence (dealing with spiritual awareness and response) and existential intelligence (showing concern about fundamental questions of existence). These (seven, eight or ten) different 'ways of knowing' – as they are often referred to – have become immensely influential in structuring educational provision in the USA particularly. In Britain, too, it is not uncommon to see this model featuring in school and local education authority policy documents and guidelines for provision for very able pupils (for example, Norfolk Education and Advisory Service, 2003). Teachers find it helpful to be able to focus on a child's particular ability by referring to it as, say, high linguistic intelligence or high logical-mathematical intelligence, and then to target the nurturing of the characteristic features of that particular kind of intelligence.

The model also gives recognition to a broader range of exceptional ability than might normally be taken into consideration in a school's provision for more able pupils, by inclusion of special performance in areas like music and sport, which traditionally have been identified as special talents, and also in aspects of social, personal and spiritual development, which have not. Readers may find it surprising to describe exceptional performance in areas such as sport or social relationships as an 'intelligence'. Yet, one has only to consider the way in which the mind of a top sportsperson – think of the footballer David Beckham or the cricketer Sachin Tendulkar – is able to process rapidly a complex set of spatial and kinetic relationships, to predict and evaluate instantly the outcomes of a set of available choices and then to co-ordinate

their physical actions to produce the optimum effect, to realize that this is behaviour that is worthy of the adjective 'intelligent'. Yet, all too often teachers will not hold such outstanding performance in the same regard as outstanding achievement in academic areas of the curriculum. Gardner's theory at least has the merit of challenging such an attitude and recognizing intelligence in all its different manifestations.

## *Subject-specific behaviours*

In practice, recognition of special talents in music and sport is usually the responsibility of experts in the fields – such as private music teachers and coaches in sports clubs – rather than that of the primary school teacher. By contrast, all teachers in primary schools will from time to time find themselves involved to some extent in the recognition of exceptional ability in language, mathematics and science, the core subjects of the curriculum. In these cases it is not just a matter of the pupil's attainment and scores in tests or examinations being at a higher level than their peers. It is also to do with recognition of the characteristic behaviours within each of these subjects that are the most significant indicators of exceptional ability. It is important therefore that each primary teacher should be aware of the key subject-specific behaviours associated with special ability in these core subjects. For the teacher, this awareness will provide not only a means of recognizing high ability in these subjects, but also a framework for the development and fostering of that ability.

### *High ability in English*

Evans and Goodhew provide the following set of behaviours associated with the child with exceptional language ability, which forms a useful starting point for a primary school teacher:

- demonstrates a high level of technical correctness;
- writes complex sentences using extensive vocabulary;
- is able to write and speak in a variety of registers and styles to suit audiences;
- achieves excellence in creative writing;
- can identify and demonstrate irony, humour, absurdity, implied meaning;
- experiments with plot and character;
- displays originality;
- demonstrates speed and depth of understanding in the spoken and written word;
- is able to express and debate ideas in discussion;
- displays enthusiasm for the subject;
- is able to select, extract and synthesise facts from a passage of writing; and
- is a sustained reader from a wider range of materials (Evans and Goodhew, 1997, p. 20).

Clearly, many of the items in this list are simply a matter of doing at a higher level what we would aim for all pupils in primary schools to learn to do, such as handling spelling and sentence construction accurately and writing and speaking in a variety of registers. Pupils who are especially able in language will stand out because of their understanding and use of extensive vocabulary and their fluent reading and writing. But there are some primary school pupils who are able to do this in a stunning fashion, adding to technical correctness and skilful use of the architecture of language the creative elements of originality and a willingness to experiment and play with language. Here is an example of a highly able language-user starting an imaginative story:

> The bonfire crackled away merrily, its flames dancing and leaping upwards. Sparklers shimmered and Catherine Wheels whizzed. Snatches of conversation could be heard as people arrived and departed from the park. Sam wandered around, looking at the bonfire and licking a toffee apple. He was getting rather bored and wished that something exciting would happen. Suddenly he was aware of someone looking at him. An old lady, with tangled grey hair and a flowing black dress, beckoned him towards her. She gave him a firework, which she lit for him with a cigarette lighter. It crackled away excitedly for a few seconds, shooting out sparks and smoke like a jet engine, then fizzled out. Sam was suddenly aware that his whole body felt weird and that he seemed to be much closer to the ground. He had turned into a cat. He looked around for the old lady, but she had disappeared. He ran to his Dad, but he never did like cats and he just kicked him away. So he ran to his Mum, but when she saw him she just started to scream and to sneeze violently. Then Sam remembered. She was allergic to cats …
>
> (Hannah, age 9)

Technical aspects such as accuracy in spelling, syntax and punctuation, the use of connectives, the choice of vocabulary and use of alliteration, the mix of simple and complex sentences, and the use of adjectives and adverbs are easily identified in this piece of writing. But teachers who are willing to embrace creativity in children's writing as a key factor in recognizing linguistic ability will need to be able to articulate what it is that makes a piece of writing like this 'creative'. For example, the use of original humour in writing and speaking is an early indicator of genuine creativity in language use. The deliberate use of irony, absurdity, puns, hyperbole and understatement are all facets of this kind of creative act in using language, making the reader respond with at least a smile. The fluent use of simile, metaphor and imagery – all of which begin to emerge in the writing of more able pupils in the primary years, as in the example given above – should also be highlighted as key indicators of highly creative ability in language.

Guidance for teaching gifted and talented pupils provided by the QCA suggests that the characteristics of pupils with special ability in English can be grouped under six headings: creative flair, stamina and perseverance, communicative skills, the ability to take on demanding tasks, arguing and reasoning, and awareness of language.

- Creative flair is shown by writing or talking in imaginative and coherent

ways, elaborating on and organizing content to an extent that is exceptional for their age.
- Stamina and perseverance is shown by taking opportunities to produce work that is substantial and obviously the product of sustained, well-directed effort.
- Communicative skills include involving and keeping the attention of an audience by exploiting the dramatic or humorous potential of ideas or situations in imaginative ways, writing with a flair for metaphorical or poetic expression, grasping the essence of particular styles and adapting them to their own purposes, and expressing ideas succinctly and elegantly, in ways that reflect an appreciation of the knowledge and interests of specific audiences.
- The ability to take on demanding tasks involves researching, comparing and synthesizing information from a range of sources, including ICT, and engaging seriously and creatively with moral and social themes expressed in literature;
- Arguing and reasoning includes creating and sustaining accounts and reasoned arguments at a relatively abstract or hypothetical level, in both spoken and written language, grasping the essence of any content and reorganizing it in ways that are logical and offer new syntheses or insights, justifying opinions convincingly, using questions and other forms of enquiry to elicit information and taking up or challenging others' points of view.
- Awareness of language is shown, for example, in understanding the nature of language and having a special awareness of features such as rhyme, intonation or accent in spoken language, and the grammatical organization of written texts (adapted from the National Curriculum website, Gifted and Talented Guidance).

*High ability in mathematics*

Mathematics is the core subject in the curriculum where exceptional ability can be most marked. It is within this subject that we hear about 7-year-old prodigies who can solve quadratic equations and 12-year-olds passing A level examinations and embarking on their first degree! Even within a normal range of pupils in a primary school class the clearly observable range of facility in mathematics will lead teachers to make separate provision for the more able and less able pupils more often that in other subjects. In a typical Year 2 group (ages 6 to 7 years) a primary teacher will have to cope with some pupils who struggle to calculate mentally, say, 8 + 9, and others who can successfully treble a three-digit number like 298. Not surprisingly, therefore, there has probably been more attention in educational research into the nature of high ability in mathematics than there has in other subject areas.

Consequently, various lists of characteristics of high mathematical ability have emerged in this field. Most influential has been the work of the Russian mathematics educator, Krutetskii (1976), who used a problem-solving model to identify the distinctive ways in which mathematically capable schoolchildren respond to problems, process information in obtaining solutions, and learn from the experience. Straker (1983) provided a checklist for teachers of young

children to identify mathematical potential, using criteria related to logical reasoning, recognizing and articulating pattern, and classification. In England, the Excellence in Cities programme (DfEE, 2000b), and guidance provided by the National Numeracy Strategy (DfEE, 2000c; 2000d) also provide lists of key characteristics of mathematically able pupils, highlighting again their ability to generalize patterns and to develop logical arguments, as well as their flexibility and persistence in problem-solving. Kennard provides a synthesis of some of these sources, indicating the following characteristic abilities associated with mathematically able pupils in primary schools:

- grasping the formal structure of a problem;
- generalising, initially through the recognition of instances of a general rule and later from the study of examples;
- generalising approaches to problem-solving;
- leaving out intermediate steps when solving familiar problems;
- thinking flexibly as a consequence of appropriate teacher intervention;
- using mathematical symbols;
- developing logical arguments;
- remembering generalised results (Kennard, 2001, p. 10).

The reader should note the twin prongs of analytical thinking (grasping the structure of a problem and logical argument) and synthetic thinking (generalizing patterns and approaches). The nature of mathematics itself ensures that both these kinds of thinking will be involved in any significant mathematical endeavour and, therefore, in any description of mathematical ability. The reader may also be surprised that none of the lists of characteristics of mathematically able pupils in primary schools makes reference to prodigious skill in numerical calculations. Krutetskii (1976) found that this was not a necessary component of high mathematical ability.

References in Krutetskii, Kennard and the DfEE documents to pupils showing flexibility in thinking indicate that in this subject also there are aspects of creativity, such as non-rigidity and non-reliance on stereotype procedures, that are significant in the identification of pupils who are really gifted. Exceptional ability in mathematics is not just high achievement in the standard elements of the curriculum. In my own research I have explored the relationship of mathematical creativity to mathematical attainment (Haylock, 1997). Pupils of equally high mathematical attainment can show vastly different performances on tests designed to reveal mathematical creativity (mathematical tasks requiring divergent thinking in problem-solving and problem-posing and breaking from established procedures). Conventional mathematical attainment limits the pupil's performance in terms of mathematical creativity, but does not determine it (Haylock, 1987). Low-attaining pupils do not have sufficient mathematical knowledge and skills to demonstrate creative thinking on the kinds of tasks used in the research. But the higher the level of attainment the more possible it becomes to discriminate between pupils in terms of the indicators of mathematical creativity. The pupils with the greatest facility for overcoming fixation and for thinking

divergently in mathematics are usually in the very highest attaining group – but even in this group there are significant numbers of pupils who show very low levels of these kinds of creative thinking in mathematics. Using this model we might identify the mathematically gifted pupil as one who is both a high attainer and highly creative (flexible, divergent, non-rigid, unconventional) in their approach to mathematical tasks. These pupils are found to show low levels of anxiety to mathematics, to have high self-concepts, to think in broad categories (being able to see similarities between mathematical entities) and to be willing to take reasonable risks in a mathematical context.

The guidance for teaching gifted and talented pupils provided by the QCA provides a useful summary of this section:

> Pupils who are gifted in mathematics are likely to:
> - learn and understand mathematical ideas quickly;
> - work systematically and accurately;
> - be more analytical;
> - think logically and see mathematical relationships;
> - make connections between the concepts they have learned;
> - identify patterns easily;
> - apply their knowledge to new or unfamiliar contexts;
> - communicate their reasoning and justify their methods;
> - ask questions that show clear understanding of, and curiosity about, mathematics;
> - take a creative approach to solving mathematical problems;
> - sustain their concentration throughout longer tasks and persist in seeking solutions;
> - be more adept at posing their own questions and pursuing lines of enquiry.
>
> (National Curriculum website, Gifted and Talented Guidance)

*High ability in science*

In science, because of the nature of the subject, with its emphasis on drawing conclusions from experiments, able pupils in primary schools are likely to get most opportunity to demonstrate and develop such key generic cognitive skills as planning, organizing, classifying, problem-solving, reflecting and evaluating. In addition, there is a huge amount of technical knowledge and terminology which pupils with an exceptional fascination for things scientific can acquire, even at primary level. Primary teachers will tell you, for example, of pupils with an extraordinary knowledge of astronomy, or an extensive understanding of electric motors or a comprehensive knowledge of fossils. But the creative aspect that we usually look for in any discussion of giftedness is also potentially there in primary science. It begins with pupils spotting patterns or associations in their observations and in recognizing that a principle discovered in one scientific context can be applied in another. It is shown in the process of hypothesizing, where the pupil draws on some experimental or observational data to formulate a theory or principle that can then be checked by further experimentation or observation. Creativity is shown further by the pupil who is innovative in experimental design. These creative aspects of the process of thinking scientifically feature in the description of pupils with high

scientific ability, provided by Coates and Wilson (in Eyre and McClure, 2001, p. 92). These authors assert that such pupils have a natural curiosity about the world and the way things work; that they enjoy hypothesizing and show an ability to express scientific knowledge and understanding logically and coherently; that they use scientific vocabulary accurately and appropriately; that they are able to transfer knowledge and understanding from one situation to another and can spot and describe patterns in results; and that they show innovation in experimental design and in the way they collect and record data.

The curiosity of the able young scientist about the world and the way things work can sometimes lead to an extraordinary persistence in researching some personal interest, with the pupil consuming reference books and lapping up more and more facts and scientific principles about the subject in question. It is not uncommon for the able scientist to 'show intense interest in one particular area of science (such as astrophysics), to the exclusion of other topics' (National Curriculum website, Gifted and Talented Guidance). They may have scientific hobbies, have an unusual interest in science books and science fiction, and enjoy talking to the teacher about new scientific information they have acquired.

The QCA, on the National Curriculum Gifted and Talented website, provides a detailed description of some further characteristics of pupils who are gifted in science. The guidance asserts that such pupils are likely to:

- be extremely interested in finding out more about themselves and things around them;
- enjoy researching obscure facts and applying scientific theories, ideas and models when explaining a range of phenomena;
- be able to sustain their interest and go beyond an obvious answer to underlying mechanisms and in greater depth;
- be inquisitive about how things work and why things happen;
- ask many questions, suggesting that they are willing to hypothesize and speculate;
- use different strategies for finding things out;
- think logically, providing plausible explanations for phenomena;
- put forward objective arguments, using combinations of evidence and creative ideas, and question other people's conclusions;
- decide quickly how to investigate fairly and how to manipulate variables;
- consider alternative suggestions and strategies for investigations;
- analyse data or observations and spot patterns easily;
- strive for maximum accuracy in measurements of all sorts, and take pleasure, for example, from reading gauges as accurately as possible;
- make connections quickly between facts and concepts they have learned, using more extensive vocabulary than their peers;
- think abstractly at an earlier age than usual;
- enjoy challenges and problem-solving, while often being self-critical; and
- be self-motivated, willingly putting in extra time (adapted from the National Curriculum website, Gifted and Talented Guidance).

However, teachers are alerted to the possibility that these pupils may approach

undemanding work casually and carelessly, they can be easily bored by over-repetition of basic ideas, and that, although they may be methodical in their thinking, this may not be the case in the recording of their results and findings.

## Acceleration or Enrichment

The trick in providing learning opportunities for all pupils in school is to ensure that they are sufficiently challenged but without experiencing too much failure. Just as low-attaining pupils can be easily demotivated by experiencing too much failure in the tasks they are given in schools, so can high-attaining pupils by too little challenge. However, challenge does not come simply from moving the more able pupils through the standard curriculum at a greater pace. This can be part of the answer, but such an approach (often called acceleration) is based on the false premise that the standard curriculum is appropriate and sufficient for all pupils. The discussion above about the characteristics of gifted and talented pupils indicates that these pupils are capable of engaging substantially with a much broader range of activity, with material that is not just 'harder' but qualitatively different (often called enrichment) with opportunities to foster aspects of their creativity. So, as well as stretching more able pupils vertically (acceleration), we should be looking for ways to stretch them sideways (enrichment).

Acceleration is sometimes understood as an organizational device, meaning the moving of the pupil to work with a class or set in an older year group, for those subjects in which special talent has been identified. There are obviously advantages to this in terms of moving through the standard curriculum more quickly, but often such an approach will still fail to provide the pupil with the sideways stretching that they need as well. Pupils will often be unhappy to be separated from their age-group peers and may experience greater social problems in integration with older pupils. There are also some very obvious practical difficulties of organization. For example, having reached the top set in the top year group in a primary school in, say, mathematics, ahead of their chronological age, where does the pupil go the following year? Most primary schools will therefore tend to keep their gifted and talented pupils working with their own year groups, but seek to ensure special provision within lessons where the material may be insufficiently challenging, and to supplement this with additional opportunities outside normal class lessons.

The special provisions within ordinary class lessons are likely to be a combination of acceleration (moving the pupil on to more advanced material) and enrichment. Particular knowledge and skills to be learnt by the majority of pupils later on can be selected to be taught to the more able pupils specifically because possession of this knowledge and these skills might open up possibilities for a broader range of experiences for them. For example, in mathematics, very able Year 4 pupils (ages 8 and 9) can begin to learn to use algebraic notation in mathematics, not just because it is more advanced mathematics, but specifically because it provides the pupils with a tool they can use to articulate the generalizations arising from their explorations of pattern in number.

### *Stretching them sideways*

The descriptions of the characteristics of gifted and talented pupils provided above are the starting point for determining how to stretch these pupils sideways. The basic curriculum principle for the teacher planning to meet their special needs is to ensure that they are provided with experiences and opportunities that develop these exceptional qualities and characteristics.

For example, in English language a characteristic of the exceptionally able pupil is their ability to take on demanding tasks, researching, comparing and synthesizing information from a range of different sources. The QCA gives an example of how a unit of work for a Year 6 class based on the school information booklet might provide opportunities for the more able pupil to develop this kind of ability:

> Most pupils generate accounts of their own experiences to include in the booklet, or work together to write an introduction to the school for visitors. Pupils with special gifts in literacy could carry out a much more demanding 'review, research and rewrite' exercise. They could critically analyze the content and design of an existing booklet and generate alternative proposals for a new document, incorporating the contributions of their fellow pupils. This would allow the most able pupils to explore how the use of language can be effectively related to illustrations and other design features of texts.
>
> (National Curriculum website, Gifted and Talented Guidance)

For some further practical suggestions for challenging the more able language user, the reader is referred to Dean (1998).

In mathematics, the QCA proposes that activities for the exceptionally able should aim 'to increase pupils' ability to analyse and solve problems, stimulate originality and encourage initiative and self-direction'. Activities should challenge pupils 'to develop their thinking through, for example, observing, comparing, classifying, hypothesising, criticising, interpreting and summarising' (National Curriculum website, Gifted and Talented Guidance). Many such activities are provided in, for example, the National Numeracy Strategy mathematical challenges for able pupils (DfEE, 2000d). A particularly useful resource for teachers is the Internet-based material provided by NRICH (NRICH website), a project based at the University of Cambridge School of Education. This project aims to establish a permanent national centre in the UK for curriculum enrichment to provide mathematical learning support for very able children of all ages. The learning and enjoyment of mathematics is promoted through an Internet newsletter and the participation of university students as peer teachers providing an electronic answering service. The NRICH centre also offers support, advice and inservice training to teachers, and resources for mathematics clubs.

In science teachers can give pupils with exceptional scientific ability access to more ICT-based information for research, they can give pupils the chance to modify an investigation being undertaken by the whole class to make it more challenging, or they can expect these pupils to provide explanations and connections, when other pupils are reporting only information and observations. Individual science projects in an area of personal interest carried on both at school and at home are often one of the most effective ways of engaging the more able young scientist. For some practical suggestions for these

kinds of activities in science for more able pupils the reader is referred to Coates and Wilson (in Eyre and McClure, 2001).

### *Activities outside the class lesson*

A number of actions are taken by many primary schools to ensure proper support for their gifted and talented pupils. First would be the appointment of a member of staff with responsibility in this area. This member of staff would be expected to research resources, including useful and relevant websites, to consult LEA guidance and to develop contacts with relevant organizations, specialist teachers in the local high school, LEA advisers and experts in the field outside of the school. This 'gifted and talented co-ordinator' would take the lead in the development of a school policy, outlining the principles and provision in this area to which the school is committed. Governing bodies will often appoint one of their members to exercise oversight of this area.

Putting on musical and dramatic performances, participating in sporting competitions and producing school magazines and newsletters, for example, are all well-established opportunities for a range of particular gifts and talents to be fostered. But in addition to such public activities, many schools have found ingenious ways of providing additional challenge for more able pupils outside the normal class lessons. For example,

- a school arranges for their more able pupils to participate in a mathematics challenge event organized by the local university for mathematically able pupils in local primary schools;
- a school organizes a literary circle for more able language users, inviting pupils to read and discuss books, poetry and to share their own writing;
- a group of primary science and mathematics teachers, supported by two enthusiastic teachers from a high school, organize a series of termly events for able young scientists, including visits to local science laboratories and industrial sites;
- a school commissions a more able language user to visit a local author, to interview them and to write a piece for the local newspaper;
- a school arranges for a mathematics educator from the local university department of education to spend an hour a week working with a small group of very able mathematicians;
- in co-operation with the parents, a teacher puts together a collection of science experiments and challenges that can be performed at home by an exceptionally able pupil; or
- the parents of more able pupils are encouraged to arrange for their children to attend weekend events provided by subject organizations or summer schools designed to stretch the gifted and talented pupils.

### *Further support and guidance*

In recent years curriculum provision for the gifted and talented pupils has been an area of increased activity. As has been noted above, the QCA through its

National Curriculum Gifted and Talented Pupils website, has provided guidance on teaching such pupils. This includes guidance on identification of the gifted and talented, school policies, roles and responsibilities, management of provision, how to match teaching to pupils' needs and on issues of transition. Very active in this field in the UK has been the National Association for Able Children in Education (NACE website), which is the professional association that promotes and supports the education of gifted and talented pupils. Members of this association have generated a substantial number of books in the last few years, reflecting the burgeoning interest in this field. Local education authorities, often prompted by OFSTED inspections, are also actively producing guidance for their schools in this area. It is encouraging to see that at last in Britain the special needs of the gifted and talented pupils in our primary schools are being addressed seriously by all who have a part to play in their education.

## Issues for Reflection

- What, if anything, do the following terms contribute to your understanding and recognition of gifted and talented pupils in primary schools: precocity, attainment, underachievement, excellence, aptitude, promise, intelligence, creativity, exceptional performance, prodigy, genius?
- In your experience do gifted and talented children in primary schools have more problems in terms of personal and social development than other children, or not?
- What would be the arguments for or against moving an exceptionally able pupil to work with an older year group for one or more areas of the curriculum? In what circumstances might a primary school judge this to be an appropriate course of action?
- For a primary school year group with which you are familiar, for each of English, mathematics and science, identify some examples of activities for exceptionally able pupils that would foster their creativity.
- What would you want to see included in a primary school's policy for provision for gifted and talented pupils?

## Summary of Key Points

- Exceptionally gifted or talented pupils in primary schools form a very varied group of highly individual children.
- These are pupils, therefore, who should demand of their teachers as much individual attention to their special needs as those at the other end of the spectrum of school achievement, if they are to develop their gifts and talents to their full potential.
- Gifted and talented pupils are likely to have no more problems in terms of personal and social development than other pupils of their age, although they may exhibit certain characteristic personal qualities, such as curiosity, independence, persistence and nonconformity.

- Gifted and talented pupils can be identified in terms of general cognitive abilities, or by using Gardner's theory of multiple intelligences, or by reference to subject-specific behaviours (particularly in English, mathematics and science).
- In all areas, exceptional ability combines high achievement in conventional terms with aspects of creativity.
- Curriculum provision for very able pupils should be a balance of some acceleration through the standard curriculum and a range of enrichment activities.
- Enrichment activities within class lessons should focus on the fostering of the particular characteristics that exceptionally able pupils show in that subject area.
- Schools should supplement their provision for their highly able pupils within class lessons with a range of opportunities outside the classroom.
- In recent years there has been a growth in the provision of guidance, resources and support for teachers to enable them to meet the needs of gifted and talented pupils.

## Suggestions for Further Reading

Freeman, J. (1998) *Educating the Very Able: Current International Research.* London: The Stationery Office (for OFSTED). This is a key text, summarizing the implications of international research findings. Sections deal with ways of identifying very able pupils, their characteristics and how to educate them. The strength of the book is that assertions are based on evidence rather than opinion.

Eyre, D. and McClure, L. (eds) (2001) *Curriculum Provision for the Gifted and Talented in Primary School: English, Maths, Science and ICT.* London: David Fulton Publishers Ltd, in association with NACE. This very practical book has useful contributions dealing with provision for very able pupils in the core subjects of the primary curriculum. It would be a good first text for someone coming new to this field.

DfEE (2000) *National Literacy and Numeracy Strategies: Guidance on Teaching Able Children*. London: DfEE. This book is an important text for all primary schools and teachers, providing government guidance on how to ensure that the special needs of able children are catered for properly within the national strategies for numeracy and literacy.

Porter, L. (1999) *Gifted Young Children.* Buckingham: Open University Press. This is a gem of a book for all teachers of younger children, as well as for parents of gifted children. It provides a rationale for gifted education as well as comprehensive and practical guidance for working with able children from birth to about 8 years of age.