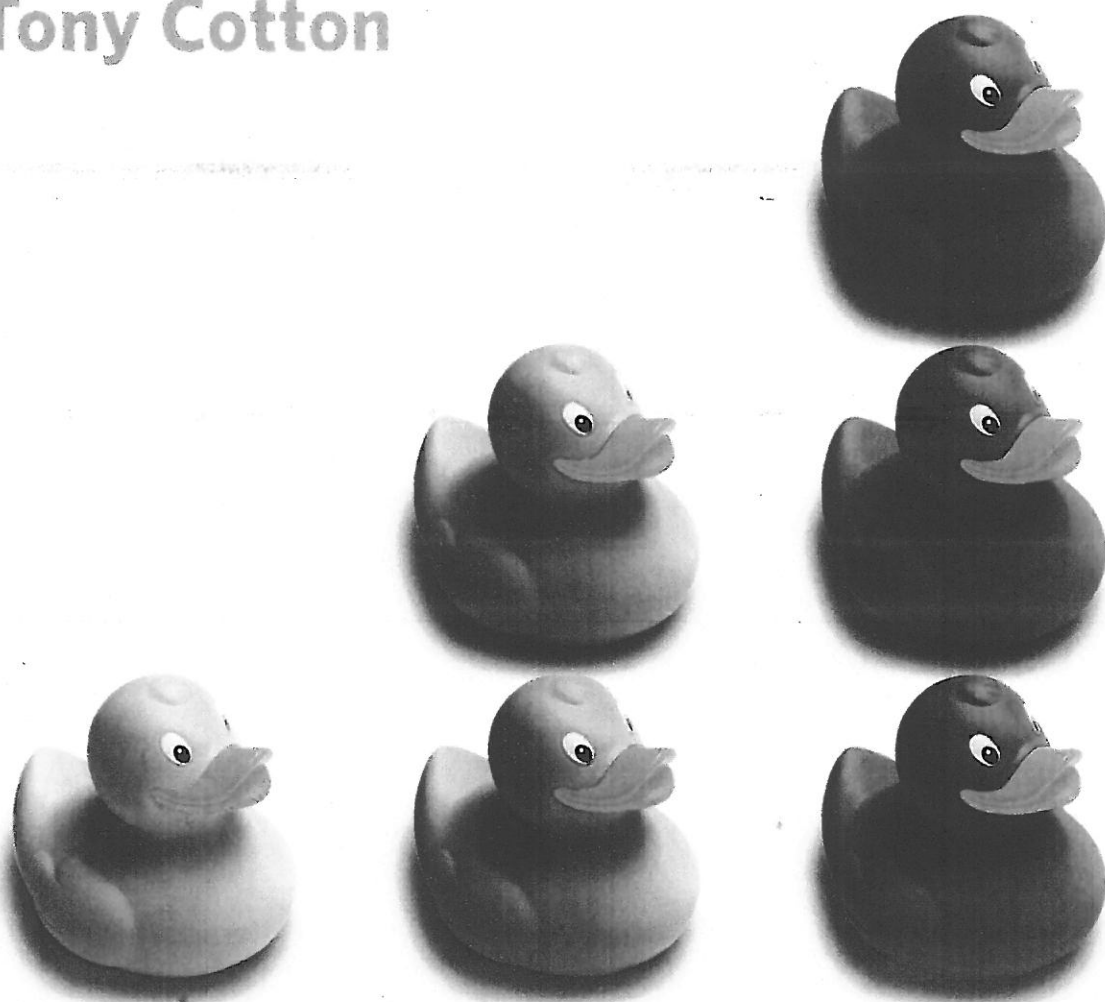


Understanding
and Teaching

SECOND
EDITION

Primary Mathematics

Tony Cotton

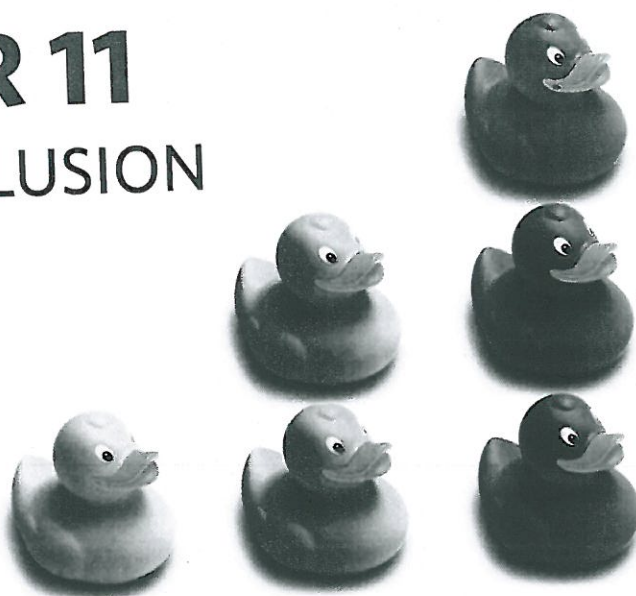


ALWAYS LEARNING

PEARSON

CHAPTER 11

ISSUES OF INCLUSION



Introduction



Understanding and becoming successful in mathematics can have a huge influence on individual life chances. None of you would have been able to gain places on teacher education courses without achieving a 'C' in GCSE mathematics. In 2008 in answer to a parliamentary question the schools minister announced that 42% of pupils in English schools achieved five GCSEs at grades A-C including English and mathematics. This percentage falls to 13% in schools where over half the children are entitled to free school meals. This statistic shows how success in mathematics, and access to the improved life chances that offers, is not equally distributed. This chapter explores issues of inclusion – it aims to offer you support in helping *all* your learners to achieve their potential in mathematics.

Starting point

In 1997 Mike Askew, Margaret Brown, Dylan Wiliam and colleagues from King's College in London explored the links between teachers' practices, beliefs and knowledge and pupil learning outcomes in mathematics. They interviewed and observed 90 teachers and 2000 pupils. The full results are available in the book *Effective Teachers of Numeracy: Report of a study carried out for the Teacher Training Agency* (King's College). In this book the authors

identified three sets of beliefs which they suggested were important when understanding the impact of teacher beliefs on effective teaching of numeracy. These were:

- **Connectionist** – a connectionist teacher values pupils' methods and teaching strategies with an emphasis on establishing connections within mathematics. This means that learners are able to see the links between the different areas of mathematics they are engaged with and can see the 'big picture' rather than view mathematics as a set of separate skills to be learnt in isolation from each other.
- **Transmission** – a teacher with these beliefs sees mathematics as a collection of separate routines and procedures to be taught to pupils.
- **Discovery** – these teachers see themselves as facilitators of learning and see mathematics as an area to be discovered by pupils.

You will recognise these terms from the audit questionnaire you completed in Chapter 2. The research showed that teachers with a strong connectionist view were most effective in terms of pupils making progress in their learning of mathematics. A key belief for connectionist teachers is that 'most pupils are able to become numerate'. This means that they believe that all pupils are able to move forward in their mathematics learning. The challenge for teachers is to find the most effective ways for pupils to learn mathematics.

This chapter explores the ways in which you can adapt and develop your practice to include all children in your class, whatever their learning needs are.

Chapter 3 opened with this number square:

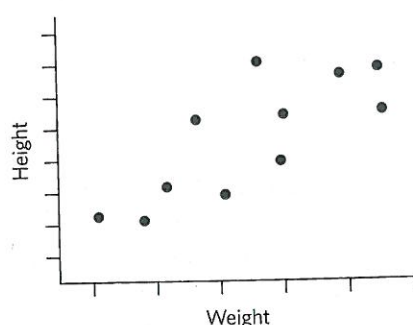
1	3	5	7	...
2	6	10	14	...
4	12	20	28	...
8	24	40	56	...
...	...	...	...	...

I posed the questions 'What patterns can you see?' and 'Will 1000 appear?' I have used this activity with learners aged 10–70, with primary school pupils, secondary school pupils and degree-level mathematicians. Some groups of pupils focus on exploring patterns; the simplest patterns here are odd and even numbers, series of numbers that increase by 2, by 4, by 8, and so on. Another group noticed that the numbers in the first column are powers of 2 ($2^2 = 4$, $2^3 = 8$, and so on). Older learners used algebra to explore the patterns in the square, and academic mathematicians came up with a proof that showed all numbers would appear once and only once.

As a teacher exploring ways of teaching for inclusion through mathematics, a key skill you will need to develop is the ability to plan activities that are accessible to the range of learners in your class. However, as well as offering accessibility, these activities need to offer challenge too.

Another activity I have introduced you to previously in Chapter 9 has engaged a wide range of pupils. If you remember I ask the children to try to think about the relationship between the distance around their head and their height and come up with some conjectures.

I always ask learners to work in all attainment groups for this activity, and I will explore the outcomes in a little more detail here. The children measure each other's height and the circumference of their heads to create a scatter graph using initials rather than dots so that each child can see themselves in the data. A scatter graph is a graph of plotted points which shows the relationship between two sets of data. For this activity, distance round head was measured on one axis and height on the other.



Different groups will interpret the graph in different ways. Some find the 'line of best fit'. The line of best fit is the line that can be drawn on a scatter graph which is the best approximation to all the points on the graph. If you have drawn it accurately the total distance of all the points from the line should be the same for points on each side of the line.

Some children used calculators and individual measurements to see if there was a pattern; some looked at boys and girls in the data to see if there were generalisations that could be made. But the whole class were engaged in exploring the data. At the end of the activity the teacher turned to me and said, 'That was interesting, the weaker mathematicians were the most successful.' In this class the teacher usually grouped her children by prior achievement in mathematics tests. These tests were usually number based. The teacher had noticed that for this activity prior achievement in a 'number' test did not predict how well an individual would engage with ideas of data handling and problem solving.

In an inclusive classroom all learners would be achieving to the best of their ability; and different learners may well excel in different areas of mathematics rather than individuals attaching labels of 'good at mathematics' to themselves. A key lesson for me here was how important it is to vary the groupings we operate within schools. When I visit my students in schools many still operate with fixed groups for mathematics sessions. They may start a session by asking children to get into their 'numeracy groups'. If we never vary the groups that our children learn mathematics in, we limit the range of their peers that they can learn from; we also limit the possibility for children to excel in different areas of mathematics as they quickly come to understand they are in the 'bottom group' for mathematics and put limits on their own understanding.

This became clear one day when I was sitting with a group in a Year 2 classroom. One boy in the group said to me, 'Can you do all of your times-tables?' I told him I could, so he said, 'You need to go and sit with the blue group - they're the cleverest and we won't know our tables until next year.'

Taking it further



Professor Jo Boaler, currently working at Stanford University in the United States, has researched into the impact of setting by ability in English schools for many years. She suggests that this practice means that many learners spend much of their time in school being given low-level and uninteresting activities. Many of these children are capable of achieving more if they are given appropriate learning activities.

In interviews she carried out she was moved by the pleas of learners in low groups who said that they just wanted to learn but were constantly given activities that they did not feel stretched them. She notes that some people believe the practice is right because it keeps the high achievers away from low achievers. However, her research shows that high achievers do not do any better in high sets than in mixed-ability groups, and for some students, being in a high set is a source of considerable anxiety. She also shows us that comparisons of test performance in different countries always show that countries that set students the least and at the latest date have the highest performance. The reasons for this are obvious: once students are told that they are low achieving and given low-level work, their learning diminishes.

Her conclusion is that a mixed-ability, multi-dimensional approach means that success is an option for all learners.

If you are interested in reading more about these ideas, there is a wide range of research studies available on Professor Boaler's home page: <http://www.sussex.ac.uk/education/profile205572.html>.

The rest of this chapter focuses on ways in which teachers can meet the specific needs of particular groups of learners who may currently be underachieving in mathematics.

Children with special educational needs

It is important to remember that there will not necessarily be a correlation between children you teach who are identified as having a special educational need and their ability at mathematics. For example, a child in your class who is dyslexic may be a high achiever in mathematics or may achieve less well. There is often no direct correlation between a special educational need and attainment in mathematics. However, there are steps you can take that ensure you are giving all children the best possible chance to achieve their potential. It is vital that you become aware of the impact of an individual child's specific need, and use this to support your planning.

The main implications for your planning are ensuring that activities are accessible for all learners so they can find a way to get into the activity, while ensuring the activities offer sufficient challenge for all pupils.

This might mean that you have to adapt resources that have previously been used to teach a particular idea. For example, I have seen a group of children who are learning about 'adding money to 10p' set the following set of questions.

Copy and complete these number sentences:

$$\begin{array}{ll} 2p + \text{---} = 10p & 9p + \text{---} = 10p \\ 4p + \text{---} = 10p & 5p + \text{---} = 10p \\ 7p + \text{---} = 10p & 1p + \text{---} = 10p \end{array}$$

This very closed activity was accessible to children who already had the necessary skills, but several of the children in the class found it hard to make a start on the activity. Similarly those children who understood the task found it very easy and completed the activity without being challenged.

An alternative to this is for the teacher to ask, 'How many different ways can you make 10p?', providing learners with 1p, 2p, 5p and 10p coins. Try this activity for yourself and you will see that it offers accessibility and flexibility.

If you plan the structure of your lessons carefully you can maximise the possibility of all your learners progressing in their learning. For example, in the sections of the lesson which focus on discussion led by the teacher it will help to plan questions specifically for pupils achieving below expected levels. By careful targeting of questions rather than asking for 'hands up' you can draw all pupils into the activity. This also allows you to focus on and develop key vocabulary. You may choose to sit these children close to you, or to use teaching assistants to work with them in oral sessions. Another good way to involve all pupils in oral sessions is through 'talk partners'. You can set up 'talk partners' and place those children who are achieving below expected levels with peers who are achieving well. Using paired discussions will support both sets of learners.

Careful thought about the resources you can use will also support your learners with specific learning needs. Flash cards and illustrated wall displays will support all learners in developing appropriate vocabulary. The use of number lines, 100 squares and other number apparatus will also support children in developing mental images of the ways in which the number system works.

There will be children you will meet in your career who have been identified as having specific learning needs. There are suggestions below as to how you may support these particular groups of learners. Don't forget, however, that most of these ideas will improve the learning experience for all your learners.

Children with emotional and behavioural difficulties

'EBD' stands for Emotional Behavioural Disorder (often referred to as 'Emotional and Behavioural Difficulties') and refers to a condition in which the behaviour or the emotional response of children is so different from the rest of your class that they impact on the child's learning. This may take the form of disruptive, antisocial or aggressive behaviour; poor peer relationships; or hyperactivity, attention and concentration problems.

You may find that unstructured, open-ended tasks can exacerbate behavioural difficulties. If children are uncertain how to start an activity, or are unclear what your expectations of success are, they may avoid starting the activity in case they 'go wrong'. Similarly, if they are unclear what you are looking for as success in the activity they may not take a risk in

case they 'get it wrong'. It may help to provide a clear structure and set time-specific targets. Try to be consistent in your routines; in particular, the cycle of demonstration, modelling and summarising is very important for this group of learners. Giving children responsibility and involving them in demonstrations by bringing them to the front can support them in developing positive behaviour patterns. Also aim to avoid interrogational questioning, as this may lead the learners to feel humiliated, and this is a common cause of inappropriate behaviour; this is where using talk partners can help. Make sure you offer this group of learners challenge – they will soon realise if you are offering them low-level tasks, and this can lead to inappropriate behaviour too.

Children with autism

The National Autistic Society, on its website <http://www.nas.org.uk/autism>, describes autism as follows:

Autism is a lifelong developmental disability. It is part of the autism spectrum and is sometimes referred to as an autism spectrum disorder, or an ASD. The word 'spectrum' is used because, while all people with autism share three main areas of difficulty, their condition will affect them in very different ways. Some are able to live relatively 'everyday' lives; others will require a lifetime of specialist support.

The three main areas of difficulty which all people with autism share are sometimes known as the 'triad of impairments'. They are:

difficulty with social communication

difficulty with social interaction

difficulty with social imagination.

These are described in more detail below.

It can be hard to create awareness of autism as people with the condition do not 'look' disabled: parents of children with autism often say that other people simply think their child is naughty; while adults find that they are misunderstood.

All people with autism can benefit from a timely diagnosis and access to appropriate services and support. (Visit www.autism.org.uk for further information.)

You need to be careful when setting up group or pair work as this can be problematic for children on the autistic spectrum. It is important not to avoid group and pair work but you need to make sure that routines are followed consistently, in particular routines for moving into groups or pairs. For example, always sitting in the same pair on the carpet will help. Classroom transitions are another point of the lesson that can cause difficulties for children with autism. Plan for these transitions carefully, be very clear about how the transition will be managed and keep them calm and orderly – if you just send groups back to their tables without instructions this will prove difficult for children with autism. If they become overwhelmed by noise and movement they should be allowed to go to a quiet, calm place for a while. (So, it is important to have such a space in your classroom.)

Using familiar equipment also supports these children in their learning, as novelty has little appeal. Extensive use of metaphor can also cause difficulty as children with autism are likely to interpret what you say literally. Making time to observe the children to check their understanding is important. Using picture sequences to break down activities into manageable tasks can also support progression.

Recent films and stories in the media seem to suggest that many people on the autistic spectrum can calculate huge numbers in their heads and have photographic memories. Unfortunately such stories give the false impression that all children with autism have these special skills. Most people on the spectrum do not have any special talents for mathematics. However, it can be true that children on the autistic spectrum will exhibit keen interests in particular subjects, and so may know a great deal about very specific areas.

Finally, allowing a child to 'fiddle' with their fingers or small objects can help with concentration and focus.

The following suggestions for children with dyspraxia will also prove helpful for children on the autistic spectrum.

Children with dyspraxia

Dyspraxia is thought to affect up to 10% of the population. It is an impairment in a child's development in terms of the way the brain processes information to help us organise our movements. It affects the way that we plan what we are going to do and how we do it. Dyspraxia can lead to difficulties in terms of perception, language and thought.

Avoid giving a series of instructions for a task as this may well confuse a child with dyspraxia. This will mean that you may have to differentiate, giving some groups more complex instructions while breaking the instructions down for others. Giving 'thinking time' is useful for children with dyspraxia - saying, 'In 30 seconds I will ask you to tell me three number pairs that sum to 100' for example. Using individual whiteboards to rehearse answers will also support these children.

Children with dyslexia

Dyslexia is a specific learning difficulty that mainly affects reading and spelling. Dyslexia is characterised by difficulties in processing word sounds and by weaknesses in short-term verbal memory, and its effects may be seen in spoken language as well as written language. The current evidence suggests that these difficulties arise from inefficiencies in language processing areas in the left hemisphere of the brain which, in turn, appear to be linked to genetic differences.

You should avoid asking a child with dyslexia to read questions aloud unless you are sure they will be comfortable doing this. By checking individual needs you will know what specific support your dyslexic learners may need. It may be that coloured filters will support them in reading text, or printing on a particular colour of paper. The use of highlighters to pick out key words is an important skill for all pupils and will support dyslexic learners across all subjects.

Providing visualisation activities will help dyslexic learners - indeed they may excel in this area and be able to support other children in becoming more skilled at visualisation.

Children with dyscalculia

Dyscalculia describes children who have specific difficulties in carrying out calculations as a result of damage to specific regions of the brain. Recent research suggests that dyscalculia can also occur developmentally, as a genetically linked learning disability which affects a person's ability to understand, remember or manipulate numbers or number facts. The term is often used to refer specifically to the inability to perform arithmetic operations, but it is also seen as leading to a specific difficulty in conceptualising numbers as abstract concepts. This may be described as having 'number sense'.

Ways that you can support learners with dyscalculia include providing a wide range of concrete manipulatives to help understanding to develop before moving into the abstract concepts. This will also assist in providing learners with strategies to visualise. When working on problem solving or word problems, try to provide opportunities to use real-life situations or items to assist with visualisation.

It can also help to provide opportunities to use 'pictures, words or graphs' to help with understanding. Make sure you promote a 'can do' attitude as much as possible; praise and a positive outlook can start to overcome the fear of mathematics that learners with dyscalculia may have developed.

Children who are gifted and talented

The Department for Children, Schools and Families (now Department for Education) suggested that providing an appropriate learning experience in mathematics for gifted and talented learners in our schools is a matter of equity. As with all other pupils they have a right to a mathematics education that will allow them to fulfil their potential. It is appropriate then that a section exploring the particular issues for learners who have been identified as gifted and talented should feature in a chapter exploring inclusion.

Identifying a learner who is gifted and talented in terms of mathematics does not mean identifying those learners who are achieving very highly in tests. Gifted and talented learners may often be those children who take on leadership roles in group work, who show high-level practical skills or can see creative solutions to complex problems.

The following are characteristics that gifted and talented children may exhibit. They will:

- Be very articulate.
- Offer quick verbal responses.
- Communicate well with adults.
- Show unusual responses to problem-solving activities.
- Be able to work things out in their head quickly.
- Have a good memory.
- Be easily bored.
- Show a strong sense of leadership.

So it is important in planning your lessons that you work to the strengths of these learners. Create opportunities for them to articulate their thoughts; this may be best in small-group work so they don't dominate whole-class sessions. You may occasionally want to work in 'achievement' groups so that these learners can challenge each other, but it is also important that these learners articulate their thoughts with a wide range of pupils. Through describing their own thinking to their peers they will come to understand their thinking processes better.

Similarly, plan activities which demand quick verbal responses and offer leadership roles to this group of learners. Most importantly, watch out for signs of boredom and always have open, extension activities ready.

One website which will help you add stretch and challenge to your classroom is the NRICH site <http://nrich.maths.org>. This site is coordinated by Cambridge University and offers a wide range of activities and free resources for teachers. For example, in October 2012 the theme for the month was 'Playing with Numbers' and the site offered activities such as this one.

Zios and Zepts

On the planet Vuv there are two sorts of creatures. The Zios have three legs and the Zepts have seven legs. The great planetary explorer Nico counted 52 legs. How many Zios and how many Zepts were there?

These activities can be carried out interactively on-screen too.

Taking it further



In 1999, Keith Jones and Hannah Simons from Southampton University carried out an independent evaluation of the use of the online NRICH materials. They discovered that over two-thirds of the users of the site were boys and that a large number used the site at home. This suggests that teachers were not using the site regularly as a part of their own teaching and were not making sure that girls had access to the materials. The main impact on pupils of using the site was that they gained a wider appreciation of mathematics and began to view mathematics as an interesting subject which they might enjoy studying outside the classroom. The interactive nature of the site was seen as a particular advantage. This research is available from the University of Southampton in a booklet entitled *Online mathematics enrichment: an evaluation of the NRICH project*.

Portfolio task 11.1



Here is another NRICH problem to have a go at.

I am decorating 20 biscuits for my daughter's party. I line them up and put:

- icing on every second biscuit
- a cherry on every third biscuit
- chocolate on every fourth biscuit.

How many biscuits have no decoration on them? How many have icing, a cherry and chocolate?

If I ice 50 biscuits how many will have all three decorations on them?

Make notes in your portfolio about your thinking while you solved this problem. How do you think it would 'stretch' your high-attaining learners?

Multicultural and anti-racist approaches

The mathematics that we teach in schools is not value or culture free. Multicultural and anti-racist practice does not assume that any other practice is overtly racist, rather it acknowledges that the historical and social context in which our current system of schooling has developed may advantage some groups over others. It also takes the view that these systems can be challenged in order to ensure access to mathematics learning for all learners.

Values and cultural beliefs are embedded in:

- The content of the curriculum that we offer to pupils.
- The ways in which we teach that content.
- The environment in which children learn mathematics.
- The view of mathematics we bring to the classroom as teachers.
- The ways that we measure success in our mathematics classrooms.

So a multicultural and anti-racist approach to mathematics teaching would:

- Include content that develops pupils' understanding of cultures other than their own through reflecting on cultural and linguistic diversity.
- Use resources that draw on pupils' cultural heritage, counter or challenge bias in materials such as textbooks, or draw on pupils' own experience.
- Present positive images of learners as mathematicians and use familiar contexts as starting points, as well as illustrating the diverse cultural heritage of the discipline of mathematics. This may include photographs of your current learners being successful in mathematics, or people from the communities you draw your pupils from who are successful in mathematics.
- Use teaching strategies that both develop pupil confidence with mathematical language and develop positive attitudes towards linguistic diversity. Children here will see linguistic diversity as a benefit to the classroom and would expect to hear a range of languages in the classroom.
- Encourage collaborative teaching and learning, which offers challenge to the pupils, encourage learners to express and examine their own views, encourage learners to become involved in their own learning, encourage learners to pose their own problems.
- Develop anti-racist attitudes through mathematics by using data that critiques stereotyped views of particular groups of people. So, for example, looking at images in newspapers and carrying out a data-handling activity may well show the images that newspapers present of minority ethnic groups in a small number of roles, as sportspeople,

or as underprivileged. It is interesting to contrast these images with those found in newspapers such as *The Voice* or *The Asian Times*.

- Monitor achievement and grouping by ethnicity to ensure equal access to the curriculum.

This set of bullet points can be seen as a series of prompts for planning. It accepts the need for the numeracy strategy to form the basis for planning but offers a way in which key questions can inform the planning so that values of multiculturalism and anti-racism pervade the planning.

An activity which would support this view of teaching and learning uses a 100 square in a range of scripts or languages to develop children's understanding of place value and the Hindu-Arabic number system. (The Hindu-Arabic number system is the system widely used in European schools; it is also called the decimal number system or sometimes the European system. This system has developed from combining the Hindu and Arabic representations of number.)

In this activity give groups of children 100 squares in a range of scripts which you have previously cut up to form a jigsaw. They have to reconstruct the 100 square - this will draw on

১	২	৩	৪	৫	৬	৭	৮	৯	১০
১১	১২	১৩	১৪	১৫	১৬	১৭	১৮	১৯	২০
২১	২২	২৩	২৪	২৫	২৬	২৭	২৮	২৯	৩০
৩১	৩২	৩৩	৩৪	৩৫	৩৬	৩৭	৩৮	৩৯	৪০
৪১	৪২	৪৩	৪৪	৪৫	৪৬	৪৭	৪৮	৪৯	৫০
৫১	৫২	৫৩	৫৪	৫৫	৫৬	৫৭	৫৮	৫৯	৬০
৬১	৬২	৬৩	৬৪	৬৫	৬৬	৬৭	৬৮	৬৯	৭০
৭১	৭২	৭৩	৭৪	৭৫	৭৬	৭৭	৭৮	৭৯	৮০
৮১	৮২	৮৩	৮৪	৮৫	৮৬	৮৭	৮৮	৮৯	৯০
৯১	৯২	৯৩	৯৪	৯৫	৯৬	৯৭	৯৮	৯৯	১০০

The Bengali 100 square.

and develop their understanding of the 100 square they are used to working with as they explore it with a new set of eyes. A wide range of resources is available from the 'Learning Live' website: <http://www.learninglive.co.uk/teachers/primary/numeracy/teaching/index.asp>.

Children with English as an additional language (EAL)

In January 2004, 21 local authorities piloted a programme designed by the Department for Education (then the Department for Education and Skills) and aimed at raising the achievement of bilingual learners in primary schools as this group of learners were not achieving as well as the rest of the population. The project involved each authority receiving the funding to appoint an EAL consultant to work in participating primary schools to support them in developing the curriculum better to support bilingual learners. While this project resulted in improving the achievement in English there were no significant gains in mathematics or science. In an evaluation reported by Tom Benton and Kerensa White published by the National Foundation for Educational Research in 2006, *Raising the Achievement of Bilingual Learners in Primary Schools*, it was suggested that this may have been because initial interventions were not as consistent in mathematics lessons as in English lessons. This means that teachers may not support EAL learners in developing their linguistic skills in mathematics sessions as much as they would in English sessions.

Schools which are effective in supporting bilingual learners realise that these learners enhance our classrooms. The pupils bring a wealth of experience to the classroom which offers a wide range of starting points for exploring mathematics. As I have mentioned previously, the advice on how best to support bilingual learners will also benefit all the learners in your class.

Try to encourage learners in your class to use mathematical language in a wide range of different contexts: some familiar, such as counting up the school dinners, talking about how many children are away; and some new, so whenever you introduce new ideas in any subject try to explore these ideas mathematically. Bilingual learners may need to listen to mathematical language to allow both mathematical and language development. This means that discussion becomes very important. This allows learners to both hear and use mathematical language. To support this discussion use visual resources and engage in practical activities too. Bilingual learners should also be encouraged to develop fluency in their home language through mathematics by engaging in discussions with teaching assistants or peers who share their language.

Observing inclusive mathematics teaching

The video clip available at <http://www.teachfind.com/teachers-tv/special-needs-inclusion> and on the companion website to this book shows how a piece of IT called a Visualiser is used to support deaf children in a mathematics lesson. This allows a teacher to 'film' their

demonstration and record, or add text to the piece of video. This particular clip shows the equipment being used in a secondary school to demonstrate the construction of bisectors of angles. Watch the clip and then reflect on the following question in your portfolio.

What could you use the Visualiser for in your classroom? Can you think of a lesson you have taught recently which would have been enhanced by the use of a Visualiser?

Summary

This chapter took as its starting point the importance of supporting all learners in becoming as good at mathematics as possible. This is vital in order to maximise their life choices. Through drawing on a range of research studies and advice from organisations with the interests of children with specific learning needs at heart, you have learnt about a wide range of strategies you can use to support the learners in your class. The key areas I have focused on have been children with specific learning needs, children who have particular gifts in mathematics, and children from minority ethnic groups, all of whom may not reach their potential if we do not adapt the way that we plan and teach.

Reflections on this chapter

As you read this chapter you may well have realised that most of the suggestions for changes and adaptations to mathematics teaching would benefit all learners in your classroom. By focusing on the needs of specific groups of children that you teach, you begin to plan for individual needs. And by doing this all learners will become more engaged in the mathematics you are teaching.

Going further

***Mathematics for Dyslexics (including Dyscalculia)* by Steve Chinn**

This book is now in its third edition. As well as outlining the difficulties that learners with dyslexia or dyscalculia may have in the classroom it offers suggestions for you to support these pupils in overcoming these difficulties. The mixture of theory in the first part of the book together with practical examples in the second half of the book should help you in developing your practice to be more inclusive.

Chinn, S. and Ashcroft, R. (ed) (2006) *Mathematics for Dyslexics (including Dyscalculia)*. London: Wiley-Blackwell.