

Including Pupils with Down's Syndrome

Information for teachers and learning support assistants –

P R I M A R Y



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Aim of this booklet:



In the last 10-15 years, more and more children with Down's syndrome have attended their local mainstream school. This is a result of the introduction of legislation promoting inclusion and outlawing discrimination, backed by a considerable body of research into the capabilities of children with Down's syndrome. Many teachers may find the idea of including children with Down's syndrome into their classrooms daunting and they may be initially apprehensive. However, experience shows that most teachers have the skills to understand these children's particular individual needs and are able to teach them effectively and sensitively.

This booklet is to inform teachers and teaching assistants about the learning profile typical of children with Down's syndrome and about good practice in their education, thus paving the way to successful inclusion and preparation for life in the community both during and beyond school.

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Inclusion – a brief introduction

In 1997, The Green Paper, **Excellence for All Children: Meeting Special Educational Needs** proposed that more pupils with SEN should attend mainstream schools.

The Special Educational Needs and Disability Bill followed this in 2001. This Act amended the SEN framework of the Education Act 1996 and extended the Disability Discrimination Act (DDA) 1995 to cover the provision of education and to make unlawful any unjustified discrimination by education providers against disabled pupils, students and adult learners.

The Disability Discrimination Act 2005 took things further, giving most public authorities a positive duty to promote equality of opportunity for people with disabilities. It came into force on 1 October 2006.

Today

- Children with disabilities will be educated in mainstream schools if their parents wish.

Schools and local authorities must:

- Promote equality of opportunity between disabled people and other people.
- Eliminate discrimination.
- Eliminate harassment related to disability.
- Promote positive attitudes towards disabled people.
- Encourage participation by disabled people in public life.
- Take steps to take account of disabled people's disabilities even where that involves treating disabled people more favourably than other people.
- Collaboratively draw up disability equality plans to show how, over time, they will increase access to education for disabled pupils.

Benefits of including children with Down's syndrome

Attending mainstream schools provide many advantages for the child with Down's syndrome, bringing both academic and social benefits:

Academic

- Research shows that children with Down's syndrome do at least as well, if not better, academically in inclusive settings rather than in segregated settings.

Social

- Daily opportunities to mix with typically developing peers provide models for age-appropriate behaviour.
- Children have opportunities to develop relationships with children from their own community.

In addition, successful inclusion is a key step towards preparing children with disabilities to become full and contributing members of the community, and society as a whole benefits. Typically developing peers gain an understanding about disability, tolerance and how to support others with disabilities.

A positive attitude

Successful inclusion does not happen automatically. Experience shows that one of the most important ingredients in successfully implementing inclusion for children with disabilities is the will to make it succeed. A positive attitude solves problems of itself. The attitude of the whole school is therefore a significant factor: schools need a clear and sensitive policy on inclusion with committed and supportive staff, especially the senior management team.

Some facts about Down's syndrome

- Down's syndrome is the most common form of learning disability – about 1 in every 1,000 live births a year.
- It is caused by the presence of an extra chromosome. Instead of the usual 46 chromosomes, a person with Down's syndrome has 47.
- All children with Down's syndrome will have some degree of learning difficulty, although this will range from mild to severe.
- Although Down's syndrome is due to genetic factors, environmental factors play an important part in development as with any child.
- Children with Down's syndrome vary as widely in their development and progress as typically developing children.
- Generally speaking, children with Down's syndrome develop more slowly than their peers, arriving at each stage of development at a later age and staying there for longer. The developmental gap between children with Down's syndrome and their peers thus widens with age.

A specific learning profile.

Children with Down's syndrome are not just generally delayed in their development and therefore merely in need of a diluted curriculum. They have a specific learning profile with characteristic strengths and weaknesses. Being aware of the factors that facilitate and inhibit learning allows teachers to plan and implement meaningful and relevant activities and differentiated programmes of work. The characteristic learning profile and learning styles of the child with Down's syndrome, together with individual needs and variations within that profile, must therefore be considered.

Although many children will not exhibit them all, the following factors are typical of Down's syndrome. Some have physical

implications; others have cognitive ones. Many have both.

Factors that facilitate learning

- Strong visual awareness and visual learning skills.
- Ability to learn and use sign, gesture and visual support.
- Ability to learn and use the written word.
- Tendency to model behaviour and attitudes from peers and adults.
- Ability to learn from practical material, hands-on activities and demonstration.;
- Keen to communicate and socialise with others.

Factors that inhibit learning

- Auditory and visual impairment.
- Delayed motor skills – fine and gross.
- Speech and language impairment.
- Short term and working memory problems.
- Shorter concentration span.
- Difficulties with consolidation and retention.
- Difficulties with generalisation, thinking and reasoning.
- Sequencing difficulties.
- Avoidance strategies.

A brief account of each of these inhibiting factors follows, with some strategies to address them. These make use of the pupils' likely strengths and weaknesses in order to develop new learning and allow curriculum access. Many of these strategies will be recognisable as basic good teaching practice and so will be equally suitable for other pupils in the school.

You will notice that many of the features that inhibit learning are likely to be mutually reinforcing, making the task of overcoming them harder. At the same time, many of the strategies appear in several sections, stressing the importance of taking an overview and preparation to prevent difficulties rather than ad hoc attempts to address a problem as it arises.

Visual impairment

Pupils with Down's syndrome tend to be very good visual learners due to their good visual memory. However, many have some sort of visual impairment – with 60-70% being prescribed glasses before the age of seven. In addition to the problems of long or short sightedness and astigmatism, it is important to note that children with DS do not have as good general vision as typically developing children and see less detail, contrast and colour. This will affect their ability to access visual resources, including reading materials, in the same way as their peers. It is important therefore that staff are aware of appropriate compensating strategies in order for the children to be able to use their strong visual skills as much as possible.

In addition, approximately 75% of children have poor

focusing on close targets – whether or not glasses have been prescribed for them. Research conducted by Maggie Woodhouse at Cardiff University, has shown however, that focusing improves greatly with bifocal spectacles. These need to be fitted particularly carefully for a child with Down's syndrome who needs the top of the bifocal to lie across the pupil of their eye. It is therefore important that those conducting eye tests have suitable specialist knowledge to ensure that the resulting prescription yields the maximum benefit.

Strategies:

- Place pupil near front of class.
- Offer access to larger type/print.
- Ensure all materials in school have high contrast and visibility i.e. you may find the child responds better to seeing print written in black felt tip as opposed to pencil or on yellow rather than white paper.
- Use simple and clear presentation with less detail rather than more.
- When asking the child to write, highlight lines on the page with a bold colour to improve the child's ability to focus on them.
- Ensure the child's glasses fit properly and are worn.
- Seek advice from the Visual Impairment Service within your Local Authority.

Hearing impairment

Many children with Down's syndrome experience some hearing loss, especially in the early years. Up to 20% may have a sensori-neural loss, caused by developmental defects in the ear and auditory nerves. Many have smaller sinuses and ear canals which result in frequent upper respiratory tract infections: this leads to over 50% suffering from periodic conductive hearing loss due to glue ear. Since hearing problems will affect speech and language development, it is particularly important to check children's hearing carefully and regularly. Also clarity in hearing can fluctuate daily and it is important to check that inconsistencies in response are due to hearing loss rather than lack of understanding or poor attitude.

In addition, some children with Down's syndrome have poorer auditory discrimination, meaning that they have greater difficulties recognising and discriminating between different speech sounds. This may have particular importance when teaching speech sound work and phonics for reading and spelling.

Strategies:

- Place pupil near front of class.
- Speak directly to the pupil.
- Reinforce speech with facial expression, sign or gesture.
- Reinforce speech with visual backup: print, pictures, concrete materials.

- Write new vocabulary on the board.
- When other pupils answer, repeat these answers aloud.
- Rephrase or repeat words and phrases that may have been misheard.

Fine and gross motor skills

Children with Down's syndrome usually develop fine and gross motor skills in the same pattern as typically developing children but with some delay, reaching milestones later, which can restrict early years' experiences and delay cognitive development. However, there is a wide range of variation with difficulties decreasing over time.

Many children with Down's syndrome have low muscle tone (hypotonia) and loose ligaments enabling a wide range of movement and flexibility. The thumb joint can be particularly lax. This combined with low tone in the fingers and wrist as well as shorter, stubbier fingers can particularly hinder the acquisition of writing skills.

In addition, research suggests that many children have difficulties processing the information they receive from their senses and then co-coordinating their movements. Their motor-neuro pathways seem to be relatively inefficient and take longer to become established. Studies also show slower reaction times with difficulties in adapting movements. As a result of the above, although the muscles themselves can perform the movements, they are often performed in a slower, more uncoordinated manner.

Strategies:

- Ensure child is seated correctly with feet on floor (provide footrest if necessary) and elbows resting comfortably on desk.
- Use a sloping board on which to write or place book to enable child to sit up straighter as well as achieve better pressure when writing.
- Provide additional practice, guidance and encouragement through demonstration and visual and verbal prompts: all motor skills improve with practice.
- Use a wide range of multi-sensory activities and materials.
- Encourage hand exercises to increase awareness – open/close/rub hands, tap thumbs to fingers etc.
- Provide wrist and finger strengthening exercises: threading, tracing, drawing, sorting, cutting, building, tearing paper, squeezing stress balls, hammering pegs, using clothes pegs/bull dog clips.
- Provide hand-to-eye coordination exercises: finger rhymes, touch screen, finger paint, dot-to-dot, mazes, building & stacking.
- Provide cutting exercises: excellent for all round strengthening and co-ordination. Provide spring loaded scissors if need be and thin card which is easier to cut than paper.

- Encourage correct pencil grip and pincer grip: pegboards, short stubs of crayons which will not fit into the palm, triangular, chunky pencils.
- Highlight lines on page for writing and provide boxes for short sentences to encourage consistency of letter size.
- Ensure child is developmentally ready for writing (can they draw horizontal, vertical, diagonal lines and circles, all needed when forming letters independently?)

Speech and language difficulties

Children with Down's syndrome typically have a speech and language impairment and the majority will need to be seen regularly by a Speech and Language Therapist who can suggest suitable activities and set a programme of work to be carried out within school by a Teaching Assistant (TA).

The language delay is caused by a combination of factors, some of which are physical and some due more to perceptual and cognitive problems. Any delay in learning to understand and use language is likely to lead to cognitive delay.

The level of knowledge and understanding and thus the ability to access the curriculum will inevitably be affected. However, receptive skills are greater than expressive skills. This means that children with Down's syndrome understand language better than they are able to speak it. As a result, their cognitive skills are often underestimated.

In addition, the combination of having a smaller mouth cavity and weaker mouth and tongue muscles makes it harder to physically form words; and the longer the sentence, the greater the articulation problems become. Many children have articulation difficulties and their speech can be hard for an unaccustomed listener to understand although your ear will tune in fairly quickly in many cases.

Such speech and language problems often mean that children actually receive fewer opportunities to engage in language and conversation. It is more difficult for them to ask for information or help. Adults tend to ask closed questions or finish a sentence off for the child without giving them much needed time or help to do it themselves. This results in the child getting:

- Less language experience to enable them to learn new words and sentence structures.
- Less practice to improve their clarity of speech.

Common features of delay in language acquisition:

- Smaller vocabulary leading to (and resulting from) less general knowledge.
- Difficulty learning the rules of grammar (leaving out

connecting words, prepositions etc) resulting in a telegraphic style of speech.

- Ability to learn new vocabulary more easily than the rules of grammar.
- Greater problems in learning and managing social language.
- Greater problems in understanding specific language of the curriculum.
- Difficulty in understanding instructions.
- Articulation difficulties.

Strategies:

- Give child time to process language and respond.
- Listen carefully: your ear will adjust.
- Ensure face-to-face and direct eye contact.
- Use simple and familiar language and short concise sentences.
- Check understanding: ask child to repeat back instructions.
- Reinforce speech with facial expression, gesture and sign.
- Teach reading and use the printed word to reinforce language.
- Reinforce new language and spoken instructions with print, pictures, diagrams, symbols, and concrete materials.
- Emphasize key words, reinforcing visually.
- Teach grammar through print: flash cards, games, pictures of prepositions, symbols, etc.
- Avoid closed questions and encourage the child to speak in more than one-word utterances.
- Encourage pupil to speak aloud in class by providing visual prompts. Allowing the pupil to read information may be easier for them than speaking spontaneously.
- The use of a Home-School Diary can help pupils in telling their "news".
- Develop language through drama and role-play.
- Encourage the child to lead.
- Set up regular and additional opportunities to speak to others, e.g. taking messages etc.
- Provide lots of short listening activities/games and visual and tactile materials to reinforce oral work and strengthen auditory skills.
- Practise speech sounds and reinforce all speech sound work visually: pictures, symbol & signs e.g. Jolly Phonics.

Working memory and processing skills

Many children with Down's syndrome have poor working memories which affects their ability to hold, store, process, understand, manipulate and assimilate the spoken word. This greatly affects their ability to respond to the spoken word or learn from situations which rely on good listening skills. Areas of learning such as mental maths for example, where some information needs to be stored whilst further calculations are made and then added to the contents

of the working memory are therefore particularly difficult. Another example of particular difficulty due to poor working memory would be the ability to follow directions.

This poses real problems for children in school situations such as carpet time, listening to a story, assembly, whole class discussions, following, remembering and responding to instructions, mental maths, learning unfamiliar and new vocabulary, coping with long sentences.

Strategies:

- The main method of reinforcing verbal information is visual: provide pictures, sign and gesture, key words, icons, artifacts and symbols.
- Use white boards to translate verbal information at carpet times.
- Work on developing memory skills through memory games such as Kim's game, Pairs/Pelmanism, Simon Says, hide the toys under a towel and ask the child to tell you what is there.
- Provide subject or topic based key word lists with pictures to reinforce meaning so the child can refer back to new vocabulary.
- Teach rehearsal techniques through flip cards using pictorial information.
- Limit the amount of verbal instructions and length of sentence at any one time.
- Allow time for the child to process and respond.
- Make use of songs and music to aid memory especially when learning lists such as the alphabet.
- Repeat individually to pupil any information/instructions given to class as a whole and write down or provide a symbolic card.
- Always plan for visual translation and/or alternative activity.

Remember: children with Down's syndrome are strong visual but poor auditory learners. Wherever possible, they need visual support and concrete and practical materials to reinforce auditory input.



Shorter concentration span

Many children with Down's syndrome have a short concentration span and are easily distracted. In addition, the intensity of supported learning, especially in a one-to-one situation, is much higher and should be taken into account.

Strategies:

- Build a range of short, focused and clearly defined tasks into the lesson.
- Provide short breaks from learning.
- Provide physical breaks at times; these can be enough to enable a child to re-focus again.
- Vary level of demand from task to task.
- Vary type of support.
- At carpet times, place the child at the front to help keep focused.
- Provide a carpet square to encourage the child to sit in one place.
- Create an activity box. This is useful for times when the child has finished an activity before their peers, needs a change of activity or time out. Put in a range of activities that the child enjoys doing, including books, cards, fine motor skill games etc. This encourages choice within a structured situation. Allowing another child to join in is a good way of encouraging friendships and co-operation.

Generalisation, thinking and reasoning

Where any child has speech and language impairment, thinking and reasoning skills are inevitably affected. Children will find it more difficult to transfer skills from one situation to another. Abstract concepts/subjects can be particularly difficult to understand and problem solving may be affected.

Strategies:

- Do not assume that the pupil will transfer knowledge automatically.
- Teach new skills using a variety of methods and materials and in a wide range of contexts.
- Reinforce learning of abstract concepts with visual and concrete materials.
- Offer additional explanations and demonstrations.
- Encourage problem solving.

Consolidation and retention

Pupils with Down's syndrome generally take longer to learn and to consolidate new skills and the ability to learn and retain can fluctuate from day to day.

Strategies:

- Provide extra time and opportunities for additional

repetition and reinforcement.

- Present new skills and concepts in a variety of ways, using concrete, practical and visual materials wherever possible.
- Move forward but continually check back to ensure that previously learned skills have not been overwhelmed by the new input.

Reading

Introduction

For many children with Down's syndrome, reading is a strength. As strong visual and poor auditory learners, learning to read makes language visual and helps to overcome the difficulties that many children have with learning through listening. Reading provides an area of the curriculum where many children with Down's syndrome can exceed expectations. It is also a skill that many continue to develop to a useful and practical level, enabling them to become more independent and more able to integrate into the community as they grow up. Reading for children with Down's syndrome has other benefits too. It can:

- Develop awareness of grammar and sentence structure.
- Improve articulation by providing more language practice.
- Increase vocabulary.
- Develop and reinforce general knowledge and understanding.
- Help access the curriculum in school.
- Increase working memory.
- Increase self-esteem.

Learning to read

In the early stages of reading most typically developing children initially learn to read through a logographic approach; learning whole words by sight or their visual pattern. They then progress to an alphabetic or phonic approach – where they begin to use letter/sound correspondences to decode or break words into separate sounds in order to read and spell them.

As good visual learners, children with Down's syndrome make considerable progress in the logographic stage, but often stay at this stage for longer than their peers and have far greater difficulty moving to the alphabetic stage. Apart from problems with hearing, auditory discrimination, memory and problem solving skills, research shows that children with Down's syndrome have greater problems acquiring phonological awareness. However, many do acquire a level of phonic skills, although this is variable, and it is important that phonics is encouraged. Unless they acquire some phonic skills, their reading progress will eventually slow down or even stop.

Professor Buckley's research, (2001), shows that children with Down's syndrome begin to show more phonological

awareness when they reach word reading skills of a 7-8 year-old. Furthermore, experience suggests that for many children it is often during school years 3 to 4 that applying phonic knowledge to their reading seems to take off.

Phonics

The teaching of phonics is now a central part of the Government's approach to the teaching of reading. Thus, while children with Down's syndrome will not necessarily learn to read in the early years through a phonic approach, they should still access the whole group phonic and letter sound sessions alongside their peers. This will not only introduce them to early phonics which will be of use to them at a later stage in their reading, but it will also provide valuable practice in developing their awareness and articulation of speech sounds. It will also mean that they are included into a regular whole class activity. More focused phonic work should be gradually introduced, once the child has a sight vocabulary of approximately 50 words.

Work should make use of kinaesthetic and multi-sensory approaches. It should also draw on the child's strong visual skills to link sounds and letters, by reinforcement with pictures, actions, music and concrete materials.

There are also many good phonic based programmes for children with special needs which include a range of activities including reading, spelling, comprehension, quizzes etc.

Strategies:

- Match letters to speech sounds and speech sound cards they are currently working on within their therapy programme.
- Provide an array of objects that can be sorted into initial letter groups, e.g. child places a model pig and pencil into a pot labelled P.
- Sort words from their sight vocabulary into groups beginning with the same initial letter; use a posting box to make it fun.
- Use visual phonic materials such as Jolly Phonics, cued articulation, picture sound cards, and signing, and plastic letters.

How to teach reading

Matching pictures

In the early years, structured teaching should begin when the child can understand 50 or more spoken words and involves matching, selecting and naming pictures.

Matching words

Once they can match pictures, proceed to matching words together. These first words must be familiar and within the

child's understanding. These will mainly be nouns (initially family names) followed by verbs. Many of the school frequent word lists (e.g. the 45 Reception and Year 1 words) will have little meaning for the young child with Down's syndrome, especially if used in isolation, due to delayed speech and language and smaller vocabularies. As the child's own personal sight vocabulary of familiar and meaningful words develops, the more abstract words from the word lists can gradually and carefully be introduced.

- Choose 2-4 words which are familiar and important to the child, e.g. family names.
- Make two sets of identical flash cards for the words.
- Ask the child to match the flashcards together in a Lotto game.
- Use the 3-stage Match, Select, Name process:
 1. Child matches words together.
 2. Child selects words on request – i.e. out of the words displayed, you say "Give me Mummy". The child selects the correct word, (Mummy) and gives it to you.
 3. Child names the words – i.e. out of the 2 or 4 words displayed, you say "What does this word say?" The child says or signs the word.
- Introduce new words gradually, continuing to use the match, select, name method when appropriate and for reinforcement.
- Aim for words with personal meaning for the child and ensure these include verbs and adjectives, as well as the 45 reception words, then progress to Year 1 and 2 words.
- With the words you are using, aim to build short phrases (two words together then three words together).
- Make individual books, My family book, or I like book, based on child's experience and include photographs. E.g. make an action book using photographs of the family members doing things: Mummy sleeping, Daddy eating, Danny swimming etc.
- Make Velcroed flashcards and strips or sentence holders.
- Ask the child to sequence a sentence with Velcro words. Many children will initially need to sequence a sentence to match a picture. They can then copy the sentence into their book if able.
- Make sure you include the small connecting words: they are particularly difficult to acquire but critical to the development of effective reading and language learning.
- Link reading to the child's comprehension of spoken language and use it to develop grammar and syntax.
- To assess understanding, ask the child to choose the words to match to a picture.
- Introduce commercial reading books alongside, which contain meaningful vocabulary in simple, short phrases and have simple, clear illustrations. Books should be selected that reflect real life experiences familiar to the child rather than fantasy.

There are many well-structured reading schemes which

have proved particularly successful for children with Down's syndrome, although it can be helpful to make extension activities and personalised books to reinforce some of the words used. As a general rule, the introduction of symbols such as Rebus to aid reading should not be necessary. However, symbols can be effective in teaching older children more abstract concepts such as time, or in framing "what, "who, "where" and "why" questions.

Writing skills

Producing any form of written work is a highly complex task. Difficulties in short term memory, speech and language, fine motor skills and the organising and sequencing of information make a considerable impact on the acquisition and development of writing skills for many pupils with Down's syndrome.

Particular areas of difficulty:

- The physical aspects of letter formation – see Fine motor.
- Sequencing words into correct sentence formation.
- Sequencing events/information into the correct order.
- Remembering and organising thoughts and relevant information on to paper.

Strategies:

- Investigate additional resources to aid writing as a physical process – different types of writing implements, pencil grips, larger bolder lines, boxes on page to encourage consistent size of letters, lined paper/squared paper, writing board.
- Provide visual support: e.g. flash cards, keywords, picture cues and picture sequences, sentence cues, Breakthrough to Literacy type strategies.
- Provide alternative methods of recording:
 1. Scribe.
 2. Underline or ring correct answer.
 3. Close procedure.
 4. Cut and paste – using pictures.
 5. Cut and paste – sentence card sequences with or without pictures.
 6. Use of computer with specialist software, e.g. whole word computer programmes such as Clicker, Boardmaker, Communicate through Print.
- Ensure that pupils are only asked to write about topics from their experience and understanding.
- If copying from board, select and highlight a shorter version for the pupil to copy, focusing on what is essential for that pupil or provide a separate shorter piece of text on paper from which they can copy.
- Encourage the use of cursive script to aid fluency.

Spelling

As with reading, it is unwise to rely exclusively on phonics

to address weaknesses in spelling, as many children with Down's syndrome will be spelling words from visual memory. However, in order to develop and expand their reading skills, they will need to learn some phonic skills. Teaching spelling through multi-sensory methods is best.

Strategies:

- Teach words that are within their understanding – these may NOT be the general class spellings.
- Teach words aimed to promote speech and language development.
- Teach words required for specific subjects.
- Use multi-sensory methods, e.g. look-say-cover-write-check, flash cards, finger tracing/spelling, plastic letters, Stile.
- Reinforce meanings of abstract words with pictures and symbols.
- Colour code similar letter groups/patterns within words.
- Provide a word bank with pictures to reinforce meaning and arranged alphabetically.
- Teach initial letter sounds graduating to simple blends and CVC words.
- Explore spelling activities on the computer.
- Teach simple basic word families.

Numeracy

Generally, pupils with Down's syndrome encounter significant difficulty acquiring mathematical concepts. However, their developmental stages and acquisition of mathematical concepts, although a great deal slower, appear to be similar to those of their typically developing peers and competence is linked to their general level of knowledge and understanding and language development.

Difficulties processing language together with short-term memory deficit will impact on the development of number skills as many activities involve memorising sequences and retaining numbers for further processing and calculation.

Pupils with Down's syndrome also generally encounter difficulty associating practical mathematics experiences with written mathematics formats. This happens more slowly and pupils require a variety of experiences and carefully directed teaching. Worksheets with pictorial representations are semi abstract and purely symbolic. If introduced too early, they may confuse the delicate links being formed between existing concepts, language and formal written number problems.

Children with Down's syndrome therefore need to use concrete materials throughout all development stages from early years to higher-level mathematics. These allow the pupils to visualise numerical concepts by making them much more real, overcoming difficulties with abstractions. Relating activities to real situations with real, everyday objects, such as counting and giving out pencils and

exercise books for the group or setting the table for a given number of people, is therefore vital. These real situations will provide opportunities to:

- Consolidate counting.
- Develop one-to-one correspondence.
- Understand that anything can be counted.
- Understand that there is a purpose to counting.

It is essential to provide a mathematics curriculum that will provide pupils with a basic knowledge and understanding of number in order to function effectively in daily living.

Strategies:

- Teach mathematics vocabulary.
- Teach life-skills maths: money, time, measurement, etc.
- Teach through a strong visual approach and use concrete and practical materials to overcome problems with language, abstract concepts and problem solving skills. e.g. Numicon.
- Use real objects when possible e.g. money and clocks, to compensate for difficulties with transference and generalisation.
- Teach in very small steps and incorporate plenty of opportunities for reinforcement and consolidation.
- Use a range of materials and activities to teach the same concepts and objectives.

Structure and routine

Many children with Down's syndrome thrive on routine, structure and clearly focused activities. Ensuring they are clear as to what is expected of them during every stage of their day in school will, therefore, help them adapt to each situation quicker. Establishing even small routines for situations which other children take for granted will help.

Unstructured and informal situations are often more difficult for children with Down's syndrome, and they can be easily thrown by any change. They may need more preparation and may take longer to adapt to changes in the classroom and to any transition including, for some pupils, changes from one lesson to the next.

Strategies:

- Teach timetable, routines and school rules explicitly, allowing time and opportunities to learn them.
- Provide visual timetables: use photographs, symbols, pictures, the printed word depending on whatever is most appropriate for the child.
- Show them the same place to sit for carpet time and assemblies, perhaps through means of a carpet square.
- Ensure child is always aware of the next activity and provide visual reinforcement even if you think they understand: short-term memory difficulties can easily

- affect understanding especially at busy transfer times.
- Stick to routine as much as possible.
- Prepare child beforehand for any transition or change, no matter how minor it is, if they become thrown by these:
 - Give verbal warning in advance together with pictures, symbol etc.
 - Provide egg timer so they understand exactly when their current activity will finish and when they need to start to prepare for a change.
 - Inform parents when necessary.

Social inclusion

As for all children, it is much harder to make progress in cognitive areas until able to respond and interact with others in an appropriate way. One of the main aims for any child with Down's syndrome entering mainstream school is social inclusion and all children with Down's syndrome will benefit from mixing with typically developing peers. They are often very keen to do the same as their peers and generally look to them as role models for appropriate behaviour. Mixing with other children who set normal expectations for age-appropriate behaviour and achievement is extremely important for children with Down's syndrome who can find their world more confusing and are less emotionally and socially mature. Many often need additional help and support in learning the rules for normal and appropriate social behaviour. They do not learn well from incidental learning and will not pick up conventions as intuitively as their peers. The focus of additional help and support in the early years should, therefore, be on learning the rules for normal and appropriate social behaviour.

Many young children with Down's syndrome may need additional help learning to interact appropriately with other children during break and playtimes.

Speech and language delay can make it more difficult for them to ask to join in or understand the rules of the game. Some children can be over-enthusiastic and over-physical as a result, as they try to compensate for their difficulties in communicating verbally. However, any additional adult support given can act as a barrier to other children and should be used sensitively and carefully.

Early Aims:

- Becoming aware of the major routines of the day.
- Learning to participate and respond appropriately.
- Responding to verbal requests and instructions.
- Learning to take turns, share and give and take.
- Learning to line up.
- Learning to sit at carpet time and assembly.
- Learning appropriate patterns of behaviour.
- Learning the class and school rules, both formal and informal.
- Working independently.

- Working co-operatively.
- Developing friendships.
- Developing self-help and practical skills.
- Caring for others.

Strategies to develop social inclusion:

- Encourage co-operative learning by working with a partner or in small group.
- Do not always put the child with less able or less well-motivated pupils. Pupils with Down's syndrome can benefit from working with more able children if their work is suitably differentiated.
- Consider setting up friendship rotas or a buddy system.
- Use peer support instead of adult support whenever possible.
- Provide structured play sessions led by a TA in the playground.
- Encourage participation in lunchtime or after school clubs.
- Encourage independence skills and responsibility – e.g. handing out books, taking messages.
- Encourage self-esteem and self-confidence.

Behaviour

There are no behaviour problems unique to children with Down's syndrome. However, much of their behaviour will be related to their level of development. So, when problems occur, they are generally similar to those seen in typically developing children of a younger age. In addition, children with Down's syndrome have to cope with more difficulties than many of their peers. Much of what they are expected to do in their everyday lives will have been much harder to accomplish due to problems with their speech and language, auditory working memory, motor co-ordination, shorter concentration span and learning difficulties. The thresholds that trigger problem behaviours may therefore be lower than in their typically developing peers, i.e. they are likely to feel anxious or insecure and become frustrated more easily. Therefore, a child's having Down's syndrome does not lead inevitably to behavioural problems; but the nature of their learning difficulty makes them more vulnerable to the development of such problems.

A particular aspect of problem behaviour is the use of avoidance strategies such as hiding under the table, refusing to line up etc. Many pupils with Down's syndrome tend to adopt such strategies, which undermine the progress of their learning. Many pupils tend to use attention-seeking behaviours to avoid tasks.

It is important to remain alive to the possibility of avoidance, to separate immature behaviour from deliberately bad behaviour, and to ensure that the child's developmental, not chronological age is taken into account, together with their level of oral understanding. Often at the root

of inappropriate behaviour are the increasing cognitive demands facing the child with Down's syndrome and it is important that the curriculum and level of expectations are appropriate and well matched.

Strategies:

- Ensure the pupil understands what is expected of them.
- Ensure the rules are clear – make them visual symbols, pictures, keywords.
- Ensure all staff know that the child with Down's syndrome must be disciplined at all times along with their peers and are aware of the strategies to be used.
- Use short, clear instructions and clear body language for reinforcement: overlong explanations and excessively complex reasoning are not appropriate.
- Distinguish the "can't do" from the "won't do".
- Investigate any inappropriate behaviour, asking yourself why the child is acting so. For example:
 - Is the task too hard or too easy?
 - Is the task too long?
 - Is the work suitably differentiated?
 - Are the instructions clear?
- Encourage positive behaviour by developing good behaviour prompt pictures. For example, showing a photo of themselves or others tidying up nicely can be enough to encourage them to do so.
- Reinforce the desired behaviour immediately with visual, oral or tangible rewards.
- Ignore attention-seeking behaviour within reasonable limits: it is aimed to distract. Try a time out chair with an egg timer.
- Develop a range of strategies to deal with avoidance behaviours: some will work with some children but not with others.
- Ensure that the TA is not the only adult having to deal with the behaviour. The class teacher has ultimate responsibility.
- Ensure the child is working with peers who are acting as good role models.
- Establish good liaison with parents and discuss behavioural strategies jointly.
- Distract rather than confront – use humour, have a physical break.

For further information see DSA Behaviour Information Sheet



Support

Most children with Down's syndrome in mainstream schools will need some level of additional support. This is commonly provided through a Teaching Assistant (TA). However, the type of support the child receives can have a tremendous impact on the effectiveness of the inclusion and it is important that the role of the TA is carefully established. The following are useful guidelines when considering this role:

In terms of the child:

- To increase access to the curriculum and develop learning.
- To ensure the child learns new skills.
- To help develop independence.
- To help develop social skills, friendships and age-appropriate behaviour.

In terms of the teacher:

- To help differentiate or further modify lessons and activities planned by the teacher.
- To provide feedback to the teacher.
- To provide opportunities for the teacher to work with the child with Down's syndrome either individually or in a group, by exchanging roles.

It is important that the TA is seen as belonging to the whole class, giving help to all children in need of it, and not seen as only belonging to the child with Down's syndrome.

In this way, other children in the class can benefit from extra help and care too. The teacher must not abdicate responsibility for the child with Down's syndrome to the TA.

One-to-one and withdrawal

Support should primarily consist of the TA supporting the child within a small group, with a partner or one-to-one within the whole class session. Although there will be times when some one-to-one withdrawn support is needed, this should be given only when absolutely necessary, when there is a focused and timed objective and/or when a distraction free setting is essential

Too much one-to-one support can restrict opportunities to:

- Benefit from the stimulation and models provided by the peer group.
- Learn to work co-operatively.
- Learn how to work independently.
- Develop social relationships with their peers.

How many TAs?

Generally speaking, it is not advisable to have one TA to support a child. This can create over-familiarity and over-dependency on one adult, preventing children from learning to work with a range of adults and experiencing

different strategies, approaches and experiences. In addition, this situation can be very intense for both the child and the TA.

Consider having two TAs instead of one, perhaps splitting the time between a.m. and p.m. This can also mean if one TA is absent, the other may be able to cover.

Planning support

Class teachers and TAs need to meet regularly to liaise, plan, feedback and monitor progress. A communication book to record progress, ideas, notes and feedback is often invaluable, especially where more than one TA is involved with the child.

When planning support, it is vital to decide:

- Who will differentiate the work and how?
- Who is to find or make additional resources?
- When this is to happen and how often?

The class teacher is ultimately responsible for differentiating activities and the class plans should ideally include ideas for the child with Down's syndrome who may be working at a different level to their peers. However if given cooperation, guidance and appropriate planning time, many TAs can adapt or differentiate activities and lessons themselves to a further level, as they have critical knowledge about the capabilities, strengths and weaknesses of the child they support. Schools will need to decide the approach which works best for them, as well as taking into account their provision mapping.

Strategies:

Decide when the child should work:

- In whole class activities.
- In groups or with partners in class.
- In groups or with partners in withdrawal area.
- As an individual independently or one-to-one.

And when the child is to be:

- Unsupported.
- Supported by peers.
- Supported by the TA.
- Supported by the class teacher.

Prepare an Individual Education Plan (IEP) to target specific areas, needing special attention. Provide a clear visual timetable to help the child understand the structure of their day.

Classroom practice

Many pupils with Down's syndrome, as with other pupils with SEN, do not cope well with a number of common classroom practices: whole class teaching, learning through

listening, and follow-up work based on the completion of unmodified text activities or worksheets. Therefore, teachers may need to look at their classroom practice and the whole learning environment of the class, so that activities, materials and pupil groupings are all taken into account. For some purposes, ability will be less important than pupils' learning styles. It is important, for example, to utilise the motivation and opportunity to learn from good role models that arise when grouping children with Down's syndrome with their typically developing peers.

The curriculum

Being able to access the curriculum is vital for all children, increasing their knowledge and developing new skills. In order to ensure that pupils with Down's syndrome can access the curriculum, many activities and objectives will need to be modified and adapted to the pupil's level of understanding and development. Although this may mean that the pupil with Down's syndrome may be working at a very different level from their peers, it does not mean that the subject, topic or objective is different. In some cases this may need differentiation to a very basic level with a tight focus on one particular key word or concept. In others, it may simply mean providing additional support and explanations or enlarging/adapting materials for more simplicity and clarity.

Taking into account their strengths and weaknesses is important in order to personalise their learning as appropriately and effectively as possible. As they are strong visual learners, activities, ideas and concepts should be differentiated and reinforced visually, using concrete materials or artifacts and related to meaningful experiences when possible. Language will often need to be simplified and subject specific vocabulary clarified. In many instances, mapping back through the curriculum to access programmes of study and level descriptors from earlier key stages will be necessary. Alternative methods of recording work will need to be considered to compensate for delayed writing skills and difficulties with sentence construction and word retrieval. Sequencing pictures and/or words or sentences and pasting into their books, offering cloze procedure and using computer programmes such as Clicker are ideal.

With forward planning and liaison between class teachers and TAs, this breadth of differentiation can be achieved successfully in almost all cases.

Strategies for Differentiation

Think: Visual Basic Reinforce

Content

- Decide upon the main focus you wish the pupil to learn, i.e. appropriate learning objectives.
- Look at level descriptors below the standard key stage

and at programmes of study from earlier key stages guidance and ideas.

- Check content relates to previously acquired knowledge and skills.
- Try to reflect points from the pupil's IEP.
- Ensure pupils' personal skills such as independence and co-operation with peers can be developed.

Approach & context

- Ensure learning objectives are broken down into small steps.
- Ensure they are clearly focused and short.
- Use familiar and meaningful material.
- Build in additional repetition and reinforcement.
- Choose appropriate context: whole class, small group, partner, one-one.
- Choose appropriate level of support: TA, peer support, class teacher.
- Consider learning outcomes at the same time as planning activities and tasks.

Presentation

- Remember: pupils learn best through a multi-sensory approach: seeing, copying, doing, feeling.
- Remember: many pupils benefit from more repetition and a wider range of explanation within a variety of contexts than their typically developing peers.
- Present all work visually: print, adapted worksheets, flash cards, sentence/sequencing cards, diagrams, pictures, icons, symbols.
- Ensure oral instructions are reinforced visually as a reminder to stay on task.
- Use concrete and practical materials whenever possible.
- Demonstrate activities wherever possible.
- Use simple and familiar language.
- Keep instructions short and concise.
- Reinforce instructions with diagrams/signs.
- Focus on Key words: teach carefully and ensure meanings are understood.
- Reinforce key words and subject specific vocabulary visually, with symbol, icon, and diagram.
- Be prepared to use specific/additional resources.
- Decide who will find/prepare additional resources.

Response and Assessment

- Ensure that pupils' methods of response are realistic and appropriate.
- Provide alternative means of recording: pictures, symbols, flash cards, etc.
- Look at level descriptors below the standard range for the key stage.
- To enable writing, provide the words within pupils' sight vocabulary, including key words.
- Decide how progress will be monitored and recorded so that small advances are not missed. At the same time, do not assume that any advance will be permanent:

children with Down's syndrome need regular over-learning to fix a development.

- Review, evaluate, and amend.

Due to poor auditory memory and speech & language difficulties, pupils with Down's syndrome have major difficulties learning from teaching which uses only the spoken word. However, they learn well through teaching which makes use of visual or multi-sensory approaches. This includes the written word: reading often being a strength.

Assessment

In order to check where children are in their learning, how they have progressed and help plan future steps, it is vital that progress and performance are assessed. Pupils working below national curriculum level one need to be assessed using the P scales. The P scales are assessment criteria for progress below level one in the national curriculum programmes of study and are designed for pupils aged from 5 to 16. They are to be used in the same way as the national curriculum levels and are best-fit level indicators.

P scales are available for all national curriculum subjects and Religious Education from P1 to P8. The performance descriptors for P1 to P3 are identical across all subjects because they outline the types and range of general performance that pupils with learning difficulties who are not working at levels P4 to P8 might characteristically demonstrate.

From September 2007 schools have had to record and report data on the performance of pupils working below level one against the P scales in the core subjects of English, mathematics and science.

The P scales descriptions and more information can be found on the QCA website at www.qca.org.uk/8798.html.

Communication with parents/carers

Although many parents will come into schools regularly, a home-school communication book is ideal as a way of communicating daily news. This is invaluable where the child's own speech and language skills are not developed sufficiently for them to convey their news clearly. Providing a simple picture, or drawing, will serve as a prompt for the child to remember something they did that day in school and can help them talk about it at home. E.g. photocopy of their writing or drawing, or a simple drawing of Elmer the elephant will serve as a reminder of the Elmer story they had at the end of the day. The home schoolbook should not be used as a means of just conveying negative news.

Transition to secondary school

Transition from primary to secondary can be traumatic for many pupils whether or not they have special needs. However, transition for children with special needs can be particularly difficult. A positive attitude from the receiving school is essential. In addition a good and well-prepared transition plan needs to be set in place to pave the way for it to be as smooth and trouble free as possible for pupil, staff and parents. The first consideration that parents will have to think about is "which school?" In many cases there is one main secondary school which most of the primary pupils feed in to. For pupils with Down's syndrome, this is by far the most sensible option to go for socially, as they will be well supported by the peers that they have grown up with. However, sometimes there are overriding reasons for this not to happen and the pupil has to transfer to a different secondary school without the support of familiar peers from the feeder school. The transition plan must take into account the actual situation.



Strategies:

- If possible decide who the TA(s) will be in order to set up visits and training.
- Start planning early e.g. start at Annual Review of year 5 (Primary 6 in Scotland).
- Use first term in year 6 to visit and agree the receiving Secondary school.
- Ensure Annual Review in last year of primary is held in the autumn term, allowing plenty of time to draw up a transition plan.
- Ensure that everybody involved with the child is invited, i.e.:
 - From primary: class teacher, TA and Senco;
 - From the already identified secondary school: Senco, relevant learning support staff, possibly year or form tutors;
 - From outside agencies: any involved professionals

e.g. speech & language therapist, educational psychologist, education officer, etc.

- Offer opportunities for the secondary Senco/form teacher (Guidance staff in Scotland)/TA to visit pupil in primary before transition to observe pupil in familiar and secure setting.
- Invite the secondary Senco, secondary form teacher, etc. to pupil's final termly review at primary.
- Set up regular meetings with both primary and secondary staff to discuss planning and progress of transition plan, including after the move has taken place if necessary.
- Arrange secondary class groupings in such a way that the pupil with Down's syndrome has familiar and supportive friends in new class.
- If the secondary school is not the usual one which the primary feeds into, take the pupil on a working visit to one if the main feeder primaries to help familiarisation with the new peers.
- Consider whether pupil with Down's syndrome needs extra pastoral care.
- Establish who will register any concerns, be main contact person, and what procedures will be carried out, e.g. a safety base for the pupil to go to (perhaps a learning resource room, or the Senco's room).

Visits

A regular feature of successful transition procedures is a programme of visits. Because many children with Down's syndrome are thrown by change and find it more difficult to adapt to new surroundings without extra help and preparation, this is an aspect that deserves separate consideration.

Strategies:

- Other peers from their primary class to accompany the pupil with Down's syndrome.
- Pupil to meet head teacher and relevant members of staff – form tutor, any subject teachers, learning support staff, dinner supervisors, support teachers etc.
- Try to develop familiarity with layout of secondary school – dining room, hall, toilets, classroom, library etc.
- Practice route from playground into school, which door to use etc.
- Provide the child and parents with a map of the school, colour coded if possible.
- Routines: visits should cover a playtime, lunch break, assembly etc. Many pupils with Down's syndrome settle quickly once they understand the routine and the rules.
- Issue information about class/school rules and routines, uniform (including PE).
- Issue information about the clubs and activities held in the school.
- Consider lunch: what is best initially: to pay in canteen and choose lunch or take a packed lunch?

Pupil profile

The receiving secondary school needs to understand the philosophy of the parents and the role which education plays in their life-plan for the pupil. One method of communication which has proved very successful in aiding transition is for the primary school and parents to prepare a profile of the child to be given to the secondary school during the process of transition. The profile is like a simplified Record of Achievement, in that it aims to give information about the child's background, achievements, interests, strengths and weaknesses, presented in a fair but positive light. Contributions should be sought from all those significantly involved in the development of the child: parents, year 6 class teacher, Senco and speech and language therapist etc. Importantly, to give the child ownership, they should also have considerable input.

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