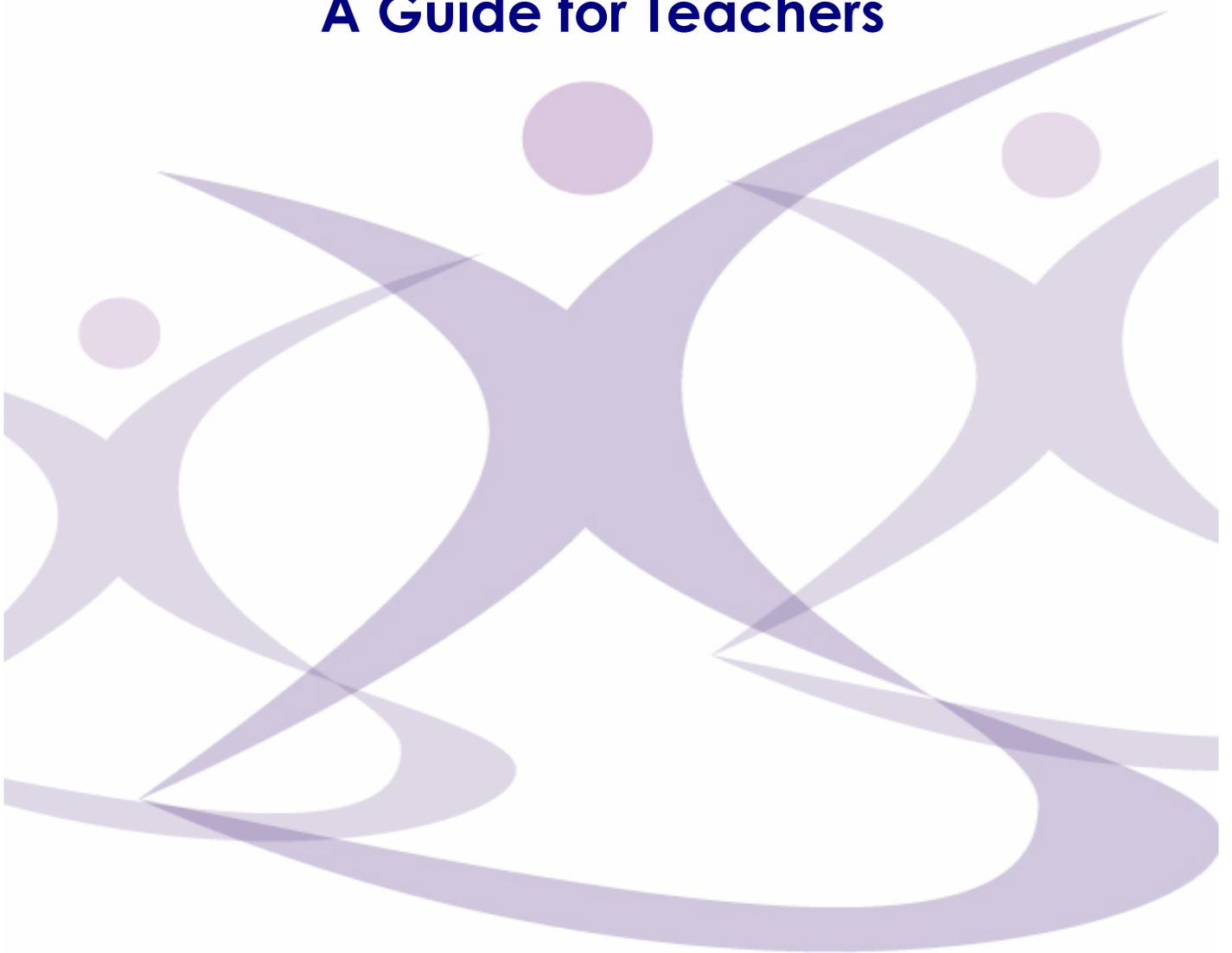




Dyslexia Scotland

DYSLEXIA

A Guide for Teachers



DYSLEXIA SCOTLAND

Dyslexia Scotland is a national voluntary organisation supporting people with dyslexia in Scotland. The headquarters are located in Stirling, with a network of volunteer-led branches across Scotland.

Amongst many other things, Dyslexia Scotland and its network of branches strive to raise awareness of the nature of dyslexia and how it can affect children, young persons, and adults in all aspects of their daily lives. Dyslexia Scotland provides a service which is unique in Scotland giving advice, information, and support to people with dyslexia, their families, teachers, employers and to other professionals who have an interest in dyslexia.

On behalf of people with dyslexia in Scotland, Dyslexia Scotland responds to consultation documents issued by the Scottish Government and aims to influence the educational policy of both central and local government. Dyslexia Scotland representatives attend meetings of all manner of formal and informal bodies to ensure that the voice of people with dyslexia in Scotland is heard by those who should hear it.

Dyslexia Help-line: A confidential telephone Help-line service is in operation, run by experienced knowledgeable staff. The Help-line is open Monday to Friday from 10.00 a.m. until 4.00 p.m. The calls are about all aspects of dyslexia and if you would like to discuss your individual circumstances, with an independent person, then Dyslexia Scotland has dyslexia advisors who can assist you. The number to call is: **0844 800 8484**.

Membership: Anyone can become a member of Dyslexia Scotland for a nominal annual subscription. Members are kept up-to-date on advancements in the world of dyslexia as well as on the activities of Dyslexia Scotland and its local branches. Membership application forms are available on request.

National Tutor List: This is an “information only” service. Application forms for prospective tutors are available on request. People who require the services of a tutor should contact Dyslexia Scotland for the relevant details.

Presentations: Dyslexia Scotland is experienced in presenting Workshops/Talks/Seminars for all manner of situations. These can be arranged for professional and non-professional groups with in-service training designed to suit your individual requirements. Dyslexia Scotland also runs National Conferences, seminars and road shows to raise awareness about dyslexia to a range of different audiences.

Information and Advice: Dyslexia Scotland works with a range of practitioners and providers to develop and co-ordinate materials and resources for teachers and others who work with people with dyslexia. Further details can be found on:
www.dyslexiascotland.org.uk

Assessments: Dyslexia Scotland can provide information for teachers about resources under development on dyslexia assessments in schools. Dyslexia Scotland can also provide information about chartered psychologists prepared to carry out independent assessments.

Included in this brief guide are the following Appendixes.

- ✓ Appendix 1 - What is Dyslexia?
- ✓ Appendix 2 - Indications of Dyslexia
- ✓ Appendix 3 - Pre-School/Early Identification
- ✓ Appendix 4 - Teaching The Dyslexic in the Classroom
- ✓ Appendix 5 - Numeracy Difficulties
- ✓ Appendix 6 - Hints for Homework
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APPENDIX 1 - WHAT IS DYSLEXIA?

WHAT IS DYSLEXIA? Working definition of dyslexia: January 2009

The following working definition of dyslexia has been developed by the Scottish Government, Dyslexia Scotland and the Cross-Party Group on Dyslexia in the Scottish Parliament. This is one of many definitions available. The aim of this particular working definition is to provide a description of the range of indicators and characteristics of dyslexia as helpful guidance for educational practitioners, pupils, parents/carers and others. This definition does not have any statutory basis.

Dyslexia can be described as a continuum of difficulties in learning to read, write and/or spell, which persist despite the provision of appropriate learning opportunities. These difficulties often do not reflect an individual's cognitive abilities and may not be typical of performance in other areas.

The impact of dyslexia as a barrier to learning varies in degree according to the learning and teaching environment, as there are often associated difficulties such as:

- ✦ auditory and/or visual processing of language-based information
- ✦ phonological awareness
- ✦ oral language skills and reading fluency
- ✦ short-term and working memory
- ✦ sequencing and directionality
- ✦ number skills
- ✦ organisational ability

Motor skills and co-ordination may also be affected.

Dyslexia exists in all cultures and across the range of abilities and socio-economic backgrounds. It is a hereditary, life-long, neuro-developmental condition. Unidentified, dyslexia is likely to result in low self-esteem, high stress, atypical behaviour, and low achievement.

Learners with dyslexia will benefit from early identification, appropriate intervention and targeted effective teaching, enabling them to become successful learners, confident individuals, effective contributors and responsible citizens.

People with dyslexia can be talented in many ways e.g. they can have strongly developed spatial awareness, have good problem solving skills and can often present themselves well orally.

What causes dyslexia?

Research is ongoing with this perplexing question but what is clear is that dyslexia is not a 'disease' or 'condition'. At this moment in time, there is still no known way to 'cure' the difficulty. Recent studies have shown that dyslexia can be hereditary.

There is an individual difference in learning style in some people, finding an acquisition of literacy skills inordinately difficult. The following are some associated possible "causes"-

- ★ a delay or difference in the way the brain specialises for language; in other words a brain organisation not favouring symbolic and sound - symbol processing. This is neither brain damage nor defect, but relates to individual differences in the development of the brain. In another culture, the dyslexic person might be "normal" and the average person "different".
- ★ problems in processing speech sounds, particularly in segmentation of sounds and in awareness of the phoneme (sound unit) structure.
- ★ difficulties in coding (i.e. translating and storing) visual information into sounds.
- ★ wider difficulties in short-term memory such as remembering visual or auditory sequences, immediate verbal memory and accessing alphabetical rules.

The underlying difficulties give rise to problems in learning alphabetical names, remembering spelling patterns, reading phonetically, giving letters and words verbal meaning, sequencing, and directional confusions. In other words, these difficulties give rise to dyslexia.

Is dyslexia a rare phenomenon?

Research suggests that one person in ten (10%) of the population is dyslexic to some degree. One in four of these are thought to be severely dyslexic (2.5% of the population).

Can dyslexia be overcome?

If appropriate support is given then improvements can be made. In a school setting reading, writing and spell can fall further and further behind if the difficulties are not recognised and supported on a regular and re-occurring basis. In terms of workplace support, provided the correct level and type of support is given the more likely the person will succeed.

The problem can be difficult to overcome and expectations should be realistic, particularly in relation to complex spelling and written expression. However, if the right help is given there is no reason why a person's true potential cannot be achieved.

What is “appropriate” or the “right” help?

Support should match task to learner by the careful development of an individual programme based on the individual's particular needs. Sometimes asking the person themselves can produce simple but effective results to a problem. Dyslexic people can usually suggest their own solutions to problems.

Research shows that dyslexic people do improve with:

- Small group (or one-to-one) support.
- As early identification and remediation as possible.
- Understanding and encouragement.
- A structured multi-sensory method of teaching e.g. sound-symbol associations, and simultaneous oral spelling.
- A structured approach based on established phonetic principles.
- Matching task to learner - ie. individualised instruction based on careful assessment.
- Teaching to strengths and the person's learning style to help remediate the weaknesses whilst utilising their strengths.
- Mnemonics and “concrete” aids.
- Help with organisation.
- Patience and understanding.

Dyslexic people do not improve with:

- ✗ Unspecific remedial methods, i.e. more reading, more spelling.
- ✗ In a child's particular instance, being left to “grow out of it”.

- ✘ Training visual or auditory perception alone (unless within written language itself).
- ✘ Punishments, threats of being disciplined or sacked, ridiculed in front of others.
- ✘ Inappropriate labelling, name calling e.g. thick, stupid, lazy.

Many of the following characteristics may be present:-

STRENGTHS

Strongly developed spatial awareness.

Can be talented in many ways e.g. They can excel in many areas particularly:

- ✓ Designing, Art
- ✓ Music
- ✓ Engineering
- ✓ Computing
- ✓ Mechanics
- ✓ Sports
- ✓ Drama, Entertainment
- ✓ Building
- ✓ Science

Dyslexic people can be extremely

- ✓ imaginative, creative
- ✓ adaptable, resourceful
- ✓ practical
- ✓ and sensitive to the needs of others.

APPENDIX 2 - INDICATIONS OF DYSLEXIA

- Performs well orally but finds difficulty with reading, writing and spelling.
- Reversals in letters when writing and/or in numeracy.
- Are known to be clumsy.
- Late in development of speech, walking etc.
- Has an average or high IQ but does not do well academically.
- Low tolerance of own lack of achievement.
- Restlessness, poor concentration span, inattentive, forgetful, easily tired.
- Poor sense of direction-confusion of left and right.
- Has good days and bad days.
- Spells phonetically.
- Can sometimes see patterns in printed text. Complains of headaches when reading.
- Says that words move around the page or that text is glaring at them.

MEMORY AND SPEECH DIFFICULTIES

- * Poor articulation.
- * Difficulty in 'getting out' what he/she wants to say.
- * Lack of intonation when reading aloud.
- * Misuse of words.
- * Incorrect or confusing sentence structure.
- * Using mainly 'simple' sentence structure.
- * Inability to follow verbal instructions, especially a sequence of instructions.
- * Difficulty in learning days of the week, months of the year, multiplication tables.
- * Tendency to forget names of common objects and people.
- * Inability to recognise rhymes.
- * Difficulties in learning to use a clock or watch.
- * Confusion of syllables in speech - f / th / v.
- * Confusion of syllables in speech - ephelant, sghapetti.
- * Forgetting what he/she was going to say, while waiting for a pause in the conversation or in the middle of a sentence.

ESSAY WRITING DIFFICULTIES

- Inability to plan and organise essays.
- Difficulty with punctuation.
- Lack of paragraph concept.
- Faulty grammar and syntax.
- Slow laborious writing.
- Insecure spelling.
- Vocabulary confusions.
- Inaccurate proof-reading.

STUDY SKILLS AND EXAMINATIONS

- Inability to take notes at speed.
- Inability to copy accurately.
- Lack of organisation in notes.
- Difficulty in understanding own notes.
- Inability to organise notes for study and revision.
- Lack of skill in knowing how to study and revise.
- Misreading examination rubric and questions.
- Inability to stick to the question.
- Inability to organise use of time in an examination.
- Extreme exam panic.
- Lack of examination proof reading skills.

If dyslexia is identified, and remediation provided, there is no reason why a dyslexic person cannot progress.

Many famous people are dyslexic;

- ☺ Sir Jackie Stewart - Former 3 x World Champion F1 Racing Driver
- ☺ Richard Branson - Owner of Virgin
- ☺ Tom Cruise - Actor
- ☺ Lee Ryan - from Pop Group Blue

APPENDIX 3 - PRE-SCHOOL /EARLY INTERVENTION

"I think God's put my brain in upside down!

What small children often say can make us aware of difficulties they may have:

"The word is coming"
"I've dropped it again"
"What's that word again?"

These may be some early signs of dyslexia.

The following is a guide to some other things to look out for as a child develops, **but remember** not all children will show every sign listed here.

Before Primary School, P1 & P2

- Difficulty with fastening shoe-laces, buttons and getting dressed generally.
- Often accused of 'not listening' or not 'paying attention' or having difficulty in carrying out more than one instruction at a time.
- Difficulty with catching, kicking or throwing a ball.
- Difficulties with hopping/skipping and clapping with a simple rhythm.
- Find's difficulty with rhyming word's e.g. cat and mat and with learning nursery rhymes.
- Hesitates because he cannot find the words he needs and cannot remember the name for familiar objects.
- Use of 'near misses' e.g. 'lopital' for 'hospital', 'lampshade' for lamppost.
- Confuses 'up' and 'down' and 'left' and 'right'.
- When colouring in the child has difficulty in keeping the colours within the shape.
- When colouring in the child may have difficulty in keeping within the lines. All young children may make mistakes like these and many will grow out of them, but it is the **length of time these** continue which give vital clues as to possible signs of dyslexia.

Despite these difficulties dyslexic children have strengths in other areas.

- They are often good at drawing and have a good sense of colour.

- They often show particular ability for construction or technical type toys e.g. bricks, puzzles, lego, remote controls for T.V. etc.
- They are often quick 'thinkers' and 'doers.'
- They appear bright in some areas but may have a 'block' in others.
- They are often good with people of all ages.
- They can be very good speakers and enjoy talking about interests.
- Some children can be very good at sports.
- You might find the child likes to take things apart and put them together – they are not being destructive

Ways in which you can help the child:

1. Say nursery rhymes together; they help to encourage rhythm at an early age.
2. Finger play e.g. poems and songs which have hand actions.
3. Read to the child: poetry, (especially funny or nonsense poems) and stories.
4. Act out a mime of a rhyme or something that has happened and then guess the mime.
5. Find pictures to talk about and help the child to notice details e.g. Is the man in front of or behind the lady? Is the boy climbing under or over the gate?
6. Play games e.g. hunt the thimble and say "is it inside the pot, under the pot, on top of the pot?"
7. Watch television together. It can be a useful way of learning if you talk about what is happening.
8. There are some very good puzzle books e.g. joining dots, mazes and simple picture crosswords are all useful.
9. Encourage the child to help with tasks e.g. laying/cleaning the table, setting out play things and putting them away.

HINTS AND TIPS

- ★ Set standards for him in concrete terms. Error free learning is unlikely to be possible for him. It maybe helpful for him to work on one area of improvement at a time.

- ★ Give individual attention when you can and encourage him to ask when he is stuck.
- ★ Check that he understands the assignment given.
- ★ Give new information more than once and in various formats e.g. verbally, in diagraphical format then demonstrate - very multi-sensory and very dyslexia friendly!
- ★ Give more practice than would be normal.
- ★ He may need help in relating concepts to past experience.
- ★ Give him time to organise his thoughts and complete his work. Skeleton formats can help guide the flow of work.
- ★ He may need extra time for various activities and pressure is not helpful for him. Try to be flexible.
- ★ If possible, try sometimes to test orally, perhaps using tapes or allowing him to dictate answers. The Classroom Assistant could do this for you if your time is limited.
- ★ Remember that it may take him much longer to complete homework than other pupils. Does he have the task written down correctly and does he understand what he has to do?
- ★ Try to include positive comments on his work - he may not get many! Try to correct for content and not spelling ability.
- ★ He is likely to need a lot of help to build his self-esteem. Try to avoid asking him to read aloud unless he volunteers to do so.
- ★ Try to find his strengths and teach to these strengths.
- ★ Is it possible for you to grade him on his own progress rather than in comparison with the rest of the class?
- ★ Allow him to use any learning methods or tools which he can manage such as tapes, graphs, computers, table squares etc.
- ★ He may require help in learning how to take brief notes if he cannot get full details down. Can you consider accepting answers in key words or in note form? This may help him, but he may need to be shown how to do it.
- ★ Read material out to him if necessary. Check that the level of material to be read is appropriate. Books on tape could be very useful.
- ★ Try to limit the amount of instructions you give at one time.

OTHER SUGGESTIONS

- Have the pupil sitting near to you so you can encourage him to ask questions.
- Use coloured chalk / pens when writing on the blackboard / whiteboard. Try to avoid black on white or vice versa.
- Use graphs, drawings etc to explain work where possible. Avoid too much writing.
- Use practical aids when teaching i.e. cuisenaire rods, table squares, calculators, wooden letters etc.

- Try to maintain good communication with the pupil's parents. Keep them involved. Should any difficulties arise, you will be able to discuss this openly and gain their full co-operation to resolve problems quickly.

If the answer to all or several of the following questions is YES, it is probable that the individual needs help.

Many pupils have similar difficulties and they do grow out of them, but it is the number and persistence of the problems, in spite of the pupil receiving the same teaching as his classmates that causes concern.

8 years or under - Does he

- ✕ have a history of dyslexia in the family?
- ✕ have delays in speaking, making sentences, pronouncing words?
- ✕ have difficulty with reading and spelling?
- ✕ have difficulty in kicking or catching a ball?
- ✕ have difficulty with tying shoelaces, dressing etc?
- ✕ transpose letters and figures e.g. 15 for 51, b for d?
- ✕ have a problem telling left from right?
- ✕ confuse the order of the days of the week, months of the year etc?
- ✕ have difficulties in remembering the times tables and the alphabet?
- ✕ have apparent alertness and intelligence that does not match his performance in other tasks?

8 years to 12 years

- still make mistakes in reading and has strange spelling mistakes?
- still miss out letters within words?
- still put letters in the wrong order?
- have a poor sense of direction and still confuses left and right?
- still confuse b and d, and other letters?
- still find arithmetical tables difficult?
- still need to use his fingers, or marks on paper, to make calculations?
- have problems understanding what he has read?
- takes longer than average to do written work?
- lack self-confidence and have a poor opinion of himself?
- have poor confidence and self esteem?

12 years or over - Does he

- still read inaccurately?
- still have difficulties in spelling?
- need to have instructions and telephone numbers repeated?
- get `tied up' using long words, e.g. preliminary, philosophical?
- confuse places, times, dates etc?
- have difficulty with planning and writing essays?
- have poor confidence and self esteem?
- Is there anyone else in his family with similar difficulties?
- Do you have the impression that he has good and bad days?

TEACHING THE DYSLEXIC PUPIL IN THE CLASSROOM

READING

Supply books which complement the pupil's reading ability - do not pitch it too high or the pupil may lose interest. Try using books in audio format. It is an excellent way for a pupil to access books.

Paired reading - e.g. a Classroom Assistant can read to the pupil from a book and pupil indicates when he wishes to take over. The Classroom Assistant supplies any words which cause difficulty.

SPELLING

This is rarely consistent. It does not help to make him write the words out several times. Try to mark for content rather than spelling ability.

A word bank could be compiled for those words the pupil continues to have difficulty with spelling.

Try marking errors in a different way rather than using a cross. You could try putting a green dot next to the word that is incorrect. The correct spelling can be put in the margin. The pupil could then transfer this into his word bank.

WRITING

Computers make the job much simpler and neater - it is also easier to recognise spelling errors and correct them. A perfect piece of work is a great confidence booster. Homework assignments could be completed on a PC at home. Not only could this be easier in many ways for the pupil, it could be easier for you to mark!

Use lined paper, preferably tinted in colour. Praise the content of his text rather than criticise the standard of his script. If your pupil has difficulties with fine motor control, you could try using chunkier pens / pencils or rubber grips. It can be useful to mark the starting point on the page.

MATHS

He may often use unconventional methods to arrive at the answer, i.e. working in multiples of ten instead of step-by-step. This is known as the grasshopper and inchworm methods.

If the pupil has problems with learning the times tables, try using a table square. Alternatively, a calculator would be just as good!

Many dyslexics are good at higher-level maths but struggle with the arithmetic side of things - using a calculator can help bridge that gap. Concrete materials often aid understanding - even in algebra!

HAND-OUTS / HOMEWORK

Give handouts wherever possible. A Classroom Assistant could check with dyslexic pupils that they have copied the assignment accurately from the board and that they understand what they have been asked to do.

RECREATION

The dyslexic pupil has probably experienced more than his fair share of failure in the classroom situation.

The most valuable contribution a person involved in recreational activities can make is to help the pupil enjoy a certain measure of success.

This should be because:

- The pupil is not in a classroom situation where the emphasis is on good literacy skills.
- Many dyslexic people are well co-ordinated and shine at practical activities.

Difficulties may arise from:

- Poor short-term memory leading to difficulties remembering lengthy instructions.
- Poorly developed spatial awareness - left and right orientation, directions etc.
- Short concentration span.

HELPFUL HINTS

- ❖ Keep instructions short, clear and one at a time. Pitch them to the pupil's understanding, not yours!
- ❖ Try to ensure that instructions are understood before a task begins. Give them in a number of different ways e.g. write them down, demonstrate, diagram etc.
- ❖ Dyslexic pupils can be inconsistent. This causes a great deal of frustration when success one day is not necessarily repeated the next. There needs to be constant over-learning. Progress takes place slowly and in very small stages. Develop a routine which can be followed at the start of each lesson.
- ❖ Vary activities within the lesson to hold concentration. Explain the way certain skills are being practised.
- ❖ Dyslexic people can often understand the overall aim easily and can therefore get better results when working towards the ultimate goal.
- ❖ These pupils can be highly articulate but often have to search for words which give the impression of someone who is unsure of what he is trying to say. Listen to what he has to say.
- ❖ Discuss his ideas with him and develop systems together. Praise him as often as he deserves.

- ❖ Spelling and punctuation will be poor and erratic. Mark for content rather than accuracy.
- ❖ When the person is required to copy from the blackboard, do not expect the pupil to copy as quickly or accurately. Copying from paper close to hand is much easier. If possible, give handouts.
- ❖ Self-organisation is often a problem; please do not give an oral list of instructions. Whenever possible put itemised instructions in writing on overhead projector, blackboard or worksheets.
- ❖ Try to arrange for pupils to have a copy of essential notes, either typed handouts or a photocopied set of notes from another pupil's book.
- ❖ Try to boost the pupil's self-confidence by encouraging positive attributes - such pupils often have very low self-esteem and will respond greatly to praise and understanding.
- ❖ Ensure that special arrangements permitted by the Scottish Qualifications Agency are in place by the due date.
- ❖ Please allow all important tests and exams to be scribed if necessary. This is not giving the pupil an unfair advantage. It is allowing the pupils to reflect actual ability and not apparent ability. Some pupils may manage independently with additional time only.

CHECKLIST OF PRESENTATION SKILLS

The way in which teaching material is presented can affect learning. Whilst preparing work, consider the following points:

- ✦ It is useful to have text size at pitch 12 or above. A wide variety of fonts can be used with preferences being Arial, MS Sans Serif, Sassoon etc.
- ✦ Try to use tinted paper wherever possible. Many dyslexia people find white paper with black text quite difficult to cope with.
- ✦ Very long sentences are difficult to understand - keep them short and simple. Bullet points could be used or a flow diagram to demonstrate a particular procedure.
- ✦ Is there too much on the one page? Will it be cluttered after the pupil has entered his responses?
- ✦ Have key words and new concepts been adequately introduced before pupils are asked to use them? Provide a glossary of key words and concepts and ask groups to discuss them for clarity.
- ✦ Is the writing legible and in script form? Could it be typed onto coloured paper in a more dyslexia friendly format?
- ✦ Try to include diagrams and illustrations to break up large sections of text.

- ✦ Are references clearly and accurately signposted?
- ✦ Are all instructions clear, unambiguous and in short simple sentences and do they come before tasks? Try using diagrams / flow charts to further demonstrate and reinforce the tasks.
- ✦ Have you provided checklists / skeleton plans / directed questions, the answers to which provide the basis for extended writing?
- ✦ Do pupils know why they are carrying out the tasks set? Could they be discussed in groups before continuing with the task?
- ✦ Have you ensured that data sheets, diagrams etc are not back-to-back with related tasks?

NUMERACY DIFFICULTIES

Directional Confusion

Children may write numbers backwards, E for 3, or be confused by the inconsistent 'starting points' of algorithms, e.g. addition, where the child starts at the right and works left;

$$\begin{array}{r} 362 \\ + 431 \\ \hline \end{array}$$

and worse, subtractions, where the child starts at the bottom right and has to remember to 'take' the lower number from the top number, 'borrow' from the left upper number and move left:

$$\begin{array}{r} 495 \\ - 236 \\ \hline \end{array}$$

or long division, where the child has to start at the left and move right and downwards while writing the answer at the top:

$$\begin{array}{r} \hline 5 \overline{)2655} \end{array}$$

Sequencing Problems

It may be difficult for a child to count, especially using one-to-one correspondence. It is frequently difficult for a child to count backwards. Children may write 18 as 81 (which has some logic) or 26 as 62 (which does not, Sharma, 1987). They may have difficulty remembering the sequence of steps to follow for long division. It may be difficult for a child to see a sequence e.g. 4^0 , 4^1 , 4^2 , 4^3 .

Visual Perception

The pupil may confuse +, ÷, and x (especially if written carelessly) or 6 and 9, 3 and 5.

Spatial Awareness

Spatial awareness is needed for work such as place value or distinguishing between 2 and Z or three-dimensional geometry. In the classroom, the pupil may lose his place on the page (or board) from which he is copying. He may not be able to relate two-dimensional drawing to the three dimensional shape they represent.

Short Term (Working) Memory

Poor short-term memory can create several areas of difficulty and has a strong influence on how a pupil processes numbers.

Deficits in short-term memory combined with long-term memory deficits create major problems e.g. a child trying to add 47 and 78 mentally has to hold the sum in his memory, work out $7+8$ (poor memory for basic facts), remember 5, carry 1, remember that he has to add $4+7$ (and the carried 1), work out $7+4+1$, recall the 5 and put them all together in the right sequence 125.

Short-term memory difficulties may even prevent a pupil from starting a problem; he may simply forget some or all of the teacher's instructions or, if his short-term memory is overloaded, he may be left with absolutely no clue as to where to start. The pupil may not be able to 'hold' the visual image of the sum he is trying to solve.

He may not be able to hold the sum in visual auditory memory while he searches for a necessary number fact. (Indeed the working out of that fact, say $9+6$ by counting on, may overload the memory and leave him not remembering the initial sum.)

Long Term Memory

Rote learning, as a means of loading information into long-term memory, is rarely effective with dyslexics (Pritchard et al., 1989), though teachers still persist in trying (McDougal, 1990). Dyslexics have significant difficulties learning basic facts such as times tables (Pritchard et al., 1989). This is particularly frustrating for parents who encourage the child to practise until he achieves mastery one day only to find that the child has forgotten again soon after.

Poor long-term memory may also handicap other areas of mathematics, such as recall of algorithms (methods) or formulae.

The language of Mathematics: Difficulties in Naming

Mathematics has its own language and symbols and this brings further problems for the dyslexic whose language skills may be weak. To complicate the issue further, the same symbol often has different names, e.g. $+$ means add, more, plus, positive, and (Henderson, 1989)

Word Skills (Kibel, 1992; E Miles)

A child needs to be able to read a problem with accuracy (and a certain amount of speed). The wording for mathematics problems tends to be precise and so needs accurate reading and interpretation. A child who misses key words or perhaps small words such as 'not' will be disadvantaged.

Cognitive Style

The child's cognitive style, the way he works out a problem, is significantly influenced by the factors previously mentioned. It may not match the teacher's cognitive style. Some writers use the terms learning and teaching style, which often refer to classroom styles, for example, informal or formal, a management aspect.

Although this is relevant in that a teacher whose style is predominately verbal will disadvantage a child whose style is predominantly visual, we are referring here to the cognitive styles of teacher and the learner.

This particular facet of mathematics learning and teaching was highlighted by Cockcroft (1982) who stated (s242):

"We are aware that there are some teachers who would wish us to indicate a definitive style for the teaching of mathematics, but we do not believe that is either desirable or possible."

and, later (s256)

"...the now well established fact that those who are mathematically effective in daily life seldom make use 'in their heads' of the standard written methods which are taught in the classroom."

Conceptual Ability

The child's ability to form concepts will be aided by the range and extent of the experiences he receives. Drill and practice is often used to reinforce a new topic. A dyslexic student is typically slower and will often manage less practice for this reason alone. A child who continually fails in mathematics will also have a small variety of experiences and consequently will be less likely to be able to see patterns and to generalise and thus to form concepts. This has the effect of compounding his difficulties and hindering his progress.

Anxiety and Self Image

Overlaying all the above areas of difficulty is the child's poor self-image and his mathematics anxiety (Buxton, 1981). This is a cumulative and cyclic problem - more failure, more anxiety, more failure, poorer self-image, more failure, etc.

Summary

The definition of dyslexia has been expanded from a consideration of just language difficulties to include numeracy/arithmetic difficulties. There is now a greater awareness that difficulties in mathematics frequently occur.

Mathematics is a sequential subject, so if early difficulties are not addressed effectively then 'classroom-acquired' difficulties will be added to inherent difficulties and compound the child's failure. If the remediation is started at the right time but is too slow, or continues for too short a time, the extent of the child's problems will still be increasing for, while his peers progress, the dyslexic child will be marking time (or even regressing).

Thus it seems recognised that many dyslexics have difficulty in at least some aspects of mathematics, but this is not, necessarily, in all areas of mathematics.

Indeed, some dyslexics are gifted problem solvers despite persisting difficulties in, for example, rote learning of basic facts. An appropriate education may leave such a child floundering in early numeracy when he has the ability to leap-frog over these difficulties into more advanced aspects of mathematics.

If the problem is not appropriately (and continuously) addressed, these learning difficulties may reduce the extent of the child's mathematical experiences, making it harder for him to develop concepts and to progress past the very basic levels of knowledge. The difficulty may create a cumulative effect beyond its original potential, if it is not addressed at an early stage (and thereafter).

As the teacher, you require both an understanding of the strengths and weaknesses which the child brings to each lesson and knowledge of the structure and interrelating nature of mathematics. It is the successful interaction of these items of knowledge which helps to make an effective teacher.

Hints for Homework

Before leaving School

- Use an A5 sized diary into which you or your teacher can write your homework. If you are in a hurry at the end of a class do not think that you will remember the homework instructions later on. You will not remember, so develop the habit of writing in your diary.
- Have an emergency telephone number of a friend in the same class in case you have forgotten to write down some information.
- Look at your homework diary before leaving school to make sure you have the correct books. Avoid carrying all your books.

Once Home

- Establish a homework routine. If you have a lot of homework, consider doing some after school and some after tea.
- Have a snack before you start. You cannot concentrate if you are hungry.
- Pick a quiet place without any distractions. That means no television on in the room. Preferably with a table so there is plenty of room to spread out.
- Some people find it easier to work with music playing *quietly* in the background. Mozart has been shown to help the listener relax and improve their Maths.
- Have a glass of water nearby.
- Have all your homework books, sharpened pencils, eraser, pens, calculator and dictionary to hand before you start.

Getting Started

- Do the homework needed for the next day first.
- Do the hardest homework first.
- Plan long-term assignments. Do not leave everything until the last night.
- Read through class notes. Look at examples. Remind yourself before you start writing.
- Read instructions thoroughly.
- Read aloud or talk to yourself.
- Explaining your ideas to someone else makes everything clearer.
- Take rests, but *do not* switch on the television.
- Double check that nothing is forgotten and always proof read your work for errors in spelling, punctuation and tenses.

General Tips

- Have a pin-board with a calendar for marking when homework assignments are due.
- Use A4 hole-punched plastic wallets for handouts to avoid dirt and crushing.
- Use different coloured folders for different subjects.
- Make notes/rough workings.
- Use box files and cards to note important points, which can be stored under each separate subject. These will help when revising.
- Make sure you pack your schoolbag the evening before. Check the books against your timetable. Look to see if you will need a gym kit, musical instrument, lunch money etc.

Essay Writing

- Read instructions thoroughly. Underline the key words, for example, describe, discuss and explain.
- “Brain dump” all your ideas, in note form, onto different pieces of paper. These can be moved around and sorted into sequences that will form your paragraphs.
- Use a Mind Map.
- Read the question again.
- Think of the ending before you start.
- Write the introduction.
- In the main body of text, have one idea per paragraph.
- Draw the essay together with a conclusion at the end.
- Proof read. Read the essay through looking for spelling, punctuation and grammar errors. Read the essay aloud and follow each word with your finger or a pencil. This will help you notice omitted words.
- Proof read it again, but this time, work backwards from the end of the essay to the beginning.

General Tips

- Use Mind Maps. Mind Mapping is explained well in the video, “Get Ahead. A Short Cut to Straight “A’s”” by Lana Israel, Tony Buzan and Richard Carylton. Produced by Island World Video
- Spider diagrams. The title of the essay is in the body of the spider. All the legs are ideas for the story. This helps keep your mind on the title of the essay.
- If you find writing difficult and you cannot put all your ideas on paper, ask the teacher if you can submit your essay on cassette tapes.
- Use a word processor. The “cut and paste” facility and the Spell checker are particularly helpful.

SUGGESTED READING LIST

<u>Books</u>	<u>Supplier</u>	<u>Phone No.</u>
Dyslexia - A Brief Guide for Parents <i>(Indications, what is dyslexia, hints and tips, refers to Scottish system. Compiled by parents and teachers with vast knowledge of dyslexia)</i>	Dyslexia Scotland	01786 446650
Overcoming Dyslexia - Bevé Hornsby <i>(an overview of dyslexia and how it affects a child with useful hints and tips on how to help)</i>	Hornsby	0207 7223 1144
How To Detect and Manage Dyslexia by Philomena Ott <i>(an overview of dyslexia, history, definitions, what is etc.; more like a handbook)</i>	Heinemann	01865 314301
This Book Doesn't Make Sense - Jean Augur <i>(Summaries the author's home and classroom experiences and has practical advice on how to help dyslexic people develop to their full potential)</i>	Whurr	0207 359 5979
Let's Discuss Dyslexia <i>(A book for young people (P6+) to read to help them understand dyslexia)</i>	Desktop Publishing	01652 688781
So You Think You Have Problems <i>(For young people in early primary school to help them understand dyslexia)</i>	Egon Publishers	01462 894498
A Parent's Survival Guide - Christine Ostler <i>(coping and dealing with a dyslexic child from the parents point of view - a good overview)</i>	SEN Marketing	01924 871697
Study Skills (suits late primary/secondary) by Christine Ostler <i>(hints and tips for organisation, studying, essay writing etc)</i>	SEN Marketing	01924 871697
Advanced Study Skills (suits secondary/students by Christine Ostler <i>(more advanced tips for organisation, essay structure, timetabling - very good book)</i>	SEN Marketing	01924 871697
Toe By Toe - Keda Cowling <i>(Helps with teaching reading. Suits ages 8 - 80! see website for more info www.toe-by-toe.co.uk & www.kedapublications.co.uk)</i>	Keda Learning	01274 598807
Stride Ahead - Keda Cowling <i>(to aid comprehension - should have a reading age of 9 before beginning this)</i>	Keda Learning	01274 598807

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Office: 01786 446650 Dyslexia Helpline: 0844 800 8484 Email: Helpline@dyslexiascotland.org.uk

<u>Books</u>	<u>Supplier</u>	<u>Phone No.</u>
Wide selection of `Mind Mapping' books available	Buzan Centres	01202 674676
Seven Ways to Help Your Child with Maths <i>(practical suggestions for stimulating maths through everyday examples, games and activities)</i>	REM	01458 254750
Power of 2 <i>(reinforces and practices numeracy work suitable for all ages)</i>	SEN Marketing	01924 871697
Seven Ways to Help Your Child with Reading <i>(practical suggestions for stimulating reading through everyday examples, games and activities)</i>	REM	01548 254750
Dyslexia - Successful Inclusion in the Secondary School <i>(increasingly dyslexia is becoming an inclusive issue. This book gives useful help on addressing the needs of the dyslexic student, subject specific info, school management etc)</i>	SEN Marketing	01924 871697
Revised Structured Cursive Writing <i>(a programme to help with teaching cursive writing- Includes pen)</i>	Ann Arbor	01668 214460
The Word Wasp - Harry Cowling <i>(Structured multisensory one-to-one workbook teaches the spelling rules through phonic spelling)</i>	SEN Marketing	01924 871697
Specific Learning Difficulties (Dyslexia) A Teachers Guide by Dr. Margaret Crombie <i>(a practical guide for teachers who wish to know about teaching a dyslexic pupil)</i>	Ann Arbor	01668 214460
Maths & Dyslexics - Anne Henderson Maths for the Dyslexic - Anne Henderson <i>(information & practical guide to support dyslexic pupils with mathematic difficulties.)</i>	SEN Marketing	01924 871697
Mathematics for Dyslexics - Chinn & Ashcroft What to Do When You Can't Tell the Times Tables What to Do When You Can't Add and Subtract Practical information and advice to support mathematics)	SEN Marketing	01924 871697

<u>Books</u>	<u>Supplier</u>	<u>Phone No.</u>
<p>Demystifying Dyslexia - Krupska, Klein <i>(practical and informative guide to dyslexia, adults/students)</i></p>	SEN Marketing	01924 871697
<p>Dyslexia and Stress - Miles & Varma <i>(Presents documented evidence on dyslexia and stress. This book comprises a series of essays on stress at different ages and in a variety of circumstances)</i></p>	Whurr	0207 359 5979
<p>Dyslexia in the Workplace <i>(A book more suitable for the employer and employee)</i></p>	Whurr	0207 359 5979
<p>The Dyslexia Adult in a Non-Dyslexic World <i>(a comprehensive look at the world of dyslexic adults based on personal experiences. The book suggests strategies and creative solutions, capitalising on their strengths.)</i></p>	Whurr	0207 359 5979
<p>SWAP & Fix Card Games <i>(These are essentially reading games, which can be played with a helping adult or by a group in the classroom. They are excellent for introducing and reinforcing a spelling family/rule. The simple compact design of the games appeals to primary secondary and adult learners.)</i></p>	GAMZ	01684 562158
<p>Dictionary of Perfect Spelling By Christine Maxwell <i>This valuable resource is designed to make using a dictionary accessible to even the most reluctant speller. Look up a word as you think it sounds or as you think it is written. If you are wrong the word you looked up will be in red with the correct spelling in black. Hints of where to look, easy to read font, keys to symbols and spelling rules, words that can be confused are together with clues as to their usage, tinted page edges and useful appendices.</i></p>	SEN MARKETING	01924 871697

