

HANDWRITING

Letter formation

Learning to form letters is extremely difficult for some children with special needs. For this reason, some children develop bad habits such as using incorrect patterns of movement or forming letters in fragments, rather than one fluid stroke. In the long term, this may affect the fluency and speed of their written work, and certain habits, once learnt, are very difficult to change, especially in the older child.

The movement demands of handwriting are varied and complex and take a long time to master. Adult handwriting speed is usually reached by around the age of 14. When writing, we can think faster than we can move, and our brain is planning ahead of our hand. This makes achievement of cursive writing an important part of writing quickly, as we can write in groups of letters without taking our pens off the paper. Note that some children will struggle to achieve cursive writing, particularly those with learning or motor difficulties, and this goal may not be realistic for them to achieve.



It is also important to consider children included in school settings who have more severe learning difficulties, as these children may not have the movement skills to write and the activity may have to be differentiated. For example, it may be better for them to learn to write in capitals, which developmentally are the easiest way to learn letters. This is often the reason why young children come into school doing their name in capitals initially from home. Some children may be able to move on to simple printed letters from capitals, according to their level of skills. Programmes such as Handwriting without tears (www.hwtears.com) are very useful teaching tools for this group of children.

- Learn to form single letter shapes consistently and according to a simplified set of rules that provides the child with firm foundations on which legible writing can be based.
- Introduce new letter groups slowly.
- As a new letter group is learnt, continually reinforce and consolidate the letters already learnt.
- Go slowly do not rush the child; handwriting can quickly become a source of anxiety and frustration to children.
- Practice a little and often to maximise results, for example, daily practice for 10-15 minutes is preferable to an hour a week.
- Give time to learn groups of letters with similar movement patterns; for example, c a d and g all start as a letter c.
- Each letter should be formed in one movement, not lifting the pencil from the page.
- If using a simplified printed script (easier for children with significant coordination difficulties), all letters start at the top except d.
- If using a cursive script with more advanced children, emphasize that all the letters start at the bottom, using a lead-in stroke from the line.
- Practice with eyes open and eyes closed, in order to consolidate the motor memory for each letter.
- Use a multi-sensory approach using visual, verbal, movement and other sensory cues to help learn letter shapes. For example, you can ask the child to touch the edges of a little blackboard when teaching about letters 'bumping the lines'.
- When practicing individual letters, make sure that the child always copies the sample as opposed to their own previously formed letters.

An example for teaching groups of letters with a simplified alphabet:

The 'c' family All the letters begin at the top (except 'd') and they go round anticlockwise. (c a q o d g)

The 'r' family Go down, up and over in a clockwise direction (r h m n p b)

The 'i' family Go down initially (l j l k t)

The diagonal ones (x z v w)

The odd ones (f e s u y)

The letters which start in the middle (d & e)

Uneven letter sizes

- Check line width, as some children may use all the space given to them and narrower lines could help contain the size of their work.
- Some children may have visual perceptual difficulties and could benefit from thicker lines, so that it clarifies for them where their letters should stop.
- Emphasize the idea of 'bumping the lines', so that the child is always reminded to touch both lines with the pencil when forming letters (this only applies if the child is writing in double-lined paper).
- Teach the child that letters come in two sizes:
 - Full size: all the capitals and b d f h k l t
 - Half size: the rest of the alphabet.
- Give the child paper with a line half way between the top and bottom line to help learn where the two different sizes sit.
- The Handwriting without tears programme uses two lines which can be less confusing than three lines.



Letters not sitting on the lines

When letters float above or drop below the line it is often because the child does not place their pencil at the correct spot to start the letter. Teach the child that letters come in two sizes (as above) and when starting a letter they need to place their pencil at either the top line or at the halfway mark between the two lines.

- Use a different line format which provides a better visual cue of where the letters should be sitting (ie darker lines, different coloured lines for top and bottom, etc).
- Emphasize the idea of 'bumping the lines', so that the child is always reminded to touch both lines with the pencil when forming letters (this only applies if the child is writing in double-lined paper).
- An alphabet sample taped to the table can also be used as a visual prompt of letter placement in relation to the lines.

Free hand v tracing over letters

Free hand letter formation has been found to be more useful than tracing, as it relies more on establishing a motor memory of the actions required. Tracing relies more on vision and it is an easier skill for the child to acquire. However, correct handwriting is largely a motor memory skill, which is why we can write with our eyes closed quite successfully. It is therefore more desirable that the child moves quickly to free-hand letter formation after

success with tracing skills. When a child is anxious about writing, they can guide your hand to try to form letters and words. In this way, you can also get the child to tell you how the letter should be drawn without actually committing themselves to making any mistakes. Soon, the child should be trying to follow their own motor memories to form the letters themselves.

Use multi-sensory approaches to letter formation (ie forming letters in sand, finger paint, cornflour, blackboards, etc) in order to facilitate free-hand formation, rather than tracing, and to reinforce the correct motor memory for each letter.

Letter reversals

It is not uncommon for a child aged four to six years old to reverse numbers/letters when they first start writing with a pencil. If a child still has a high degree of written reversals after the age of seven years old, it may be related to an underlying visual perception dysfunction (inability to analyse and interpret what they see) and/or visual-motor integrative dysfunction (inability to transfer what they perceive visually into motor expression).

They may also experience difficulties with body awareness (ie differentiating left and right) and directionality (ie knowing how to move in space). It also affects more often the letters b, d and p, and it is more commonly seen in left-handers.

- Always start practicing the real activity of forming letters, to clarify differentiation of letters visually and to learn the correct direction of the movement.
- Ask the child to sort out word cards into three piles, for those beginning with b, d, and p. After they have categorised the words, let the student read out their list. Have a card with each letter on to identify the piles. Expand this activity to include three boxes with slits, and a picture of a bee, a duck and a pig in each. The child draws a card from a pile of b's, d's and p's and places it in the corresponding box. The box ensures that the child has to make a fresh decision each time. After the child has finished, open the boxes and note any errors.
- Get the child to identify or copy out all the b words from a page in a book, then repeat with the other letters.
- Use a visual reminder for the child, eg the pencil box on the child's desk. Label the **pencil box** on all four sides (so that they can always see it whichever way it faces) and point this out to the child.
- For b and d confusion, write words containing these letters and associate with a symbolic picture, eg bed.
- Using A4 paper, write a letter/number in the correct orientation and reversal pattern. Ask the child to scan from left to right, line by line, and to cross out the reversed ones. Gradually increase the complexity by adding a few more letters/numbers.
- You can purchase sheets of coarse sandpaper. Cut letters and numerals that are about two inches in width and about ten inches in height. Let the child trace over these letters, very gently, with the index and middle fingers used together. If the child is not properly making the strokes, then put his hand in yours and guide his fingers in the proper direction. This is to assist children who need tactile reinforcement for learning.
- On a chalkboard with a piece of chalk, write the letters so that they are large, then gently erase them so the image of the letter or numeral is still visible. Have the child trace over that image as many as five or ten times. Watch the child so that they start and complete their strokes at the proper places.
- Have the child draw and then cut out letters and numbers on paper. Then have the child display the individual letters and numbers in their correct position. Repeat this with the child using the cut out letters to make words that cause reversals. Repeat this exercise until the child can organise letters, numbers and words several times without errors.

- Place three letters, numerals or simple designs in front of the child. Tell him you are going to draw one of them on his back or arm (child is not looking), and that he is to tell you, by pointing, which one you drew.
- Have the child check over his work and mark the letters or numbers that are reversed, using an alphabet or number strip as a prompt on his desk. Then have the child write the correct letter or number under the reversed one.

Cursive versus printed letters

It is generally agreed that an appropriate developmental sequence of handwriting instruction is to teach printed letters the first two years of school then move on to cursive towards the end of the second year. The need for printed writing continues through life, and most secondary age students tend to merge the two styles together for increased speed. To date, there is no conclusive research to support one style over another (Jane Case-Smith, 2001), although there is research to support the use of a cursive style for children with dyslexia. However, in cases where children have significant coordination difficulties, it is preferable to start with an easier, simpler style such as capital letters or a simplified printed alphabet in lower case. In any case, it is always preferable to let the child use the script that decreases physical effort and encourages good presentation and legibility, according to the child's difficulties.

Both printed and cursive scripts have advantages and disadvantages, and these should be considered when deciding which style is best for the child.

A printed script is often preferred for these reasons:

- The letters are simpler and easier to learn, with fewer details to remember.
- It is similar to the letters in textbooks and general printed documents.
- It is required for adults when filling in application forms and other documents.
- It can be more legible sometimes than cursive writing.
- It is more appropriate for younger children, who developmentally have skills appropriate for printing (ie can make lines and circles), and it can take them longer to learn cursive styles.

For children with visual perceptual, motor or learning difficulties it is easier to discriminate and learn printed letters.

On the other hand, cursive styles can:

- Facilitate faster and more automatic writing in the long term.
- Prevent reversals of letters and words.
- It is easier for certain diagnosis such as dyslexia, as all letters begin in the same point, on the line.

Generating quantity and quality of written work

A child who has mastered handwriting, has all his working memory free to focus on other aspects of the task, such as the structure and content of written work. A child who has difficulty with handwriting and letter formation may have to concentrate on his writing, at the expense of other aspects of the task; therefore, presentation, spelling and the content of a child's work may all suffer.

When a child has difficulties planning and recording written work, encourage him to develop a consistent strategy, such as that advised in Dr. Moody's book: *Dyslexia: a Teenagers Guide* (REF):

1. Focus on exactly what you want to say.
2. Brainstorm all ideas.

3. Cluster and group ideas.
4. Order and link ideas.

You can also use software to help plan work, and Mind Maps are very useful resources to do this. There are a lot of software programmes that may assist the child to plan and record their work, including Clicker 5, Kidspiration, Inspiration, Nessy Brain Booster, Think About! 1, Wordswork, etc. You have to make sure that the programme matches the skills and abilities of the child and the level of work they are expected to produce. Alternatively, Mind Maps can also be produced on paper and children can be shown how to do this before they produce any pieces of writing.

- Use carefully designed work sheets that encourage organised and sequential thinking.
- Encourage systematic and consistent ways of working through worksheets; for example, top to bottom and left to right.
- Experiment with different types of pens, and have a selection available for assessment (ie to prevent smudging, poor letter formation, etc).
- Consider allowing the child to use double spacing or using grids when doing Maths problems and measures.
- Try different line formats, eg experiment with width and thickness of the lines.
- Use the **COPS** mnemonic (the handwriting police!).
- Ask the child to re-read their work four times, each time checking for one thing in turn. Make cue cards for what to look for:

C = Capitals, for first words, names, places.

O = Overall appearance: paragraphs, margins, size of letters

P = Punctuation: ends of sentences, commas

S = Spelling

Writing skills for left-handers

People with a dominant left hand make up 10% of the population. Although being left-handed is not a problem in itself, it can prove problematic for some children, especially where other difficulties are also present. Many left-handers find their own solutions; however, awkward grips and incorrect letter formation can interfere with the development of good handwriting skills, speed and comfort.

- Position the child so that they are seated on the left hand side of a right handed child, so that they do not bump elbows. See other considerations about posture, as this may also assist developing good habits and comfort.
- Position paper to the left of the child's midline when writing and angle the right hand corner lower than the left hand corner. You can tape/Blu-tac the paper down to the desk or provide a taped guide to help the child position the top edge of the paper as they write.
- Always encourage the use of the non-writing hand to stabilise the paper.
- Left-handers cover their work as they write, so encourage holding the pencil further up the barrel, to allow the child to monitor visually what they have just written. An elastic band can remind the child where to put his finger tips (3-5cm from pencil tip).
- Encourage early writing experiences on vertical surfaces, as this discourages hooked grips; eg whiteboards, at an easel, on a blackboard, a paper pinned to wall, etc.
- The use of a writing slope can help to promote a better position of wrist and hand.
- The use of certain pencil grips may encourage a more mature tripod pencil grasp.
- Place visual reminders of left to right direction on the desk (ie arrows, drawings of people running that way, etc).

- Focus on correct stroke direction (left to right) when learning to form letters, as left-handers are likely to use a right to left stroke, or clockwise movement that may affect development of joined-up writing.
- Use pens with a thicker nib, as the push and pull movements of the left hand make using fine-nibbed pens difficult. Also certain types of pens will prevent smudging, such as Berol pens.
- Pens with easy flowing ink will ensure that a looser and more relaxed grip can be adopted.

Alternatives to handwriting

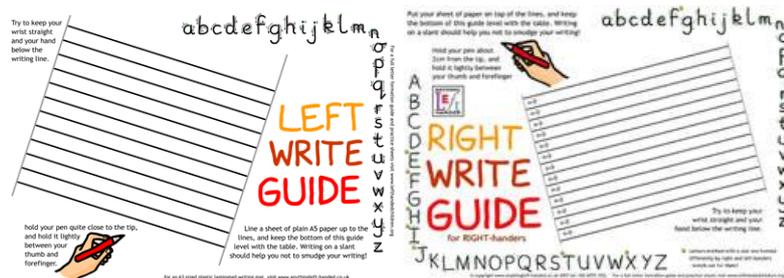
Handwriting is a tool for expressing, communicating and recording ideas. While handwriting is an important function which must continue to be practised, for children of middle to late primary school age who are still struggling it is often beneficial to also promote alternatives and strategies around handwriting. This will assist the child to achieve academic, social and communication success. It is also important to educate families and teachers about the student's difficulties and the reasons why alternatives are to be considered. By using alternatives it does not mean failure, it just shows that flexibility is needed in the way they express, communicate and record their ideas.

- Keyboarding and typing are essential lifelong skills which are particularly important for children with slow or illegible handwriting. Please be aware that not all children with handwriting difficulties may achieve touch-typing skills, some may be more effective not using all of their fingers when typing (although use of both hands should always be encouraged).
- Extra time considerations for essays, exams, note taking or taking down homework.
- Discuss with the student whether a cursive or printed script is preferable, or a mixture of both, to support speed and legibility of the work.
- Consider the use of a Dictaphone for older children, to record their ideas and other essential information.
- Use diagrams or Mind Maps to convey information where appropriate, rather than writing long sentences or paragraphs on each idea.
- Encourage the child to write down ideas in point form and use abbreviations or acronyms to reduce the writing they have to do when taking notes.
- Use of part-prepared worksheets where only the gaps must be filled in rather than the entire sentence or encourage one line answers.
- Use multiple choice questions or tick boxes where possible to test understanding.
- Provide photocopied notes and worksheets where possible, instead of copying all the information from the board.
- Consider quality rather than quantity of work. Agree with the student a minimum amount of work required before other strategies are put in place, according to speed, fatigue, mental/physical effort, legibility, etc.
- Allow the child to present information other than in a written way; ie doing oral presentations or presenting his ideas for an assessment on a Dictaphone.
- The child may benefit from a scribe at times: someone to record their ideas for them if they are having difficulties getting the ideas down on paper.
- Give the child a summary of the work for that day or topic and have the child write extra notes to supplement their understanding.
- The use of computers/laptops/word processors (ie Alphasmarts) is an excellent alternative both at home and at school.

Paper position

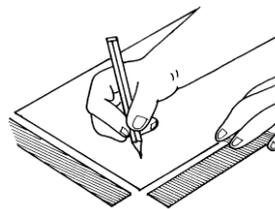
Placing the paper correctly will facilitate a more functional position of the arm, wrist and fingers, promoting a better alignment and limiting fatigue and tension. The paper should follow the natural arc of the writing hand (following the forearm), slightly slanted to one side. An angle of 35° to 45° is usually the most efficient for writing. However, some students may find it more comfortable to have the paper positioned without slant, straight in front of them; and there are many children capable of producing efficient work in a variety of positions. The paper also needs to be placed close enough to the student, so that they do not strain their back and arms, increasing fatigue.

It is best not to assume that the child has placement skills, and to teach how to slant the paper with the right hand corner up for right-handers and left hand corner up for left-handers.



The use of a supporting hand is very important to maintain correct placement of the paper. Make sure the child is always using their non-writing hand to hold the page, and use verbal or visual reminders if necessary. The assisting hand does not have to be fixed; rather it moves freely to hold the page as the child writes.

For children that have difficulties with paper position, you can place some masking tape on the desk as a visual clue.



Holding the pencil too tightly

If holding a pen too tightly or pressing very hard on the page, a child may have some instability of the fingers and hand, and this may cause:

- Limited speed of work.
- Increased fatigue, resulting in frequent stops or limited writing produced.
- Increased tension on finger and wrist joints, sometimes leading to pain.
- Poor presentation of work, due to smudges or holes on the page.

Try a range of pencil grips, in order to decrease strain on finger joints while holding the pencil. Soft/cushioned pencil grips or pens are specially recommended, in order to decrease finger joint strains and reduce pain or fatigue.

You can try activities to strengthen the child's hands, but these need to be carried out on a regular basis. For example, you can use heavy gripping activities to increase strength, such

as climbing activities, pulling ropes as in tug-of-war games, squeezing activities such as hand gyms or sponge balls; Theraband exercises; scrunching paper into balls; tearing up several sheets of paper; etc.

You can also use an angled surface for writing, to promote a better position of the child's back, arm and hand. An angled surface is also likely to decrease the excessive pressure over the desk/page. Some children prefer to use a pencil/pen with larger barrel, in order to decrease finger joint strain and to increase control of movements.



Light pressure

Light pressure on the pen or page may also be indicative of reduced fine motor coordination and often results in poor letter formation, untidy presentation of work or illegible writing. The child may also produce limited amounts of work.

- Try a range of pens, such as Berol, with darker coloured inks. You can also try different nibs and types of pens, to facilitate flow of finger movements, i.e. gel, roller ball, fine felt-tip pens, ball point pens, etc.
- Increase the barrel of the pen slightly, in order to facilitate grasp and control. This can be done with a soft pencil grip or larger pen.
- Use an angled surface, to promote a better position of the child's back, arm and hand.
- Try to use activities to strengthen the hands, as mentioned in the previous section.