

Handwriting performance

What is handwriting performance?



Although we commonly think of handwriting as simply what we see written on the page, handwriting actually reflects two equally important aspects:

- **Product:** What the written outcome looks like (e.g. Are the letters neat, legible, written on the line and correctly formed?).
- **Performance:** How the handwriting is performed (e.g. How is the pencil held? How fast is the task performed? Is there any pain during performance?).

Both these crucial aspects of handwriting are themselves dependent upon several underlying abilities including:

- **Legibility** (readability/what is produced): Influenced by letter/number awareness and formation; writing on (not above) the line; leaving appropriate spaces between letters and words, and letters being the correct size. At a very basic level, it is also dependent upon the ability to

form the 'pre-writing shapes' that combine to form letters and numbers (e.g. o + l = a).

- **Mechanics:** Where the movement comes from (either from the shoulder, elbow, wrist or fingers) to allow appropriate pencil fluency and support appropriate pencil skill endurance which is influenced by pencil grip, finger strength and control, sensory processing (especially in the hand and fingers) and positioning (e.g. posture at the table).

Why is handwriting performance important?

Writing is the means by which children's academic performance is assessed. In fact, in the upper grades, handwriting performance can significantly determine the quantity of writing produced in exams, as well as the legibility. It is best mastered early in the schooling career to prevent bad habits forming.

The underlying skills that determine handwriting abilities are similar to those for other everyday (self care) dexterous hand skills (e.g. doing up buttons, cleaning teeth, tying shoelaces). They are interestingly also the same as those for keyboard use! Thus it is crucial to recognise that even if you are not interested in developing handwriting but you are in developing keyboard skills, the *same* underlying skills are necessary.

Typing versus handwriting: Despite the advent of computers and the belief by many that typing is more important than writing as a life skill, there is rarely reason to totally exclude handwriting skill development as the pre-requisite skills for efficient keyboard use are the same as for handwriting. Furthermore, despite the use of computers we still need the ability to hand write in small amounts for filling in forms, signing cheques and the like, as well as performing the tasks that reinforce appropriate finger control for the daily tasks mentioned above.

What are the building blocks necessary to develop handwriting performance?

- **Hand dominance:** The consistent use of one (usually the same) hand for task performance, which allows refined skills to develop.

- **Hand division:** Using just the thumb, index and middle finger for manipulation, leaving the fourth and little finger tucked into the palm, not participating but supporting the remaining 3 fingers.
- **Hand and finger strength:** An ability to exert force against resistance using the hands and fingers.
- **Shoulder stability:** The ability to use the shoulder joint muscles to hold the shoulder steady which then allows the arm to be held in different positions while the forearm and hand perform handwriting.
- **Letter awareness:** Consistent knowledge of the letters appearance, sound and later its name, either by visual recognition or by writing them (age appropriateness must be considered).
- **Number awareness:** Consistent knowledge of the correct formation and orientation of numbers, associated with an understanding of what the numbers mean .
- **Pencil control:** The control with which a pencil is held and moved in a designated or desired way, which is also influenced by finger strength and sensory processing.
- **Pencil mechanics:** How the pencil is held and moved, including appropriate pressure applied to the paper with the pencil.
- **Pre-writing skills:** The pencil strokes that comprise most letters, numbers and early drawings (including: l, —, o, +, /, square, \, X, and Δ).
- **Visual perception:** The brain's ability to interpret and make sense of visual images seen by the eye, such as letters and numbers.
- **Planning and sequencing:** The sequential multi-step task/activity performance to achieve a well-defined result.
- **Postural control:** The ability to stabilise the trunk and neck to enable coordination of other limbs such as the arm (and hand) for writing.

How can I tell if my child has problems with handwriting performance?

If a child has difficulties with handwriting performance they might:

- Look awkward in the way they hold the pencil and produce the writing.
- Have writing that is messy, illegible, letters are not written on the line and/or are not the correct size.

- Demonstrate awkward, laborious or incorrect letter and/or number formation.
- Be slow to complete written tasks or tires rapidly when writing.
- Fatigue quickly while sitting at a computer to type and use a mouse.
- Be able to explain their ideas verbally, but struggles to write them down.
- Avoid writing, or writes the most concise answers possible despite verbally answering articulately at length.
- Fail to stabilise the page with their non dominant hand and slumps at the table.
- Apply inappropriate pressure to the paper when writing (either too heavy and frequently breaks the pencil, or too light and 'spidery' so it is hard to read).
- Fail to meet the pencil grasp (process) expectations or handwriting performance expectations such as:

Pencil Grasp Expectations by Age	
1-1½ years palmer-supinate grasp	The crayon is held in a fistful (whole hand) grasp with the wrist slightly bent in towards the body. The arm moves as a whole unit to move the pencil.
2-3 years digital-pronate grasp	The crayon is held with 5 fingers. The elbow remains still while the forearm moves as a solid unit to move the crayon, resulting in large crayon marks. The crayon is held in mid finger shaft rather than close to the tip of the fingers.
3½-4 years static tripod grasp	The pencil is held with four fingers with a slightly elongated (flattened) web-space. The wrist is held still while the hand moves as a unit, and the wrist is straight not extended.
4½-5 years dynamic tripod grasp	The pencil is ideally held with three fingers and with a rounded web-space that allows ideal isolated finger control for precise and refined pencil control, with the pencil movement generated in the fingers only. The wrist is held slightly extended to allow more isolated finger movement, and the forearm is slightly turned over towards the table.

<p>5 years + school entry/ Reception</p>	<p>The ideal pencil skills: A three fingered pencil grip with the fingers or thumb not overlapping the pencil or fingers and no hyper-extension (bending backwards) of finger joints. All pencil movement is generated in the isolated fingers (rather than the shoulder, elbow or wrist) which then allows good fluid pencil movement (fluency) for refined control and size. An upright posture at the desk with shoulders relaxed is also important in supporting appropriate pencil skills.</p>
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<p align="center">Handwriting Performance Expectations</p>	
<p>Start of Preschool</p>	<p>Begin exploration of letter awareness in learning letter appearance and the sounds they make (not their names).</p> <ul style="list-style-type: none"> • Begin to develop letter formation to combine components of letters (e.g. 'o' and 'l' make an "a"). • Begin to develop number recognition.
<p>End of Preschool</p>	<ul style="list-style-type: none"> • Begin to develop letter awareness in learning letter appearance and sound. • Begin to develop letter formation (lower case only) by combining the components of letters ('o' and 'l' make an "a"). • Begin writing their name with fairly good legibility and reasonable ease.
<p>Reception (first year of school)</p>	<ul style="list-style-type: none"> • Write consistently on the line. • Correctly form letters and numbers (some incorrect orientation is acceptable). <ul style="list-style-type: none"> • Leave spaces between words. • Write letters that are consistently the same size. • Use lower case letters only, with the exception of capitals in names. <ul style="list-style-type: none"> • Write their name legibly and accurately. • Recognise all letter sounds.

Year 1	<ul style="list-style-type: none"> • Write consistently on the line and within lines. • Correctly form all letters and numbers (minimal incorrect orientation is acceptable). <ul style="list-style-type: none"> • Leave spaces between words and letters. • Distinguish between tall and short letters and those that sit beneath the line.
Year 2	<ul style="list-style-type: none"> • Write consistently on the line, within regular sized lined paper lines. • Correctly form all letters and numbers (no incorrect orientation). <ul style="list-style-type: none"> • Leave spaces between words and letters. • Distinguish between tall and short letters and those that sit beneath the line. <ul style="list-style-type: none"> • Semi to complete mastery of upper case letters.
Year 3	<ul style="list-style-type: none"> • Write consistently on the line, within regular sized lined paper lines. • Correctly form all letters and numbers (no incorrect orientation). <ul style="list-style-type: none"> • Leave spaces between words and letters. • Distinguish between tall and short letters and those that sit beneath the line. <ul style="list-style-type: none"> • Complete mastery of upper case letters. • Begin mastery of link script/cursive writing. <ul style="list-style-type: none"> • Display easily legible writing.

What other problems can occur when a child has handwriting performance difficulties?

When children have difficulties with handwriting performance, they are might also have difficulties with:

- **Learning** such as mastering letter and number formation appropriately.
- **Planning and organisation of physical performance** such as how to pick up and hold the pencil correctly each time.
- **Planning and organisation of cognitive performance** such as how to plan the story content and flow. When writing stories they might be very

similar rather than extending the theme each time.

- **Handwriting speed:** Slowed by awkward physical or thinking skills.
- **Developing cursive** or link script writing that can only be easily achieved when fluid movement of the pencil has been mastered.
- **Postural control and balance:** The ability to stabilise the trunk and neck to enable coordination of limbs such as the arm and hand for handwriting.
- **Self care:** The ability to hold utensils such as a toothbrush, open zip lock bags, do buttons and zips or tie laces.

What can be done to improve handwriting performance?

- **Pencil mechanics:** Improve how the pencil is held and moved, including the pencil pressure applied to the paper.
- **Fluency:** Enhance the fluidity of pencil movement - often achieved by improving the pencil grip and movement to minimize the muscular effort required which in turn minimises fatigue and enhances handwriting speed.
- **Master pre-writing shapes:** These combine to form letters, numbers and geometric shapes.
- **Letter formation (early):** Teach letter formation in groups of letters formed similarly (so they learn 4-5 groups of letters rather than learning 26 individual letters) for formation, orientation and sound.
- **Letter Size:** Teaching size variations (e.g. some have tails that go below the line), and Upper case versus Lower case.
- **Number skills:** Including number name, its meaning (the number that it represents in 1 to 1 counting), formation, and orientation.
- **Phonological (sound) awareness:** Including rhyme, segmenting words into syllables and single sounds, blending sounds together, identifying sounds in different positions in words and manipulating sounds within words.
- **Master each individual skill** in isolation before combining the multiple skills together in the context of spelling or writing.
- **Posture:** Ensure an upright posture at the table and good arm strength (as the solid base) from which to support appropriate hand control.
- **Finger strength development:** To enable a child to hold and move the

pencil or other utensils with good control.

What activities can help improve handwriting performance?

- **Pencil fluency practice** (age appropriate patterns designed to enhance fluid pencil movement akin to writing).
- **Letter (and number) formation** practice in groups of common formation or starting point.
- **Using a pencil grip**, specific shape/size pencil and/or slant board to write with to improve how the pencil is held and moved.
- **Adapted handwriting paper** to support appropriate letter size, writing on the line and spacing between letters and words.
- **Pegs:** Make an animal face on a paper plate and put pegs around the edges to make fur as a fun way of building finger strength.
- **Play-doh:** Rolling, squishing, pinching and making things with playdough to increase finger strength.

Why should I seek therapy if I notice difficulties with handwriting performance in my child?

Therapeutic intervention to help a child with handwriting performance difficulties is important to:

- Avoid my child becoming disengaged in an academic environment due to difficulties completing handwriting activities in class as handwriting difficulties are the leading cause of academic under-performance.
- Avoid frustration experienced by parents, teachers and the child when the child is struggling to remain engaged in academic activities that involve handwriting.
- Prevent a large skill deficit developing between a child's high reading capacity and lower spelling and writing skills which only serves to reinforce the dislike of handwriting.
- Improve the legibility of my child's writing so they can get appropriate credit for the work they have produced.

- Ensure that my child's handwriting (and subsequent spelling) progresses age appropriately rather than falling behind due to fatigue from physical handwriting challenges.
- Ensure that my child is able to get their ideas down on paper in a timely manner.
- Ensure that what my child writes matches their intellectual/verbal capacity as much as possible.

If left untreated what can difficulties with handwriting performance lead to?

When children have difficulties with handwriting performance, they are might also have difficulties with:

- Poor persistence with handwriting tasks, which puts a child at risk of becoming disengaged in an academic environment and under-performing academically.
- Difficulties meeting academic criteria due to poor handwriting skills.
- Increased pressure and anxiety in a school aged child due to difficulties keeping up in class.
- Difficulties completing exams due to difficulty answering all questions in writing within the allocated time.
- Poor self esteem when a child compares their abilities with their peers.
- Being pressured to turn to IT as the solution when they don't have the underlying skills for success in this written communication from either.

What type of therapy is recommended for handwriting performance difficulties?

If your child has difficulties with written expectations, it is recommended they consult an Occupational Therapist.

Contact us today to make an initial enquiry or book an assessment for your child
on 1800 KID SENSE (1800 543 736)

