

# All the components to consider for writing

Sensorimotor	Sensory processing	Sensory registration and modulation		Regulating sensory stimuli Can affect arousal level and attention			
		Sensory discrimination		Interpreting stimuli from different sensory channels Can affect development of praxis and perceptual functions			
	Perceptual processing	Body perception		Necessary for praxis development Poor body perception will make it hard to adjust and maintain body position while writing Enabled child to position self in relation to pen and paper and orientate marks on paper			
		Tactile perception		Gives feedback about hand movements, from pencil shape, paper and surface Reduces reliance on visual feedback Aids pencil grip and consistency in letter formation			
		Kinesthetic perception (conscious awareness of body movement and position)		Helps establish memory of past movements If poor can impact pressure on pencil grip, fatigue, writing speed and automaticity			
		Visual perception	Visual-receptive	Acuity		Ability to detect/perceive detail	
				Contrast sensitivity		Quality of available vision	
				Fields		Physical space able to see	
				Efficiency		Ability to gather visual info clearly, efficiently and comfortably	
			Visual-attention	Sustained		Ability to direct and focus cognitive activity on one stimuli	
				Selective		Ability to focus on one type of info, excluding others	
				Flexibility		Shift focus from one set of visual info to another	
	Mental tracking			Ability to attend to several pieces of info simultaneously			
	Visual cognitive	Visual discrimination		Form perception		Recognise, match and name shapes, objects, patterns, etc	
				Visual closure		Recognise the whole from the parts	

					Visual figure-ground	Select and attend to relevant stimuli, ignoring the rest		
					Perceptual constancy	Able to recognise forms/shapes regardless of alterations, e.g. size, colour		
					Visual memory (short term and sequential)	Retain and recall visual stimuli		
					Visual special perception	Position in space	Judge how near/far objects are from self/reference point	
						Spatial relationship	Awareness of position/orientation of 2+ objects in 2D or 3D	
						Perception of movement	Respond, locate and follow moving object	
					Visual imagery	Able to evoke visual image even when thing is not physically present		
					Visual thinking skills	Able to e.g. rotate image mentally, process info sequentially and simultaneously		
					Visual-motor	Coordination	Visually directed hand movement	
						integration	Able to transfer visual perceptions into motor output/expression	
	Auditory Perception	Attention		Aids reading, writing, spelling				
		Acuity		Detection of presence/absence/clearness of sounds				
		Discrimination		Ability to tell difference between sounds and words that are alike (e.g. chess and chest)				
		Memory/sequencing		Retention of what is heard Ability to recall in specific order				
		Figure-ground perception		Select and attend to relevant auditory stimuli				
	Postural-motor control	Muscle tone (state of muscle tension)		Provides postural stability/mobility				
		Reflex integration		Needed for automatic postural mechanisms, bilateral integration (e.g. may struggle with writing as crossing midline)				
		Postural control	Stable postural muscles	Muscles in front must be as strong as those in back Need to anchor shoulder and arm movements				
			Midline stability	Spine muscles developed to allow arm to move across midline while maintaining trunk position (may otherwise lean in direction of arm movement)				

			Adequate trunk support	Trunk muscles make minute adjustments as hands move to allow for flow of movement, may otherwise appear jerky or fall out of chair
		Shoulder stability and mobility		Use of hand begins at shoulder
		Dynamic forearm rotation		Allows correct positioning and adjusting of wrist when writing
		Wrist stability and mobility		Needed for maximum speed and dexterity, to support hand while writing
		Hand muscle strength		For well-formed hand arches and efficient pencil grip
		Hand arches		Allow for mobility between joints Aids grip, pressure and power when writing
		Thumb stability		To grip pencil
		In-hand manipulation		Aids grip, movement and fluency
		Isolation of arm movements (able to keep some body parts still while moving others)		For muscle and movement control and grasp pattern
		Distal finger motor control	Isolation of movements	For pencil grip (only using one side of hand) and ability to monitor discrete movements
			Grading of movements	To reduce need for compensatory techniques to stabilise pencils, e.g. fingers locked into flexion/extension
			Timing of movements	For rhythm and flow
		Bilateral integration		For crossing midline, hand dominance development, supporting hand development (e.g. to stabilise paper), left-right orientation, bilateral motor coordination
		Ocular-motor control (exploration of visual field)		For visually crossing midline, focus, quick localisation (e.g. near to far, vertical to horizontal) Supports copying off board
Praxis (end product of sensory integration)	<ol style="list-style-type: none"> <li>1. Ideation</li> <li>2. Motor planning</li> <li>3. execution</li> </ol>	<p>For organising and good use of space on page, reduced need for verbal cues or subvocalizing</p> <p>For consistent letter formation</p> <p>For transferring visual/auditory information to motor output</p> <p>For sequencing motor output</p>		
Cognitive	Attention		To focus on the task and ignore other irrelevant stimuli	
	Memory	Short term	Especially when learning letter formation, to understand task and patterns/directions of movements	
		Long term	For automaticity when writing, to improve fluency, speed and endurance	

		Sequencing	Understanding processes of writing and letter formation, understanding that letters need to be ordered to make words
	Language Comprehension	The understanding of written and spoken language, like the meaning of words and how words are put together to form sentences	
	Reasoning	To use known language skills in transferable ways, e.g. to spell new words, and modifying work to solve problems, e.g. font size, reorganising work on the page to make it more logical	
Psychosocial	Emotional stability	Poor emotional stability likely to negatively impact handwriting and ability to focus and maintain good posture/grip	
	Self esteem	Confidence to try and accept making mistakes	
	Motivation	Willing and excited to learn and practice	
	Self-control		

## Things to consider when writing

Biomechanics and ergonomics	Desk	Is it the right height? Is the surface big enough?	
	Chair	Is it the right height? Is it the right depth?	
	Seated position	Can they maintain and adjust their balance? Is their trunk rotating? What is their head position? Their body should be approx. 30 degrees from upright	
	Shoulder posture and stability	Is their shoulder lifting or twisting?	
	Forearm posture	Is it twisting? Is it resting on the table?	
	Hand and wrist posture	Is their wrist flexed or extended? Can they isolate their hand and finger movements?	
	Dominant hand	Do they only use one or swap between both? Can they accommodate to their chosen hand? E.g. paper angle, pencil grip	
	Type of grip	How are they holding their pencil? Where is the movement coming from? E.g. shoulder, wrist, hand	
	Tension of grip	Is it too loose or too tight?	
	Type of paper	What colour is it? How big are the lines? What does it feel like?	
	Pressure on paper	Are they using too much or too little pressure?	
	Bilateral integration	Can they cross the midline? Can they use the non-dominant hand to stabilise the paper?	
Paper position	Can they adjust it to be at the optimum angle?		
Quality of writing	Writing style	Is it joined up? Is it printed?	
	Letter formation	Direction	Is it going from left to right?
		Size	Are the letters an appropriate and consistent size?
		Letter closure	Do the letters close their letters? E.g. the ends of an 'o' join

	Letter Orientation	Do they reverse letters? E.g. b and d
	Ascenders/descenders	Do the letters go up and down correctly? E.g. p and d
	Spacing	Are the letters and words appropriately spaced or squished together?
Letter sequencing		Do they understand that letters need to be correctly organised to make a specific word? Can they follow traditional rules, like Q is followed by U?
Writing speed		How quickly are they writing? Do they try and rush through it?
Writing endurance		Do they tire easily? Could this be to poor postural or grip positioning? Is it because they're finding the task too hard?
Upper and lower case differentiation		Do they understand the difference? Do they understand that they represent the same sound? Do they know how to use correctly?
Legibility		Can you read the writing?
Consistency		Is their sizing, spacing, positioning (on page/line), grip, hand dominance, posture and letter formation consistency?
Composition	Vocabulary	Are they able to use an appropriate vocabulary to the task and their ability?
	Punctuation	Have they used punctuation? Is this done correctly?
	Grammar	Does their sentence structure make sense?
	Narrative	Can they write something with purpose? E.g. beginning, middle and end
	Self-correction	Are they able to notice mistakes? This may be in letter formation, punctuation, grammar, etc. Can they correct this?
	Spelling	Is it correct and consistent?