



FINE MOTOR



PREREQUISITES FOR PRINTING

The following ideas are meant to be a list of possible suggestions. Select activities that are at the child's present developmental level. Please contact the child's occupational therapist if you have any questions or concerns.

When are students ready to print? How quickly do they learn?

- Children may not be developmentally ready to print until the latter half of kindergarten.
- The quality of printing develops quickly in grade one.
- By grade 3 or 4, printing becomes more automatic and fluent.
- If printing skills are attempted to be taught before a child is developmentally ready, this can result in frustration and the development of bad habits.



What positioning requirements are needed for printing?

- Children need to be able to sit independently with their arms free in order to be able to control the crayon or pencil.
- If a child cannot maintain a stable, upright sitting posture, then the shoulder, hand and eyes will be unable to function together for printing.
- The height of the chair and writing surface can affect a student's efficiency and attention. Feet need to be supported with hips and knees at 90°. This may require a lower chair or foot stool.
- The height of the desk top should be 2 inches above the height of the elbow when sitting.



What type of grasp is required for printing?

- The child's grasp of the pencil should be consistent and should not change with volume of work or fatigue.
- Using a pencil with an increased diameter may not improve pencil grip.
- Functional pencil grasps include: dynamic tripod, lateral (thumb wrap and thumb tuck), and quadruped (quad) grasp.



Dynamic Tripod



Lateral (wrap)



Lateral (tuck)



Quad

How much arm control is needed for printing readiness?

- The ability to stabilize and control the movements of the shoulder, elbow and wrist are important prerequisite skills that are required before children are able to use their hands.
- The use of vertical surfaces is useful to promote development of shoulder, elbow, wrist and hand control.



Does hand dominance matter?

- By six years of age most children have established a dominant hand.
- As printing tasks become more challenging the child needs to consistently hold the writing utensil in one hand and stabilize the paper with the other hand.
- The ability to cross body midline is a developmental milestone that usually appears the same time as hand dominance. This can be seen by the ability to color both sides of a picture without switching hands.





What visual motor skills are required?

Visual motor integration correlates with printing readiness.

- The Beery Test of Visual Motor Integration is correlated with handwriting (printing) readiness, legibility and performance. This test assesses a child's ability to use eyes (visual) and hands (motor) together to copy progressively more difficult geometric forms on paper with a pencil.
- Children should be able to copy (not imitate) the following 9 pre-requisite shapes before they are ready to easily learn how to print letters. These 9 forms are usually developed in the order listed.

Vertical line	
Horizontal line	—
Circle	○
Cross	+
Down left diagonal	/
Square	□
Down right diagonal	\
Oblique cross	x
Triangle	△

What are the fine motor prerequisites for printing?

The following are fine motor prerequisites for printing readiness:

- In-hand manipulation: This includes shifting and rotating objects within one hand. For example: Being able to flip a pencil end over end using 1 hand or the ability to pick up several small objects one at a time and store them in the hand.
- Differentiated hand use: This includes being able to use the thumb and first 2 fingers for skilled activities while keeping the 4th and 5th fingers stable. For example, scissor cutting and squeezing tweezers or a spray bottle
- Age appropriate eye hand coordination, upper extremity speed and dexterity, and visual motor control: These skills are related to printing quality and legibility.

What is motor planning? Why is it important?

- Motor planning is the ability to plan and carry out motor acts in the correct sequence.
- Motor planning abilities are correlated with printing legibility. This includes for example, the child being able to imitate finger positions such as the “I love you” sign in American Sign Language and hand movements such as those used in the “Itsy Bitsy Spider” song.



What are the cognitive/behavioral prerequisites for printing?

The following are possible cognitive prerequisites for printing readiness:

- Understand simple spatial language: up/down, big/little, left/right, top/bottom, beside, under/on, in/out
- Understand same/different
- Sit in place for at least 10 minutes doing a preferred activity
- Follow simple 2 step verbal commands
- Show an interest in fine motor or table top activities
- Recognize letters and be familiar with alphabet

What is the prevalence of poor handwriting? What are the consequences?

- 10-20% of primary school children have some handwriting difficulties.
- Handwriting ability is often seen as a reflection of a student's academic abilities. For example, lower marks may be assigned to students with poor handwriting and higher grades given to those with legible handwriting, despite similar content.
- Lack of automaticity and fluency of writing production affects the generation of creative ideas.
- Difficulty keeping up with volume of written work can affect academic success at school.
- Children with poor handwriting may be seen as non-compliant, lazy, or lacking motivation.
- Handwriting difficulties may lead to lowered self-esteem, frustration and behavioral problems.

This resource has been developed for educators by a team of occupational therapists at Sunny Hill Health Centre. The information included in this handout is based on current research and expert clinical opinion on prerequisite skills for printing.



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