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PRINTING

The Foundation of Literacy

Do we still need to teach our children to print? As a Pediatric Occupational Therapist, I'm frequently asked this question. The answer is unequivocally, "Yes!" Recent advances in technology have mistakenly led parents and teachers into thinking that computers will solve all children's problems, taking the place of printing, math, and even basic learning skills. On the contrary, recent studies show that technology is actually *impeding* children's ability to learn.

Technology has so invaded our culture that North American children now use TV, videogames, and computers 6.5 hours per day on average, resulting in physical and emotional development delays, attention difficulties, and poor school performance. Parents and teachers, as well as children, must come together and redefine basic learning objectives so that all children can attain basic literacy in reading, printing, and math skills.

During workshops, Rowan states many teachers and parents have remarked that while they all agree that reading is still an essential skill, printing is not. Many elementary teachers actually believe that computers will replace children printing. Subsequently, there has been an erosion in emphasis and amount of time teachers spend teaching this essential skill. What these well-meaning teachers do not understand is that learning to print is a precursor for reading, spelling, and sentence formation. Therefore if a child cannot print, that child is functionally illiterate.

Children have expressed tears, frustration, and embarrassment as they describe their difficulties in learning how to print. Letter formation is a complex task that requires many sequential components to come online for eventual printing skill development. First a child needs to achieve letter recognition, which develops primarily through a child's observations of his own attempts at letter formation, supported by repetitive practice and observation of the teacher or parent. Printing is therefore a *visual* and a *motor* task and requires practice of both components for skill achievement.

A good example would be a child who watches a soccer game on TV, but then is not able to go out and replicate the motor components necessary to have good soccer performance. This child needs to practice the motor components over and over again before a "motor plan" is formed. Once a child achieves a motor plan for a specific task, the task becomes subconscious, requiring very little cognitive attention for completion.

As printing is a motor task, the motor plan for each letter and number needs to be firmly established for that child then to be able to free up conscious thought for tasks such as reading, spelling, and sentence production. Children who are slow in establishing a motor plan for letter and number production, or who have *inconsistent* motor plans, e.g., making their letters different ways, spend an inordinate amount of

conscious mental energy in letter formation, leaving very little mental energy left for creative thought required for reading, spelling, and sentence production.

When a child watches her hand and pencil making a letter or a number, this image is embedded in her visual memory, like a photograph taken with a camera. For proficiency in letter and number production, many visual images of the correct motor plan need to be firmly embedded in the child's visual memory in order for reading, spelling, and sentence production to proceed smoothly. This process requires extensive time devoted by both parents and teachers in showing children a consistent method for letter and number production, with ample opportunity for practice. Failure to do so results in childhood illiteracy.

Often teachers and parents mistakenly think that printing and reading skills can be achieved through printing workbooks, computer programs, or even TV programs such as Sesame Street or Baby Einstein.

Regarding workbooks: Although they do provide a visual image and opportunity for the child to practice letter and number production, workbooks do not "show" the child the proper place to start, which way to turn, and when to stop during letter formation. The "where and when" of printing letters is an integral piece in helping the child to form a subconscious motor plan and is the area of greatest skill deficit in children who have printing and reading difficulties. Just as children's physical development starts with their trunk and moves outward, stroke and shape production starts with big movements using the whole body. Big movements teach directionality, laterality, and spatial skill components, necessary precursors to attempting letter and number production. Due to the sedentary nature of today's child, many children have not established the necessary trunk and shoulder muscle control to be able to print. Only when a child's trunk is strong and his shoulder is mobile and stable can he position his wrist and hand to hold a pencil for printing.

Regarding educational or remedial-based computer and television programs: A two-dimensional screen image is considerably different from three-dimensional "real" life. Printing and reading are motor tasks, using the fine motor muscles of the eyes and hand, and should be taught like one would teach a sport. Optimal fine motor skill development follows specific parameters such as ensuring good trunk development prior to using the hand, accomplishing big movements before progressing to small, and ensuring adequate spatial concepts by starting with strokes and shapes before moving onto more complex letters and numbers. These essential printing and reading instructional parameters cannot be met using computer or television programs alone, but require movement and motor skill practice. The point is: Use 'em or lose 'em! Children must develop and use their eyes the way nature intended, not with their eyes glued to a workbook or electronic screen.

Just as we have large muscles to control our trunk, arms, and legs, we also have small ocular muscles that control our eyes. To develop properly, the ocular muscles require stimulation to the brain's vestibular system. The vestibular system is the foundation for a child's ability to coordinate both sides of her body and eyes, to maintain erect posture, and to optimize arousal states necessary for learning. Because TV, videogames, and computers have small screens and are two-dimensional, children are not receiving adequate ocular muscle movement necessary for printing and reading. Developmental Optometrists have reported a dramatic rise over the last 20 years in children with learning difficulties who have poor ocular motor coordination. To reverse this ominous trend, parents and teachers need to reduce TV, videogames, and computer use, and increase a child's activities involving moving the body. Only then can printing and reading skills-develop properly. Playing outside and viewing three-dimensional nature is very different from viewing a nature program on TV!

In Cris Rowan's workshops, she asks parent and teacher participants to print their name quickly and then print their name backward. Frustrated and anxious, the adults comment about not knowing where to start, which way to go, or when to stop. Rowan asks that all adults who work with children who have difficulty printing and reading consider the amount of effort and mental energy required for these skills and realize that when a child has difficulty, it's not only frustrating, but also can be extremely exhausting. By the time children who have printing and reading difficulties reach third or fourth grade, they have often given up trying, resulting in statements such as, "Printing is boring," and "Reading is stupid."

If we want our children to achieve literacy in reading, printing, and math, we need to be teaching the basic skill sets, as well as providing ample opportunity to practice these skills, in order to optimize academic performance. As adults, we rarely use computers to take notes, we print! So if we're doing it, we'd better be teaching it!

Cris Rowan has been an Occupational Therapist for 20 years, working in schools for the past 10 years. Cris has recently developed two new educational programs, Zone'in and Move'in, for use in schools and at home. Zone'in is derived from Sensory Integration theory and helps children get their energy, "Zone'in to Learn." Move'in is based on Fine Motor Development theory and is designed to help children print and read by taking them on a "Printing Adventure." For more information please see www.zonein.ca.

The Zone'in Mantra

Children are the future of our planet. Through modern technology, we have unconsciously created a "virtual reality" for our children to call home, a reality devoid of connection and human interaction. TV's, videogames and computers are now the teachers of our children, not parents. The result has been an alarming increase in attachment and developmental disorders.

Now is the time to plant the seed for children to learn in a new and conscious way. Teaching children to bring awareness to themselves, so they know who they are, creates a strong healthy foundation for learning. Using their energy in positive productive ways, children learn to create balance and wholeness of body, mind and spirit.

So Tune Into the Zone and Get Move'in.