

ALET VICTOR

ARBEIDSTERAPEUT

B.Arb(Pret)
Practice Nr. 6610951

Email: alet.victor@gmail.com

Cell: 082 852 5464

THE INFLUENCE OF SCREEN TIME ON THE YOUNG CHILD'S DEVELOPMENT

Young children can be affected by many social, economic and environmental factors both in positive and negative ways. Because children are so vulnerable, they can be easily affected by things many parents and adults take for granted.

Swipe, click, flash, tap! Those all too familiar sounds that have become part of our daily lives and the lives of our children. Cell phones, computers, video games, iPads and other electronics make it easy for us to communicate with others across the world and it helps our children keep in touch with cousins, friends and schoolmates. Technology has grown so much that iPads and other electronic devices are now becoming a staple item in the classroom.

While Pokémon Go may not be the best academic tool for our children, there are several apps and learning tools out there that teachers and educators often use in their classrooms. Even us adults are learning how to text, take pictures and use GPS on our phones. Kids are now learning how to use these devices at younger ages and are often methods parents use to distract kids at restaurants and in other public places. Most 2-year-olds now know how to find videos or games on their parents' phones.

Technology is ever-changing and while these devices are making information more accessible and useful for students, do our old fuddy duddies actually have an advantage over these millennials and up-and-coming youngsters in grade school?

A recent study in the [Journal of Hand Therapy](#) shows that young adults have surprisingly less hand strength and hand grip than older generations, which could be one result from using more electronic devices and less pencil time. Some may even argue that electronics are hindering our students' education rather than helping them progress because they lack [fine motor development skills](#) used for handwriting, pencil grip and brain-building activity.

If Occupational Therapists are already seeing signs of weaker hand grip in millennials, what can we expect from younger generations and is it one of the reasons why we are seeing more learning delays and sensory issues in the classroom?

How do we prep the brain for higher learning?

Between birth and age three, for example, our brains develop quickly and are particularly sensitive to [the environment](#) around us. In medical circles, this is called *the critical period*, because the changes that happen in the brain during these first tender years become the permanent foundation upon which all later brain function is built. In order for the brain's [neural](#) networks to develop normally during the critical period, a child needs specific stimuli from the outside environment. These are rules that have evolved over centuries of human evolution, but—not surprisingly—these essential stimuli are not found on today's tablet screens. When a young child spends too much time in front of a screen and not enough getting required stimuli from the real world, her development becomes stunted.

And not just for a while. If the damage happens during these crucial early years, its results can affect her forever.

If a child struggles in many of these areas and hasn't fully developed those left-brain connections for intellectual, social and emotional growth, how do we fix it? Or, better yet, how do we begin working on these types of connections when our kids are young before they enter school?

The answer is very simple. More handwriting! How can handwriting and tracing exercises possibly help my child's brain develop?

Jeanette Farmer, certified handwriting and remediation specialist said, "Stressing age-appropriate handwriting exercises reinforces self-regulation in the early stages of preschool and kindergarten. Ultimately, in organizing the young brain, sensory-integration impacts the emotional brain, so a shift in dominance can occur and impulse control is gained."

So there is your answer! More rhythmic and repetitive strokes have a greater impact on the brain for reading, writing, impulse control and emotional stability than any other exercises.

More handwriting exercises can build your child's left-brain dominance needed for better organization, self-control, self-confidence, abstract thought, reasoning, processing what the teacher says and much more.

Why does repetition help rewire the brain?

Have you ever wondered why your child can do the same task, color the same picture or play the same game over and over again without getting bored?

While it may seem repetitive and tedious to us, repetitive play is needed to commit the task to your child's muscle memory. Eventually, these tasks (for example, climbing stairs, holding a crayon, buckling their seatbelt or tying a shoe) should become automatic without giving it a second thought.

The same goes for handwriting, tracing and drawing. The more your child practices certain strokes and rhythmic movements, the more they will commit these skills to memory so learning can become automatic.

Mindful tracing activities, for example, can help the hands and eyes work together, it encourages your child to use both sides of their brain and is a fun visual activity for getting your child to strengthen their muscle memory.

Just remember, deeper learning development and neural connections can be established at home and in the classroom when we encourage more handwriting, tracing and drawing exercises, as shown here.

Sensory Input, Motor Output: When we put "Garbage in" our Child's Brain, we will surely get "Garbage Out"

If you have ever heard of the term "garbage in, garbage out" in the technology world, you already know that the information communicated to you and me on social media, through email, presentations or even newspapers is only as good as the source from where it came from. Your child's sensory input (used for learning in the classroom) works the same way.

A child takes in everything around them with their senses. When your child's sensory system is working properly, their brain soaks in all of the information within their environment and the output is just as good as the input. However, if your child's sensory system is underdeveloped or weakened, the information the brain receives or "garbage in" literally becomes "garbage" because the child physically and mentally can't get the "garbage out" successfully in the classroom, at home and with their friends.

You can always tell the quality of the input, by the result of your child's output!

Let's use test-taking as an example. If a child fails to study for a test they won't have any output because there was never any input to begin with. They never retained any facts or details from the material in their textbook so when they are faced with a multiple choice test, they don't know which option to choose. The same applies for when a child is listening to the teacher in the classroom. If your child can't process what the teacher is saying, the brain won't retain any information they hear and when it comes time to complete homework or a project, they don't remember the instructions or how to answer the questions.

With reading and spelling, your child may say the word "set" when the word is really "sent." The brain's input did not include an "n" so the output then became "set" instead of "sent."

Sensory Input, Motor Output

Your child's nervous system has three main functions. Sensory input (where your child takes in information through their senses: sight, smell, touch, taste, hearing, etc.), integration of data (where your child organizes all the information they receive), and motor output (where your child uses the information to take action: writing, speech, reading, etc.).

Because the brain is the great organizer of sensory information that enhances your child's academic potential, if any of these functions fail to perform correctly, the entire motor output crashes or begins to show gaps in a child's learning ability because the sensory input was never developed.

"If an action response is needed, the decision is handed over to the motor system, which is actually just a worker waiting for instructions from the administrative brain. Ideally, this action system, composed mainly of muscles, has a close enough relationship to the rest of our brain to be able to understand its orders exactly as they are intended...If it fails to understand its directions then it will do a poor job of representing our wishes." (Sunbeck, [Infinity Walk: Preparing your mind to learn!](#))

Here are a few areas development where you may begin to notice gaps if your child's sensory input doesn't match their motor output.

Coordination of Muscle Groups

The simple act of moving your hand across the page with your pencil requires coordination of your child's shoulder, elbow, wrist, fingers and hands. If your child's [hands, fingers, wrists and arm muscles are weak](#), writing can become difficult and even labor intensive so the child refuses to write or becomes exhausted writing just a few sentences.

Proprioception

Simple tasks like when your child raises their hand from their desk to ask a question or how much pressure they use to write words on the page can become difficult when these [motor skills aren't developed](#). The movements require different patterns of muscle activation and won't progress if these areas are weakened.

Postural Adjustments

If your child hasn't developed their postural muscles in the body's limbs, head and torso, the body could become tired and may collapse. This may be why you see a child or student constantly [laying on their](#)

[desk](#) and they appear to have no energy for participating in class. Why does this happen? A better question to ask is what are we “feeding” our kids today that causes this undesirable result?

One answer could be video games and electronics. We all know video games and electronics are becoming more prominent and our kids are using them more often. Some children play these games for hours at a time, which prevents them from [building these muscles](#) like they do when they are outside playing. If this is the only input our children are getting on a daily basis, no wonder they don’t have any quality output in the classroom.

“Our motor nervous system, because it is largely composed of muscle, needs to be kept in good physical shape...Unfortunately, our highly technological world is constantly coming up with new ways to help us avoid using our bodies. Today, many of us have to make a special effort just to keep our bodies exercised.” (Sunbeck, [Infinity Walk: Preparing your mind to learn!](#))

“Automatic” Processing

Your child’s body usually performs motor functions on a regular basis without them thinking about it (for example, walking across the room). However, if the sensory input is underdeveloped, you may notice your child’s motor output does not become automatic. That is why many children with sensory issues often have poor balance, run into furniture, have trouble with personal boundaries, fidget in their desk, can’t attend or focus and often can’t do simple tasks like tie their shoes or kick a ball.

Motor Control

Motor control means your child requires sensory input to accurately plan and execute movements. This applies to the [lower levels of the brain](#) all the way up to the higher levels of the brain. If the lower levels aren’t working properly, higher learning can’t progress (speech, language, handwriting, reading, math).

Your child’s ability to make accurate movements that are properly timed and with the right force (proprioception) depends on the sensory input at all levels of the motor system hierarchy

An example of this would be with your child’s speech. If the [sensory receptors](#) in your child’s mouth have not yet been developed, the motor output causes them to have poor enunciation and pronunciation. This means their lips, tongue and jaw don’t have the muscle strength to correctly pronounce their “Rs,” “Ths,” “Gs,” and other letters.

How do we improve Sensory Input, Motor Output?

Improving your child’s muscle development through movement-based activities and rebuilding sensory-motor connections that tap into your child’s cognitive skills can be important to addressing poor sensory integration. Sensory stimulation and heavy work activities are some of the best therapies to address poor sensory integration. Activities like swinging at the park, throwing and kicking balls, balancing, using stretchy bands and mat exercises may help develop that sensory input and motor output.

Learning Delays from Weak Hand Grip

When children have weak hand strength, simple learning tasks could become difficult, such as holding a pencil, establishing right or left-hand dominance, poor fine motor skills, writing letters and numbers correctly, fastening buttons or zippers, writing fatigue and lack of hand-eye coordination development needed for reading.

Now you may say, “This really isn’t important anymore because most of us in the real world now only type on computers.” From an outside perspective you would be right. When you think about it, when was the last time you took handwritten notes or wrote a letter you put in the mailbox? Probably less than 20 percent of the time you are at home or work. Everything is now done with laptops, electronic devices and email.

So why continue to encourage and “push” hand grip strength?). Developing your child’s [hand strength and fine motor skills](#) is linked to more than just handwriting and pencil grip. Researchers have also found

a [connection](#) between how the brain transitions from right-brained learning (creative, emotions) to move left-brained learning (logical, critical thinking). If the brain fails to transition from right-brained learning to left-brained learning, children become more emotional instead of logical as they get older. That is why many parents and teachers today see more attention issues in the classroom, sensory struggles, meltdowns, anxiety and emotional grounding issues.

Strengthening your child’s hand grip with fine motor and handwriting activities can help ignite the left-sides of the brain for higher learning processes like organization, completing tasks, remembering facts and details, emotional control, speech and language, expressive communication, and more.

How Pencil Grip Develops

Pencil grip and [handwriting milestones](#) begin when children are babies as they start to grasp and reach for different objects. Eventually, their hands, fingers, wrists and elbows become stronger as they grasp balls, squeeze toys and start coloring with fat markers and crayons. This is when the child’s palmar grasp begins to develop. As the child gets older, the [palmar grasp](#) should automatically transition into the pincer grasp for writing and holding a pencil the correct way.

Here is the developmental progression:

Age	Performance Milestone	Grip
3-6 months	Grasps rattles, fingers, small toys Bats at toys Grabs for objects with their full arm Holds items with their whole fist	Develops Palmar Grasp
6-8 months	Grabs full objects like blocks Picks up items and puts them in their mouth Begins using their thumb	Palmar Grasp developed 
8-10 months	Palmar grasp transitions to pincer grasp Uses thumb and fingers to grasp objects Rakes objects toward them Moves objects from one hand to the other	Pincer grasp begins developing 
10-15 months	Picks up objects with little effort Begins showing preference for one hand over the other (establishing dominance) Starts to lift and use forks and spoons	Pincer grasp developed Palmar Supinate grasp develops

	Use the whole arm to color with crayons or markers	
2-3 years	Wraps all fingers around writing tool, but the wrist is turned while the palm faces down toward the page Movement comes mostly from the elbow Children start copying a horizontal, vertical and circular line	Digital Pronate Grip 
3-4 years	4 fingers are held on the writing tool An arc begins to form between the thumb and the index finger Movement begins in the wrists and fingers Children begin to try simple dot-to-dots, zig zag lines and trace dotted lines	“Splayed” or 4 Finger Grip 
4-6 years	3-fingered grip where the thumb, index finger and middle finger all work together Children can copy diagonal lines, squares, crosses and triangles Children begin to move their fingers closer to the tip of the pencil for better precision	Static Tripod Grip Quadrapod Grip 

So many kids thrive off of coloring, painting, scribbling, crafts and other fun creative activities. But is there a purpose behind this type of play or is it just for fun?

Believe it or not, these types of activities are precursors for building your child’s brain. Your child actually needs this type of play to enhance their future learning development.

For the first few years of a child’s life, your child “lives” on the right side of their brain, which is more commonly known as the creative and emotional side. As kids get older, we want them to transition to more left-brained thinking or logical thinking that helps them regulate their emotions, solve problems, think critically and complete harder tasks like reading, writing and math. Kids who don’t make the necessary connections between the right and left side of the brain, can get stuck on one side or the other. When this happens, some children may not yet be ready emotionally and academically to enter the classroom.

Parents may find that when the lower levels of the brain haven’t fully developed their child may be very emotional and struggle in one or more of the following areas:

- Can't attend and focus in the classroom
- Trouble with behavior
- Experiences tantrums or meltdowns over the age of five
- Doesn't know how to self-regulate their emotions
- Can't stay on task or listen to the teacher

Technology how much?

Environmental enrichment can strongly affect a child's cognitive development. Children whose parents read and talk to them frequently tend to have better vocabularies and develop skills like reading and speaking earlier. Conversely, television and screen time -- even educational programs -- may have a negative impact on children's development. The American Academy of Pediatrics recommends that children under 2 years old should not watch any television and that, after this age, television exposure should be limited. Parents interested in increasing their children's intellectual capacities should expose their babies to a variety of toys and stimuli including blocks, play letters, books and dolls. Screen time on any device should be limited to 1 hour a day for children aged 2-5 and content should be closely monitored.

What is the Appropriate Use of Technology in Young Children?

These days, the question that most parents and educators ask is no longer about whether and to what extent technology should be used with young children, but rather how it should be used. The appeal of technology and the steady stream of new devices may lead some parents and teachers to use technology for technology's sake, rather than as a means to an end.

Here are a few guidelines to remember when introducing technology to young children.

1. Technology and media should be active, hands-on, engaging, and empowering.

Unlike passive media (such as TV), more engaging, interactive media and technology (such as educational games) that encourage children to explore, create, problem solve, think, listen, view critically, make decisions, observe, document, research, and investigate ideas improve their cognitive development the most.

2. Technology should be balanced with other off-screen activities necessary for optimum development.

While there have been lots of evidence on the positive effects of technology on children's learning and development, access to gadgets and media should not exclude, diminish, or interfere with children's healthy communication, social interactions, play, and other developmentally appropriate activities with peers, family members, and teachers. Parents are highly encouraged to provide children with time for digital learning, social interaction, and outdoor play for a healthy cognitive, social, emotional, physical, and linguistic development of the child.

3. Technology and media should not be harmful to children in any way.

It goes without saying that with the vast variety of content on the internet, it is necessary that technology and media should never be used in ways that are emotionally damaging, physically harmful, disrespectful, violent, degrading, dangerous, exploitative, or intimidating to children. Block sites that give children undue exposure to violence or highly sexualized images as these may be emotionally damaging and exploitative.

4. Technology and media should consider the age, developmental level, needs, interests, and abilities of each child

Children interact with technology following a developmental progression similar to their use of other learning materials. Typically, they move from exploration to mastery and then to functional subordination (using the tools to accomplish other tasks). Children need time to explore the functionality of technology before they can be expected to use these tools to communicate. Simple touch screen devices, such as tablets, are a good starting point for exploration and experimentation. Parents and educators should also select the type of content the child is consuming taking into consideration the age of the child, his developmental stage, and his interests.

5. Effective use of technology should connect on-screen and off-screen activities.

Tech tools have the potential to bring adults and children together for a shared experience, rather than keeping them apart. For example, a parent may choose to read a story in traditional print form, as an interactive e-book on an electronic device. When experienced in the context of human interaction, these different types of engagements with media become very similar. Early book reading and other joint adult-child exploration can include co-viewing and co-media engagement.

6. Interactions with technology and media should promote play and exploration.

Play is vital to children’s development and learning. Their interactions with gadgets are similar to how they use other play materials and include sensorimotor and games with rules. Young children need to explore technology and interactive media in playful and creative ways. They should be able to control and explore the functionality of the medium, think of ways how it may be used in real life, and control the outcome of the experience through self-correcting learning activities. Interactive digital and collaborative games allow for these types of experiences.

7. Effective use of technology should support and extend traditional learning tools in valuable ways

Technology and interactive media provide numerous opportunities for children to learn further alongside traditional materials, such as blocks, manipulatives, art materials, play materials, books, and writing materials. Screen media that expose children to animals, objects, people, landscapes, activities, and places that they cannot experience in person. Drawing on a touch screen can add to children’s graphic representational experiences; manipulating colorful acetate shapes on a light table allows children to explore color and shape. These opportunities should not replace paints, markers, crayons, and other graphic art materials but should provide additional options for self-expression.

When used appropriately, technology effectively enhances a child’s cognitive and social skills.

By learning to navigate that world with them, they can better guide them on how to manage themselves and their time within it. With proper guidance and balance, children will surely develop holistically with the electronic devices available today

Despite the danger that overexposure to smartphones can pose for young brains, there are a lot of benefits to letting little ones use technology. Once a child is over the age of two, feel free to allow limited screen time—think an hour, max, of playing with tablets and iPhones each day—to help develop coordination, hone quick reactions, and even sharpen language skills. As with all the other toys and tools available to your developing child, smartphone use should stay in moderation, and never stand in for human interaction or real-world face time.

The bottom line? Power off regularly to help your child understand the clear boundaries between the virtual world and the real one.
