



Featured Topic of the Month Working Memory & Processing Speed

Working Memory

Have you ever gone to the store without a list, thinking you'll remember everything you need...but discovered when you got home that you forgot several items? If so, you've experienced the limitations of working memory. Sometimes referred to as short-term memory, working memory is the mental sticky note we use to keep track of information until we need to use it. Working memory is key to learning.

There are two types of working memory: auditory memory and visual-spatial memory. You can think of these skills in terms of making a video. Auditory memory records what you're hearing while visual-spatial memory captures what you're seeing. But that's where working memory's similarity with making a video ends.

When you make a video, visual and auditory information is stored for safekeeping and can be played back when you need to access it. You don't necessarily need to pay attention to details when you're filming. Working memory, on the other hand, isn't just stored for later use. It has to be accessed and "played back" immediately—even as new information is arriving and needing to be incorporated.

Imagine a teacher reads a word problem in math class. Kids need to be able to keep all the numbers in their head, figure out what operation to use and create a written math problem at the same time.

Kids with weak working memory skills have difficulty grabbing and holding on to that incoming information. This means they have less material to work with when they're performing a task.

In math class, they may know how to do different kinds of calculations. However, they run into trouble with word problems. It's difficult to listen for clue words that indicate which operation to use, while at the same time remembering the numbers that need to be plugged into the equation.

Working Memory and Paying Attention

The part of the brain responsible for working memory is also responsible for maintaining focus and concentration. Here, working memory skills help kids remember what they need to be paying attention to. Take, for example, doing a long division problem. Your child needs working memory not only to come up with the answer, but also to concentrate on all of the steps involved in getting there.

Kids with weak working memory skills have trouble staying on task to get to the end result. You could think of it like the learning equivalent of walking into a room and forgetting what you came in to get.

Working Memory and Remembering Instructions

Kids rely on both incoming information and information stored in working memory to do an activity. If they have weak working memory skills, it's hard to juggle both. This can make it challenging to follow multi-step directions. Kids with weak working memory skills have trouble keeping in mind what comes next while they're doing what comes now. For example, your child may not be able to mentally "go back" and recall what sentence the teacher wanted written down while also trying to remember how to spell out the words in that sentence.

Working Memory and Learning to Read

Working memory is responsible for many of the skills children use to learn to read. Auditory working memory helps kids hold on to the sounds letters make long enough to sound out new words. Visual working memory helps kids remember what those words look like so they can recognize them throughout the rest of a sentence.

When working effectively, these skills keep kids from having to sound out every word they see. This helps them read with less hesitation and become fluent readers. Learning to read isn't as smooth a process for kids with weak working memory skills.

Working Memory and Learning Math

Being able to solve math problems depends on a number of skills that build on one another like building blocks. The block at the bottom—the most important one in the stack—is the ability to

recognize and reproduce patterns. It's the foundation for the next block: seeing patterns in numbers in order to solve and remember basic math facts.

From there, kids build up to storing information about a word problem in their head; they then use that information to create a number sentence to solve the problem. This eventually leads to the ability to remember mathematical formulas.

What keeps the blocks from toppling over is the ability to remember, sequence and visualize information—all of which can be difficult for a child with weak working memory skills.

Reference: www.understood.org

Watch this TED for another perspective on Working Memory!

http://www.ted.com/talks/peter_doolittle_how_your_working_memory_makes_sense_of_the_world

Processing Speed

"What does this mean for my child? Why is this important?"

Processing Speed is one of the measures of cognitive efficiency or cognitive proficiency. It involves the ability to automatically and fluently perform relatively easy or over-learned cognitive tasks, especially when high mental efficiency is required. That is, for simple tasks requiring attention and focused concentration. It relates to the ability to process information automatically and therefore speedily, without intentional thinking through.

There is now an overload of information given out. Definitions and diagnoses are easy to find, the hard part is figuring out how this affects the everyday life of your child and what you can do to help.

A student with processing speed needs has difficulty in performing simple cognitive tasks fluently and automatically, especially when mental efficiency in focusing concentration is required.

The thing about processing speed is that there are actually two kinds. To understand how it is affecting your child you need to know what is going on with your child.

Visual Processing Speed

One type of processing speed is **visual** processing speed, this is the most common kind referred to. Visual processing speed is how fast your child can look at and process information on a task that does not take any more thinking than noticing the differences or sameness in the objects shown. This type of processing speed issue may be helped by vision therapy, or larger print. Extra time on tests is important so the child has time to correctly "see" the information and

not make careless errors due to misreading the information. When children also have difficulty with fine motor skills (writing) this becomes a visual-motor integration weakness.

Cognitive Processing Speed

Another type of processing speed is **cognitive** processing speed. This is how long it takes a child to process (take in information, think about it and then give an answer). This type of child also needs extra time on tests, not "see" the information but to "think" about the answer.

While both processing speed types need extra time on tests to enable them perform at their potential, the reason behind the extra time is very different. This means if you are trying to help build the area of weakness, understanding the cause helps determine the best intervention.

Students with processing speed needs may take more time to:

- recognize simple visual patterns and in visual scanning tasks
- take tests that require simple decision making
- perform basic arithmetic calculations and in manipulating numbers, since these operations are not automatic for them
- perform reasoning tasks under time pressure
- make decisions that require understanding of the material presented
- read silently for comprehension
- copy words or sentences correctly or to formulate and write passages

Reference:Bitsofwisdomforall.com

Examples of Classroom Accommodations

- Students will benefit from cueing so they know what to expect - check in with them periodically and preview what is to come.
- Help students organize the information they hear in meaningful ways, including chunking the information into shorter steps or connecting new information with previously learned information.
- Preview new concepts with students so they know what to expect - this will decrease stress and help with attention and engagement in the classroom.
 - Before a lecture, provide students with a general outline of the material to be covered.
 - Write directions with more than two steps on the board.
 - Use flip boards, photos, diagrams, laminated pictures, power point presentations, charts, maps, movies, filmstrips, timelines, mnemonics.
 - Provide access to computer programs that come with your textbook to provide greater visual exposure and practice.
 - Use the computer in the classroom to construct mind maps or webbing of the material.

- Use concept maps with key points, boxes, circles, and arrows showing the connections of information. Webbing provides the connections that visual learners must have.
- When doing questions and answers in the classroom, allow adequate wait time before calling on students.

Reference: Bitsofwisdomforall.com

Upcoming SEPAC Meetings

Our monthly meetings are held at Lincoln Town Hall, 16 Lincoln Rd., 2nd Floor, Tuesdays from 10-11:30 a.m. The upcoming meeting dates are as follows:

- April 7th* Donaldson Rm 1st Floor Sensory Processing Workshop * **Flyer attached**
- April 10th -Special Education presentation at monthly PTO meeting
- May 5th
- May 7th- SEPAC presents yearend report to the School Committee

Open Board Positions

There are many ways to get involved. Join us to work for all of our children to make our schools a better place for special education! Together we can accomplish much. Participation can be big or small, long-term initiatives or one-hit volunteer opportunities that make a big impact!

We would like to add to our Executive Board:

Program Coordinator
Membership Coordinator
Lincoln Pre-school Liaison
Lincoln School Liaison
Hanscom Liaison
Metco Liaison

Anyone interested in a board position should send an email to: lincolnsepac@gmail.com