

LEARNINGWORKS FOR KIDS PRESENTS

WHAT IS WORKING MEMORY?

**Why Working Memory skills are so important, and
how parents can help their kids improve them.**



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What is Working Memory?

Why the Thinking Skill of Working Memory is so important to a child's success, and what parents can do to help their kids improve it.



What is Working Memory?

What Working Memory is all about, and how to tell if your child needs to improve it.

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Improving Working Memory

Tips and Strategies for Improving your child's Working Memory Skills

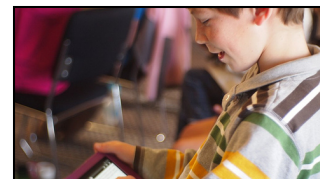
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Why strong Working Memory Skills are vital to a child's academic success.

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What is Working Memory?

Kids With Good Working Memory Skills:

1. Can remember and follow complicated directions.
2. Have the ability to use what they have learned in a previous experience in a new situation.
3. Maintain their level of engagement while performing tasks, even when shifting activities within a given task.
4. Reorganize their thoughts or materials in a fashion that encourages further learning.
5. Are able to sustain their attention throughout tasks.



Working Memory is the thinking skill that focuses on memory-in-action: the ability to remember and use relevant information while in the middle of an activity. For example, a child is using their Working Memory as they recall the steps of a recipe while cooking a favorite meal. Children who have trouble with

their Working Memory skills will often have difficulty remembering their teachers' instructions, recalling the rules to a game, or completing other tasks that involve actively calling up important information. Video games can help improve Working Memory by allowing kids to practice their memory skills

while in the midst of a fun and immersive gaming experience. Many games require that the player learn and repeatedly recall information in order to succeed and advance to higher levels.

Working Memory is a crucial skill that affects every area of a child's life. This skill allows a child to recall and utilize information while performing an activity. It is vital to activities like taking notes, following multi-step directions, and completing complex mathematical calculations. Working Memory also plays an important role in reading comprehension.

Working memory is a core component of most theories of executive functioning. Working memory is defined as the capacity

to keep information in mind as one is actively doing something (working) with it. For children, this is easily identified when they are attempting to solve a mathematics word problem in which they need to remember the numbers they have heard, think about what the word problem has asked them to solve, and then apply the mathematical operations to the information they have stored in memory. For adults, working memory problems can often be observed when we walk to the kitchen to get something, only to stare blankly at the refrigerator, unable to recall what it is we went to get.

As an executive function, working memory is also evident in individuals' capacity to follow multi-step directions. This is

important to recognize, as children who are asked to get their backpacks, jackets, and lunches prior to going to school may struggle with working memory when they forget one or two of these items.

Kids With Underdeveloped Working Memory Skills:

1. Remember only the first or last things in a series of directions.
2. Have difficulty with tasks that entail more than one step.
3. Forget what they are doing in the middle of doing it.
4. Have difficulty retelling a story in their own words.
5. Are confused when attempting to complete multi-step math problems.

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Improving Working Memory



These are some general strategies and ideas for helping kids to improve their Working Memory skills.

1. Simplify directions as much as possible. Your child will be more likely to recall short, simple, and direct instructions. For example, saying, "When you have finished those two math worksheets, you may watch one episode of the 'The Simpsons'" is much more direct and simple than saying, "When you finish your homework, you can watch some TV."

2. Use visual reminders, such as drawings, photographs, or colorful pictures, for sequential tasks. These visual reminders may serve to enhance Working Memory. Taking photographs of your child's pajamas, toothbrush, and washcloth and then posting these

"Simplify directions as much as possible. Your child will be more likely to recall short, simple, and direct instructions.."

pictures in his bedroom may help them to remember the sequential bedtime series of changing into their pajamas, brushing their teeth, and washing their face.

3. Encourage your child to seek assistance from others. Emphasize to your child that it is acceptable to ask the teacher to repeat instructions or to ask a classmate to borrow their notes. Roleplay these scenarios at home so that your child will feel comfortable when such situations arise.

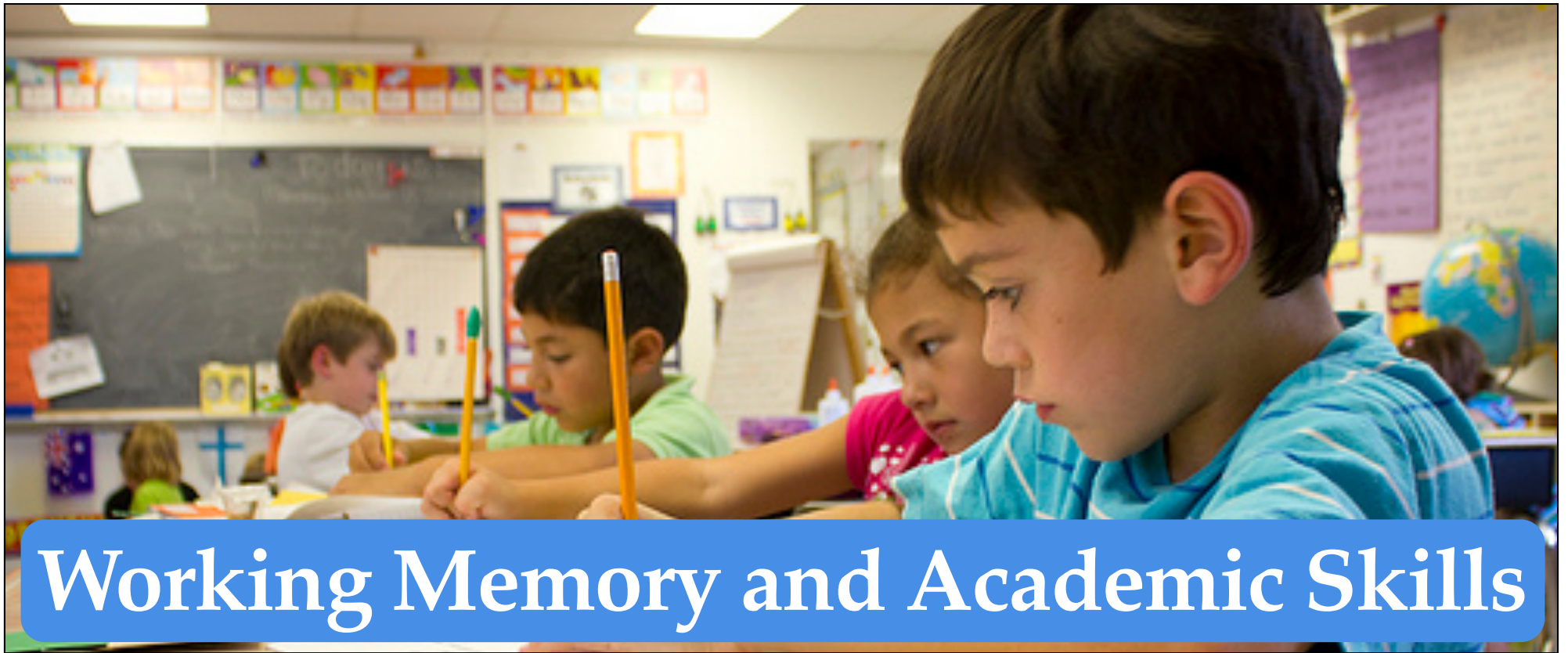
4. Practice verbal memory skills, such as rehearsing, chunking, or using mnemonic devices. Help your child to rehearse by whispering directions or lists to them. Also, practice chunking devices which can help your child whittle two-step instructions down to one-step. For example, your child may group together brushing their teeth and washing their face.

5. Exercise on a regular basis to improve memory, attention, and learning. New data strongly indicates that physical activity that improves cardiovascular functioning also improves working memory. Other studies strongly support the connection between vigorous exercise and improved attention. Encourage

your child to be physically active for an hour, working out vigorously to the point where he is sweating in order to receive these benefits.

6. Learn yoga and meditation to improve working memory. Yoga training, particularly the kind that focuses on breathing and mindfulness, has been demonstrated to improve executive functioning, working memory, and attention in younger children. Many studies strongly support the concept of using these techniques to augment other forms of working-memory interventions.

7. Play a story-building game with your child. Ask your child to concentrate on remembering as many facets of a story as he can. Provide a start to the story such as “Once there was an 8-year-old girl who enjoyed being outdoors,” then take turns adding sentences to the story — without writing any of it down. This practices memory and focus in tandem, because each person needs to listen intently to new lines added, and retell the story from the beginning on every turn. Try allowing each other to paraphrase at first, and then require the recollection of exact phrasing to increase difficulty.



Working Memory and Academic Skills

Working memory is perhaps the most important thinking skill for academic performance.

Verbal working memory plays a powerful role in reading comprehension, phonological awareness, and completing math word problems. Visual working memory is often significantly impaired in children who struggle in the area of mathematics.

Reading

- Working Memory is important while learning how to decode words.
- Working Memory helps when kids are trying to remember specific parts of a story.
- Working Memory aids in recalling previously learned vocabulary while reading.



Math:

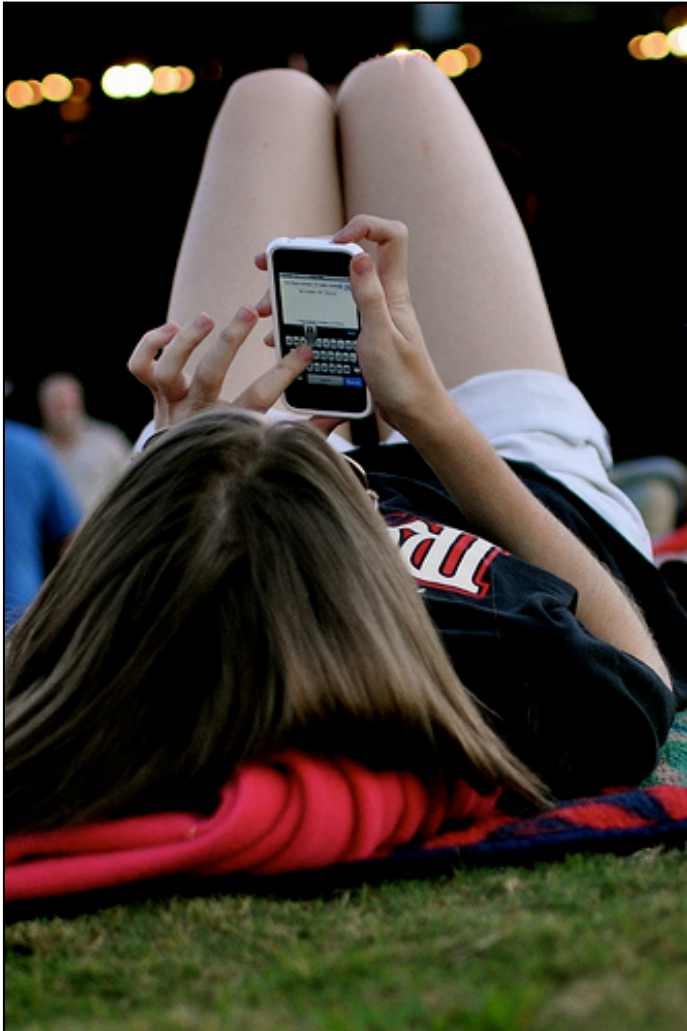
- Working Memory helps when kids are trying to keep track of multi-step problems.
- Working Memory is important while trying to recall the proper methods for solving problems.
- Working Memory aids in recalling and applying problem solving strategies.

Writing:

- Working Memory is important for keeping multiple ideas in mind at once.
- Working Memory helps kids to be aware of the proper ways to structure sentences and paragraphs.
- Working Memory helps when kids are trying to recall spelling and grammar rules.



Working Memory and Digital Play



Digital Play is filled with opportunities to improve Working Memory.

Playing video games, searching the Internet, trying out the newest app, or Facebooking a friend demands a variety of Thinking Skills. Proficiency with any of these digital tools requires the ability to apply skills such as Planning, Organization, Working Memory, or Self-Awareness. For children, the attraction of video games and technologies makes them an ideal teaching tool for practicing game-based skills and learning to apply them to school and daily activities.

Working Memory is a skill that is routinely applied in many video games, ranging from simple tasks, such

“For children, the attraction of video games and technologies makes them an ideal teaching tool for practicing game-based skills”

as recalling which buttons to push on a controller, to more complex games where recalling the layout of previous levels in a game world are crucial to future success. Games often require that players retrace their steps in a game in order to go back to a place to find new weapons, gadgets, or spells that they did not pick up initially.

Interactive digital media and apps can be great tools to support children with Working Memory deficits. Rather than having to keep every piece of information in their head, it is very easy for a child to transfer what they need to remember to an electronic device. This requires that the child masters the app, automatically inputs what she needs, and most importantly, that she has regular access to it.

Interactive digital media can be a great asset for supporting Working Memory deficits. Electronic to-do lists can help when children have a series of activities they need to complete. Speech-recognition software can be a fantastic tool for children who cannot hold information in their minds long enough to write it



down physically but can speak it clearly enough to complete a writing assignment

Digital play can help kids improve Working Memory skills by helping them to:

- Master advanced controls in fighting games such as Street Fighter, which requires players to remember fast sequences of change-of-button commands for complex attack combinations.
- Memorize the layout of racetracks in racing games to anticipate twists, turns, and hazards.