

## Working Memory and Anxiety

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### What is anxiety?

Anxiety is a sense of fear and worry, and it is not uncommon among students with language-based learning disabilities. According to Peg Rosen<sup>1</sup>, this anxiety stems from a fear of not being able to keep up with peers, as well as feeling different and worrying about the future. These issues can oftentimes interfere with a student's ability to be present in the classroom and attend to the task at hand.

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### How does anxiety impact working memory?

Based on the above information, students with working memory deficits experience anxiety within the classroom because of their inability to keep up in general. In addition, high anxiety puts demands on your working memory. Dr. Tracy Packiam Alloway, psychologist and working memory expert, believes that<sup>2</sup> "Your emotional state can play a role in working memory performance, which can in turn influence performance on tests". Studies have shown consistently that when people experience high levels of anxiety, their working memory capacity suffers. This is said to occur because more cognitive energy is devoted to managing the anxiety. Therefore, executive resources experience disruption and cannot focus on elements of the working memory.<sup>3</sup>

This resource contains strategies that focus on reducing anxiety as a tool to create classroom environments that are conducive to all working memory capacities. Because high levels of anxiety can further disrupt working memory function, it is important to present material in a familiar and structured format that will micro-unit the necessary steps and tasks. This helps to alleviate anxiety, as well as working memory demands. The strategies below can be applied to any classroom.

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### Working memory classroom strategies

Strategy	Components & Explanation
<b>Rituals and Routines</b>	Daily rituals and routines allow expectations and activities to become automatic. A consistent school, period, or class schedule reduces pressure on working memory and allows students to focus on instruction. This also alleviates anxiety around uncertainty pertaining to schedules and what is coming next.

## Memory Aids

*\*It is important to give students reminders and practice time to appropriately utilize memory aids.*

**Checklists:** checklists can be created for any activity or process. They can include one word cues and visuals. Students can keep checklists on their desks, computers, or binders as reminders of the steps to follow. They can be helpful for packing backpacks and getting ready for homework, as well.

**Cue cards:** These quick reminders aid students who need reminders about what step comes next. A card or subtle signal can help students with weak working memory skills stay on task without drawing attention to them or distracting other classmates.

(Both of these strategies give students a resource to reference rather than requiring them to remember significant amounts of information independently.)

## Task Break-down

**Micro-Unit and structure:** Tasks that can be broken up into parts allow for things to be done in smaller steps, therefore making them more manageable for students to complete. Focusing on one step at a time can prevent students from becoming overwhelmed too easily.

## Strength and Weakness Understanding

**Use preferred processing method:** Teachers should play to the students' strengths by providing instruction and materials in a manner that best fits a variety of student learning styles (visual, auditory, kinesthetic). This allows all students to feel comfortable in the classroom.

**Reinforce what works:** Working memory is similar to a muscle: the more you use it, the better it works. Practice and repeat strategies that work best for students to encourage independent application.

**Use visuals:** Visuals provide students with a format that is often easier to process and remember than spoken or written words. Just like road signs indicate familiar directions to drivers, an image associated with a classroom task may helpfully jog a student's memory.

## Technology as an Aid

**Assistive Technology:** Technology can be incredibly helpful in supporting learning and instruction by alleviating some working memory demands. Appropriate technological tools help students to better manage large amounts of information, which in turn reduces anxiety.

## How Does This Concept Connect To Landmark's Teaching Principles™?

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In order to appropriately manage anxiety and allow students with varying working memory capacities to participate fully in instruction and activities, teachers must follow Landmark's third teaching principle: Micro-Unit and StructureTasks. When specific tasks are broken up into parts and presented in structured units, they become easier to complete and process for students with both high anxiety and working memory deficits. These strategies highlight how to do that and not overwhelm the students in the classroom. For the full text of the Landmark Teaching Principles™, including "Micro-Unit and Structure Tasks," [click here](#).

## References

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1. Rosen, P. (2014-2017). **Anxiety: Why It's Different From Stress**. *Understood.org*.
  2. qtd. in Stuart, Annie. (1999-2014). **What is Working Memory and Why Does it Matter?** *National Center for Learning Disabilities*.
  3. Vytal, Katherine E., Comwell, Brian R., Letkiewicz, Allison M., Arkin, Nicole E., and Grillon, Christian. (March 2013). **The complex interaction between anxiety and cognition: insight from spatial and verbal working memory**. *Frontiers in Human Neuroscience, Volume 7, Article 93*.
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