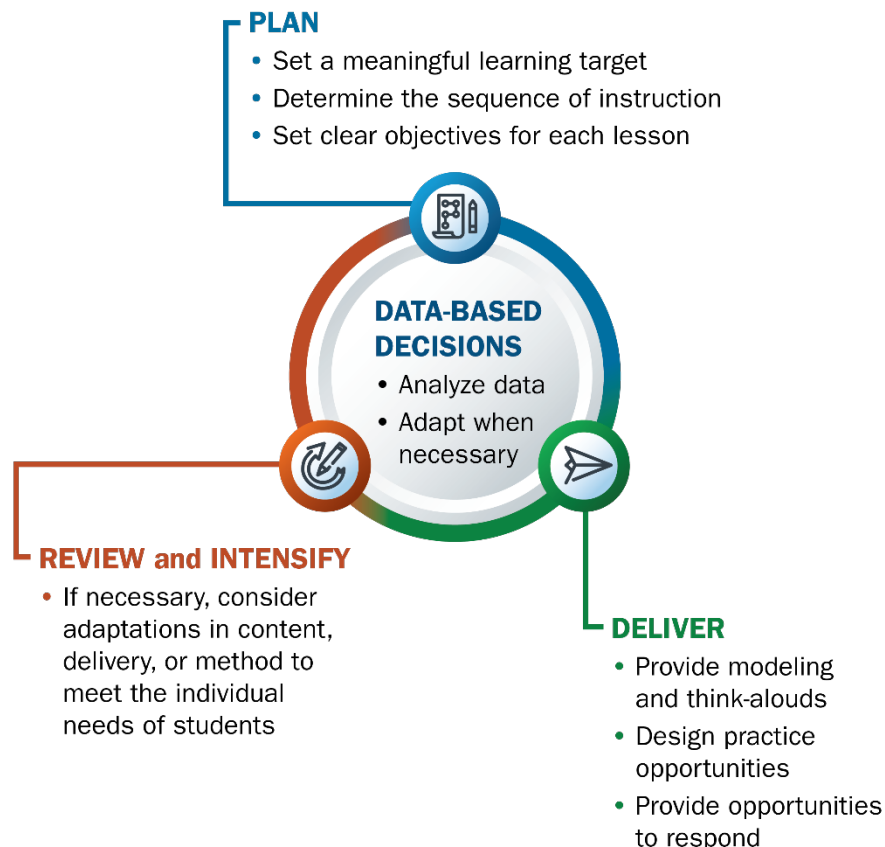# Cognitive and Metacognitive Strategies

What Do Teachers Need to Know?

Cognitive and metacognitive strategies are important for the development of executive function skills, which, in turn, are crucial for learning academic and behavior skills (Losinski et al., 2016; Peng et al., 2016). Executive function skills emerge in early childhood but continue to develop throughout adolescence (Best & Miller, 2010). Executive function skills are intentional and goal oriented (Briesch & Briesch, 2016; Cragg & Gilmore, 2014), and include processes such as

- attention (e.g., persevering through multistep or difficult tasks),
- inhibitory control (e.g., ignoring irrelevant or distracting information),
- planning (e.g., identifying an appropriate sequence of steps to meet a goal),
- self-monitoring (e.g., graphing progress on a chart, self-evaluate on-task behavior),
- cognitive flexibility (e.g., shifting between tasks, procedures, or rules), and
- working memory (e.g., organizing several pieces of incoming information).

PLAN
- Set a meaningful learning target
- Determine the sequence of instruction
- Set clear objectives for each lesson

DATA-BASED DECISIONS
- Analyze data
- Adapt when necessary

REVIEW and INTENSIFY
- If necessary, consider adaptations in content, delivery, or method to meet the individual needs of students

DELIVER
- Provide modeling and think-alouds
- Design practice opportunities
- Provide opportunities to respond

In the three-phase cycle for instruction, teachers can use several cognitive and metacognitive strategies to address challenges that students with disabilities have related to executive functioning. Using cognitive and metacognitive strategies involves planning for and delivering individualized instruction of content, followed by reviewing assessment data and intensification of cognitive and metacognitive strategies if needed.

Individualizing Instruction for Students With Disabilities

Many students with disabilities experience challenges with executive functioning (Hosenbocus & Chahal, 2012) and may require different instructional methods or accommodations to support their development. Understanding executive function processes is particularly relevant for working with students with disabilities because difficulties with executive functioning can have a compounding effect with the barriers they already experience with academics and behavior. For instance, working memory is subject to a limited capacity, and when it is overtaxed, it may be difficult for students to comprehend incoming information, develop a plan, or self-regulate their behavior.

Subsequently, researchers have reported on the effectiveness of different strategies and interventions that target students' weaknesses with a different executive functioning process, including for students with a range of disabilities (Fowler et al., 2007; Jacobson & Reid, 2010; Kaldenberg et al., 2016; Losinski et al., 2014). Teachers can use several cognitive and metacognitive strategies to address executive function difficulties for students with disabilities, regardless of grade, content area, or disability:

- **Setting goals**. Teach students to identify appropriate and feasible goals for themselves. Ask students to identify how they will measure progress toward meeting goals and help students identify positive motivation for attaining goals.

- **Self-monitoring**. Teach students to ask themselves questions regularly throughout learning and completing tasks as a method of monitoring their performance. Students also may monitor their performance through graphing, such as recording information (e.g., attention, time on task) on a daily check-in check-out form or weekly on a reading log.

- **Graphic organizers**. Teach students how to use graphic organizers to help them with planning, organizing, and making progress on tasks. For example, graphic organizers may be used to plan for word problem solving, organize a weekly schedule and goals, and make progress on independent daily living goals.

- **Self-management**. Teach students to reflect on their behavior periodically through completion of a personalized rating scale that reflects classroom expectations. Using a three-point scale, students and teachers can rate student adherence to expectations for a class period with rewards delivered contingent on accurate ratings to encourage precise self-reflection.

Access to the General Education Classroom

Executive functioning skills are critical for learners of all grades and abilities and are relevant across all academic and behavior domains. Students with disabilities who exhibit difficulties with executive functioning skills benefit from consistent use of cognitive and metacognitive strategies across settings. Teachers in general education settings should collaborate with special educators to identify which strategies are in place in special education and intervention settings. Moreover, teachers in general education settings may need to regularly review the explicit strategies with students and collect formative data to monitor students' performance using these strategies.

How to Get Started

- Keep in mind that students with disabilities will need to be explicitly taught cognitive and metacognitive strategies. Teachers should use instruction with explicit modeling and guided practice to support students applying these strategies independently.

- Teachers should provide students with affirmative and corrective feedback on their use of the cognitive and metacognitive strategies.

- Teachers should monitor students' use of cognitive and metacognitive strategies across settings (e.g., the general education classroom, recess, lunch room) to ensure that students are able to appropriately transfer skills.

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