How the Brain Learns to Learn

Session handout · PK–Grade 5

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Your toolkit, all in one place

Eight tools from the session, grouped by the three big ideas: co-regulation first, routines and choices, and learning to learn in kid words. Each tool names the research it builds on and carries an evidence tag:

Tag	What it means
Strong evidence	Replicated findings, often across many studies
Promising	Solid but limited: correlational, small, or newer
Debated	Researchers actively disagree
My interpretation	My classroom translation of the research, not a tested script

Much of my SRL work, including Tool 4, comes from or was inspired by Timothy J. Cleary's research and his book *The Self-Regulated Learning Guide* (2018).

Most tools here are tagged My interpretation because the wording and steps are practical translations. The research behind each one is named beneath it.

Tool 1 · Co-regulation phrases that lend a child your calm

MY INTERPRETATION Organized by the three co-regulation supports in Murray et al. (2015): a warm relationship, structure, and coaching. The phrases are examples, not research scripts.

Warmth	Structure	Coaching
"I see you're frustrated."	"First ____, then ____."	"Let's take a breath together."
"I'm right here with you."	"Two more minutes, then we clean up."	"What could you try first?"
"That was hard, and you kept going."	"Here's where we'll start."	"Show me how you'll start."
My phrase:	My phrase:	My phrase:

Tool 2 · Transition routine planner

MY INTERPRETATION Builds on the structure and fading support described in Murray et al. (2015). The steps and the three-week fade are a practical translation.

Step	What it looks like	My routine
Same signal	The same song, chime, or hand signal every day	
Heads-up	A two-minute warning with a visual timer	
First step	Name the very first action: “Books in the bin.”	
Adult support	Stand nearby for the first step, then step back	
Fade plan	Week 1 adult models · Week 2 child leads with a prompt · Week 3 child leads	

Tool 3 · Choice menu builder

MY INTERPRETATION built on Strong evidence. In a meta-analysis, choice had its strongest effects on motivation with 2 to 4 choices, without rewards, and for children (Patall, Cooper & Robinson, 2008).

Keep it small: two to four choices, no prize attached, and the learning goal stays the same.

Kind of choice	Examples	My choices
Materials	Pencil or marker? Big paper or small?	
Order	Top or bottom first? Words or picture first?	
Place	Table or rug? Next to a buddy or on your own?	
How to show it	Tell me, draw it, or build it?	

Tool 4 · Plan, Do, Check (a card for kids)

MY INTERPRETATION A kid-friendly version of the forethought, performance, and self-reflection phases of self-regulated learning (Zimmerman, 2002), informed by Cleary (2018). Print it as a desk card. For PreK and K, read the questions aloud and add picture cues. Model it with a think-aloud first, then fade the support.

1 · PLAN	2 · DO	3 · CHECK
What will I do?	Am I on track?	What helped?
What will I try if I get stuck?	Do I need help?	What will I try next time?

Then back to PLAN. Check feeds the next plan.

Tool 5 · Retrieval warm-up bank for grades K–4

MY INTERPRETATION Retrieval practice benefits children too (Karpicke, Blunt & Smith, 2016). Keep it low-stakes: no grades, and always give the answer afterward.

- "Close your eyes. What can your brain find from yesterday?"
- Draw what you remember, then compare with a partner.
- Tell a buddy two things you remember. Then switch.
- Finish my sentence: "A food chain starts with…"
- Which one doesn't belong, and why?
- Picture brain dump: everything you remember, no peeking.
- Teach it to your stuffed animal or a buddy.
- Thumbs up when your brain finds the answer. Wait for everyone.

Tool 6 · Come-back-to-it spacing planner

MY INTERPRETATION Spaced lessons helped 5- to 7-year-olds generalize science concepts (Vlach & Sandhofer, 2012). There is no perfect gap: come back when it's still familiar but no longer fresh (Carpenter, Pan & Butler, 2022). The gaps below are examples, not a research formula.

	When	Two to five minutes of…	My plan
Learn it	Lesson day	Teaching and practice	
Revisit 1	A few days later	A retrieval warm-up	
Revisit 2	A week or two later	Draw it, tell it, or sort it	
Revisit 3	Inside a later unit	Mixed in with new material	

Say it so a six-year-old can do it. Examples are suggestions, not wording tested in the research.

Strategy	Kid words	My kid words
Retrieval	"Close your eyes. What can your brain find?"	
Spacing	"We'll visit this again so it sticks."	
Planning	"What's your plan? What will you try if you get stuck?"	
Reflecting	"What helped you today?"	

Tool 7 · Do-the-opposite brain breaks

PROMISING These games ask children to hold a rule in mind and stop an automatic move. Red Light, Purple Light trials found improved self-regulation for preschoolers low in these skills, and one 2019 study found gains in self-regulation and math (Tominey & McClelland, 2011; McClelland et al., 2019). Using a few games as brain breaks is not the same as running the full program, which is 16 structured sessions with training.

Game	How to play	Level up
Head and toes	Say "head," they touch toes. Say "toes," they touch head.	Add knees and shoulders.
Red light, purple light	Start: green means go, red means stop.	Switch: green means stop, red means go.
Clap or stomp	Show blue: clap. Show orange: stomp.	Swap the rules.

Make it harder only when they're ready. Head and toes adapts the Head-Toes-Knees-Shoulders task (Ponitz et al., 2009), which was built as a measure, not a program.

Tool 8 · Go deeper: free resources from the researchers

Resource	What you get	Where
RetrievalPractice.org	Free guides on retrieval and spacing, plus an Early Childhood Guide	retrievalpractice.org
EEF, Metacognition and Self-Regulated Learning (2025)	Seven recommendations and practitioner tools for metacognitive talk (written mainly for school-age pupils)	EEF website
Co-Regulation practice brief	Warm relationship, structure, and coaching from birth to adulthood	fpg.unc.edu
Red Light, Purple Light	Circle-time self-regulation games and the book *Stop, Think, Act*	health.oregonstate.edu
The Learning Scientists	Posters and slides on six study strategies (best for older students)	learningscientists.org

Check each site's terms before using materials commercially.

Key sources

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