

Long-Term Retrieval (Glr)



Long-term retrieval refers to the process of accessing and retrieving information that has been stored in long-term memory.

It involves recalling knowledge, experiences, or skills learned or encoded in the past.

Students with LTR deficits struggle to remember previously learned material, follow multi-step instructions or procedures, recall information during tests or assessments (even if they studied the material), retrieve and transfer information, rely heavily on prompts, cues or reminders to assist with the retrieval of information and with the retention and application of information over extended periods.

STRATEGY CATEGORY	DESCRIPTION
Multisensory Instruction	● Engage multiple senses during learning by incorporating visual aids, hands-on activities, and auditory cues. ● Enhances encoding and retrieval by creating more robust memory traces ● Completes word association exercises ● Language Processing Kit Activities ● Complete activities where they are required to group information. E.g., You have 1 minute to tell me everything that is round, animals, wear to the beach, etc.
Spaced Practice	● Instead of cramming, distribute practice sessions over time. ● Can be implemented through cumulative review, interleaving, and spiral curriculum. ● Rehearse and review information for short periods several times ● Allows for forgetting to occur, which strengthens retrieval pathways
Retrieval Practice	● Encourage students to actively retrieve information from memory through activities like quizzing, recalling, and summarizing. ● Strategies like free recall, fill-in-the-blank, and short answer questions. ● This strengthens the retrieval pathways in the brain. ● Group information into meaningful categories
Elaborative Encoding	● Help students make meaningful connections between new information and their prior knowledge. ● Strategies like creating analogies, generating examples, and explaining concepts can facilitate deeper processing and better retrieval. ● Facilitates deeper processing and better retrieval
Mnemonics	● Teach students to use memory aids like repetition, acronyms, rhymes, or visual imagery to encode and retrieve information more effectively. ● Effective for remembering lists, sequences, or key concepts
Emotional Engagement	● Incorporate elements that evoke emotional responses, as emotional experiences tend to be better remembered than neutral ones.
Adequate Sleep and Exercise	● Encourage healthy habits, as sleep and physical activity have been linked to improved memory and cognitive function.

SKILL AREA	IMPACT OF LTR DEFICITS	EVIDENCE-BASED INTERVENTIONS
READING	● Difficulty recalling previously learned phonics rules, sight words, or vocabulary ● Struggling to remember/ apply reading comprehension strategies ● Forgetting key details or events from stories or passages read earlier	● Having the student repeatedly read a short, meaningful passage multiple times until they reach a level of fluency. Repeated exposure helps reinforce word recognition and improves retrieval. ● Teaching students to associate unfamiliar words with familiar keywords or images. This taps into their visual memory and provides retrieval cues. ● Creating graphic organizers that visually depict the relationships between concepts in a text. This helps build semantic networks to aid retrieval. ● Have students regularly summarize what they’ve read in their own words, reinforces comprehension/ retrieval of key ideas.
WRITING	● Trouble remembering and applying previously learned spelling rules or patterns ● Forgetting proper grammar conventions or sentence structures ● Difficulty recalling and organizing ideas or information for written assignments	● Self-Regulated Strategy Development (SRSD): This approach explicitly teaches strategies for planning, writing, revising, and self-regulation. Mnemonics and cue cards aid retrieval of the steps. ● Creating graphic organizers to visually depict relationships between ideas and supports the retrieval of content.. ● Teaching students to construct more complex sentences by combining sentences. This reinforces grammar skills retrieval. ● Providing banks of content-specific vocabulary words and definitions. This scaffolds word retrieval during writing. ● Using tools like speech-to-text, word prediction, and multimedia scaffolds to reduce retrieval demands.
MATH	● Struggling to recall basic math facts, formulas, or procedural steps ● Forgetting how to apply previously learned problem-solving strategies ● Difficulty transferring and applying mathematical concepts to new situations	● Concrete-Representational-Abstract (CRA) Instruction: Using manipulatives to model math concepts, then transitioning to representational drawings, before moving to the abstract symbolic level. ● Teaching mnemonic strategies and cognitive routines to solve math problems step-by-step. For example, DRAW (Discover the sign, Read the problem, Answer or annotate, Write the equation, Solve) for word problems. ● Systematically reviewing previously learned skills and concepts to strengthen retrieval over time. ● Using timed drills, cover-copy-compare, incremental rehearsal, and technology tools to build automatic retrieval of basic math facts. ● Schema-Based Instruction: Teaching students to recognize underlying problem structures and apply relevant schemas to retrieve solution strategies. It provides an organizational framework to anchor new info to existing knowledge. ● Using graphic organizers, number lines, arrays to anchor concepts and procedures in memory.

Benefits of providing evidence-based interventions

		
Academic Success	Skill Development	Lifelong Implications
Strong retrieval skills are foundational for building knowledge and making connections across academic domains. Deficits in retrieving learned information can lead to persistent academic struggles and gaps in prerequisite skills. Improving retrieval allows students to capitalize on prior learning and continue progressing.	Many higher-order skills like problem-solving, critical thinking, and self-regulation rely on the ability to efficiently retrieve and apply learned concepts/strategies from long-term memory. Interventions focused on retrieval help students become more autonomous, self-directed learners. Durable learning capabilities developed through retrieval practice transfer across subjects and contexts.	Strong long-term retrieval skills foster habits of lifelong learning by allowing continuous building upon prior knowledge. In our rapidly changing world, the ability to retrieve and apply learning flexibly is more valuable than rote memorization. Overcoming retrieval deficits can boost self-efficacy, motivation, and persistence - traits that predict long-term success.