Simple Model of Memory

Long-Term Memory

Working Memory

Sensory Memory

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Cognitive Load Theory
Cognitive Overload
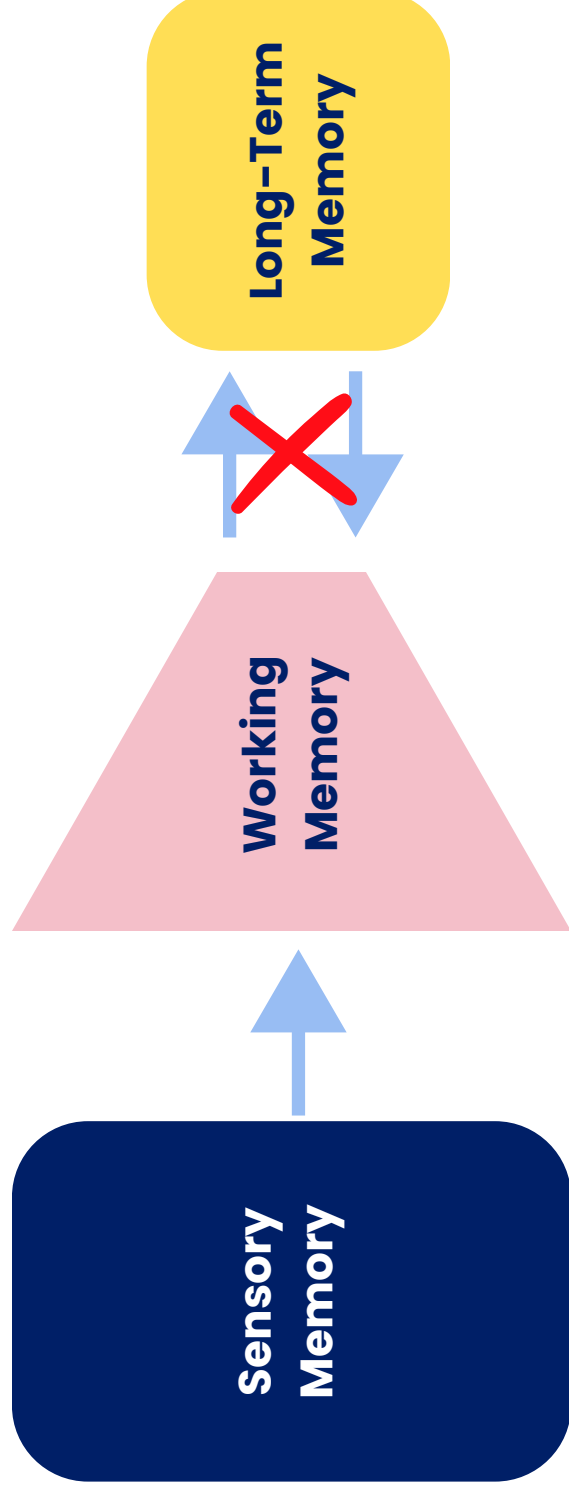
Long-Term Memory

Working Memory

Sensory Memory

Educators can make decisions to limit Cognitive Overload.

Sweller, 1988
Lovell, 2020
Swain, 2025

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Simple Model of Memory

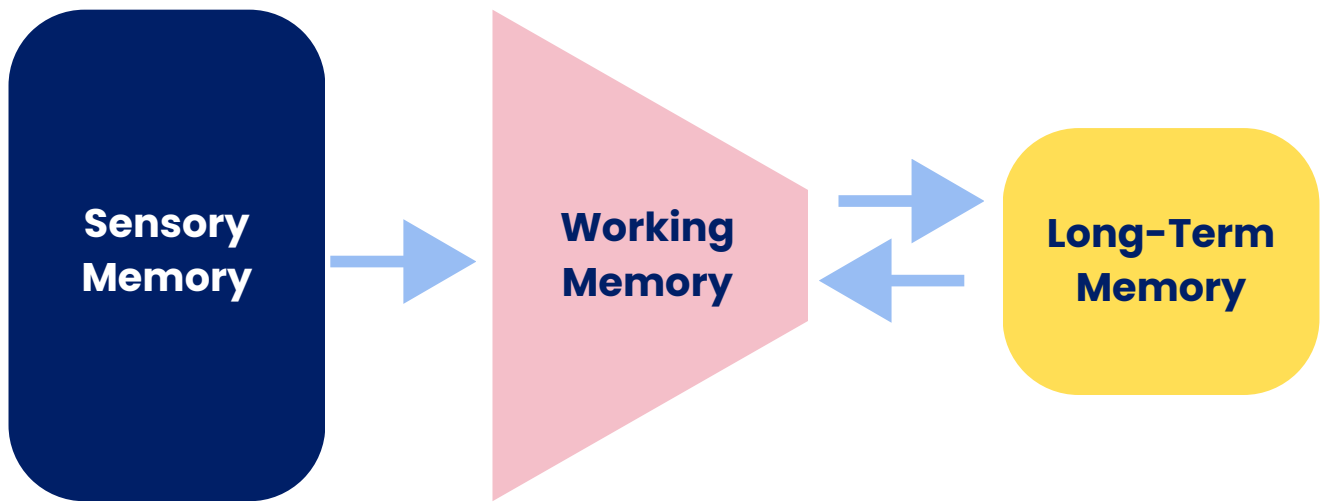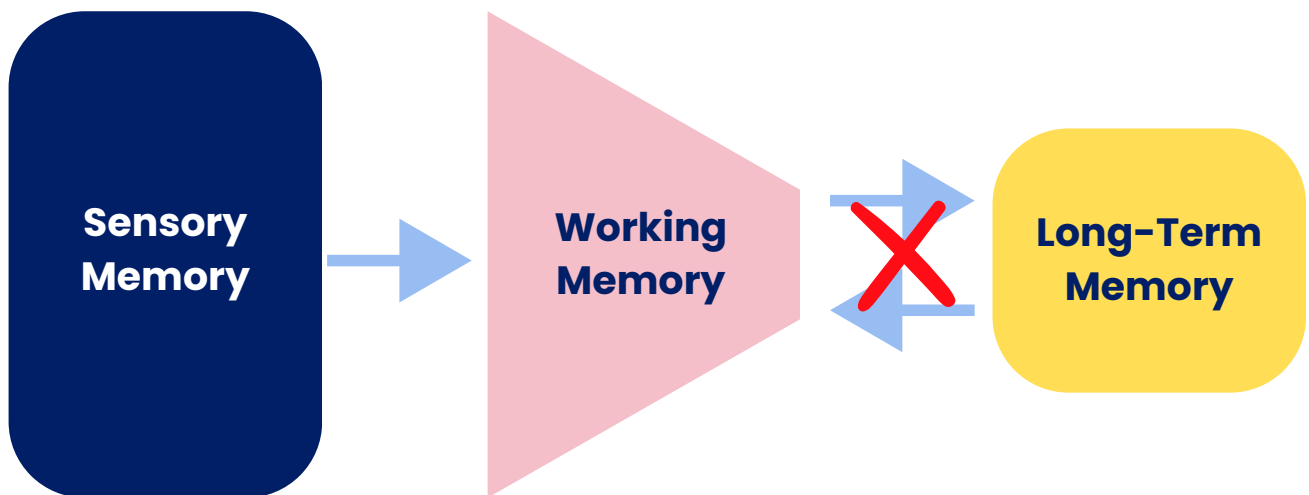Sensory Memory → Working Memory ⇄ Long-Term Memory

Cognitive Overload

Sensory Memory → Working Memory ✗ Long-Term Memory
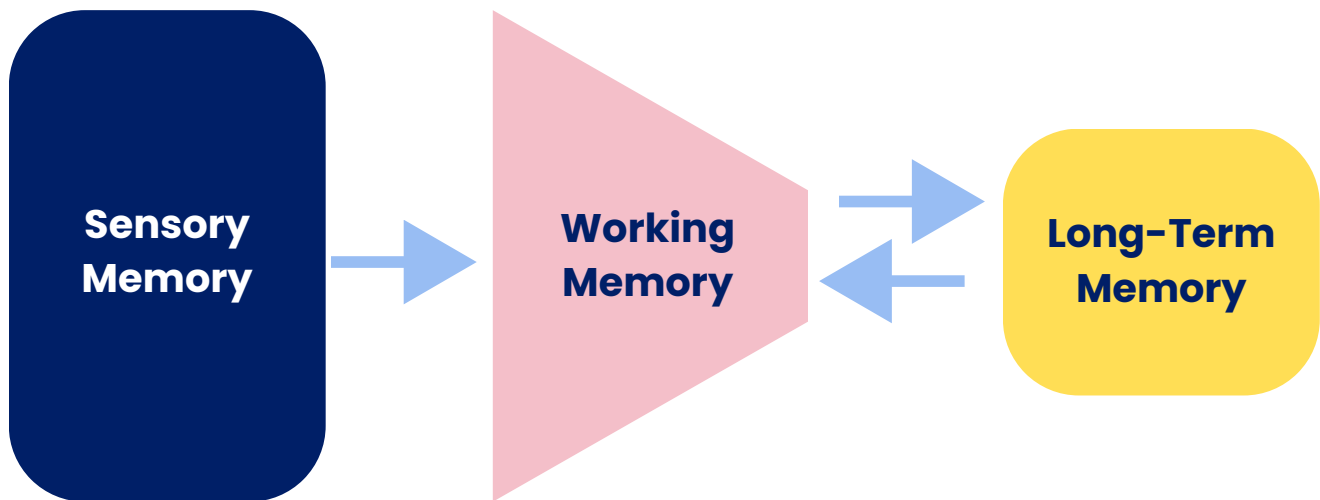
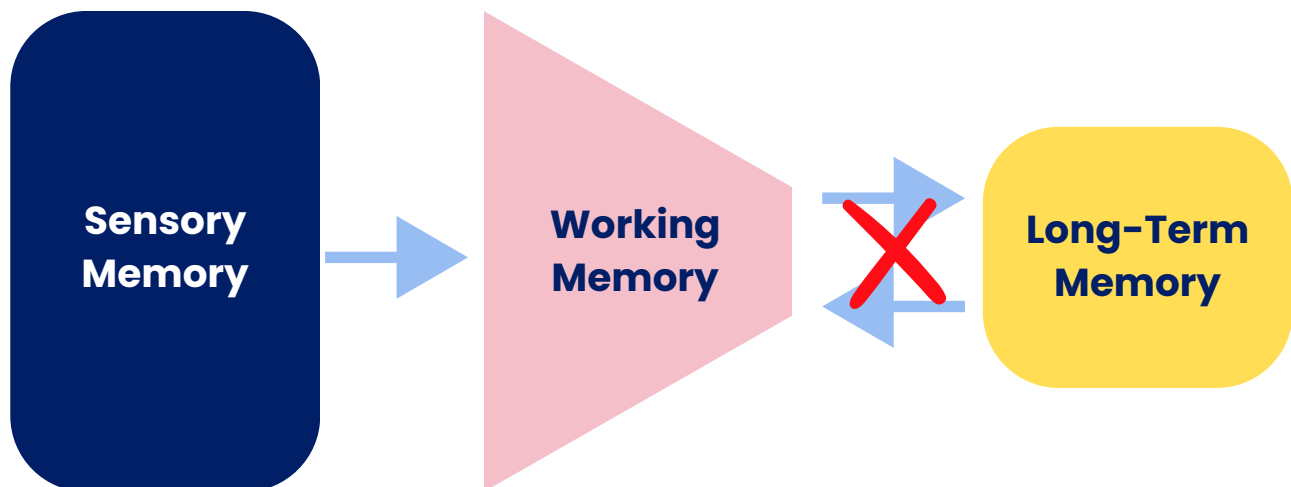# Educators can make decisions to limit Cognitive Overload.

Sweller, 1988
Lovell, 2020
Willingham, 2021
Swain, 2025

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Cognitive Load Theory

According to the **information-processing model**, our senses filter out much of the information around us. Some of this information goes into working memory. With effort, the learner can move the information from working memory to long-term memory for future retrieval. **This change in long-term memory is learning.**

Sensory Memory → **Working Memory** ⇄ **Long-Term Memory**

In this process, working memory is the bottleneck - it can can limit the path of information into long-term memory. Too much load on working memory can prevent information from being stored causing **Cognitive Overload.**
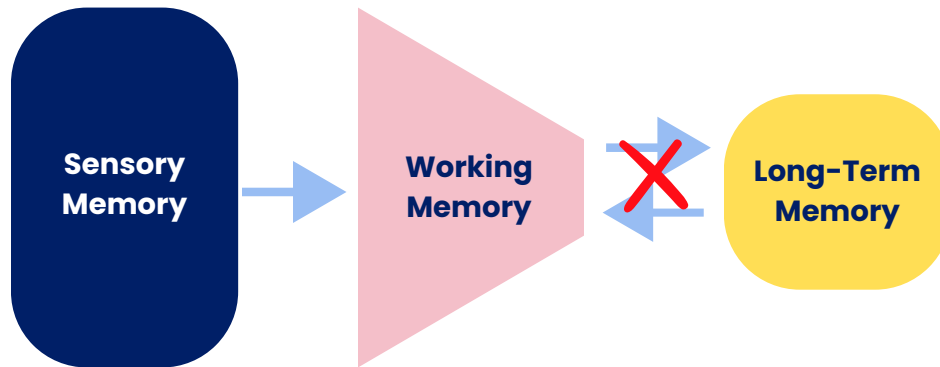
Sensory Memory → **Working Memory** ✗ **Long-Term Memory**

Educators can make decisions to limit Cognitive Overload.

Sweller, 1988
Lovell, 2020
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Cognitive Load Theory
Sources of Load

Sensory Memory → **Working Memory** ✗ **Long-Term Memory**

Intrinsic Load
Task Complexity

- Number of Steps
- Density of information
- Abstractness of concepts
- *Element Interactivity: the number of connections between elements*
- Novelty (new information)
- Open-ended/unguided tasks
- Dynamic/changing tasks

Extraneous Load
Manner or Structure of Instruction

- Complex, unfamiliar, conflicting, or ambiguous language or visuals
- *Redundancy: unnecessary or doubled up information*
- Verbal instructions overload
- Distracting information in the task (i.e., too much talk, writing, visuals, graphics, choices, unfamiliar technology)
- Distracting information outside of the task (decorations, physical items, noise, something new, off-task behaviours).
- *Transiency: important information disappears or is not accessible when needed*

Reduce
extraneous load
and **optimize**
intrinsic load
Lovell, 2020

adapted from Swain, 2025

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Cognitive Load Theory

Educators can make decisions to limit Cognitive Overload by:

Reduce extraneous load and optimize intrinsic load
Lovell, 2020

Sensory Memory → Working Memory ✗ Long-Term Memory
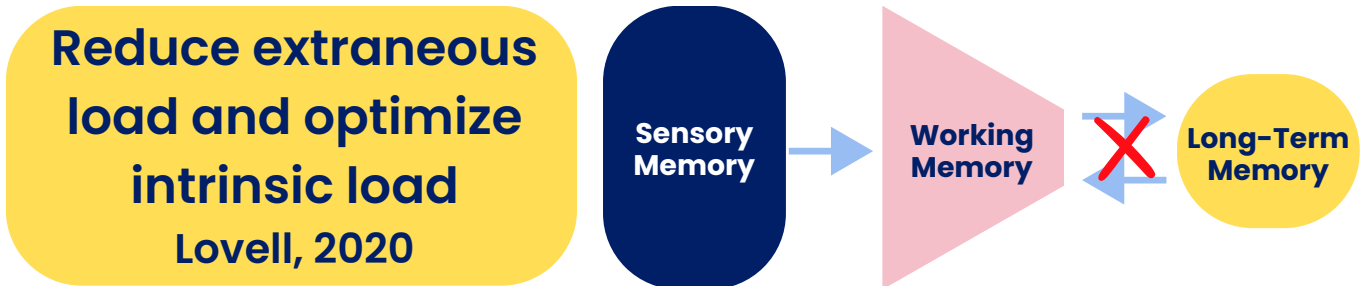
Do	Avoid
Instruction and tasks match the instructional hierarchy	Fluency practice during acquisition stage
Instructional Routines	Different tasks daily
Clear and consistent expectations	Unpredictable or inconsistent expectations
Simple, clutter-free environment and presentations.	Decorations or digital elements that are not relevant to learning goal.
Concise explanations	Long, unclear lectures
Sequence of small steps	Complex, big steps
Lots of practice opportunities to chunk and automate knowledge and skills	No or not enough practice, no mastery
Adaptive Teaching	Rigid instruction
Plan for learning and attention	Plan for engagement and fun

adapted from Swain, 2025

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