

Memory and Learning



THE NATURE
OF KNOWLEDGE

LEARNER IMPACTS

- Achievement
- Behavior
- Self-regulation

DESCRIPTION

“Memory is the means by which we draw on our past experiences in order to use this information in the present.” (Sternberg, 1999). “Human memory is the continuously active system that receives, modifies, stores, retrieves, and acts upon information.” (Klatzky, 1980). The Memory and Learning LDP uses research from Anderson; Baddeley; Bruning, Schraw, Norby, & Ronning and others to show why understanding how learners encode, retrieve, store, modify, and make use of information is important when discussing the design and development of learning environments.

The LDP presents research on memory to provide insights on the following:

- Limits on memory
- Memory capacity
- What causes information to be lost from memory
- What happens when information is lost from memory

Recommendations include:

- Leveraging instructional design strategies for memory
- Applying the principles of metacognition and self-regulated learning
- Designing learning activities and environments to:
 - Help students organize new information into meaningful chunks
 - Make information processing easier by distributing it within working memory
 - Have students connect procedural knowledge to real-life contextualized situations by practicing and integrating new skills into complex problems
 - Distribute practice and retrieval

CAPABILITIES

- Cognitive Tools: Flash card and concept map creation
- Assessment: Selected response
- Assessment: Short answer, constructed response

SAMPLE DESIGN IMPLEMENTATIONS

- Robust Technology: Design for encoding, retrieval, storing, and modifying learned material
- Simple Technology: Foundation for metacognition, authentic learning, self-regulated learning
- Content Support: Visuals, prior knowledge activation, analogies



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SELF-ASSESSMENT INSTRUMENT



Principle Criteria	Integration (4-5 points)	Exploration (2-3 points)	Consideration (1 point)	Not Applicable (0 Points)	Total Points
Purpose/Model	<p> The product strategy is aligned to memory and retention as a core principle of a learner-centered product.</p> <p> The product strategy currently integrates the use of educational technology tools as a means to maximize memory and retention.</p>	<p> The product team is exploring memory/retention as a core LDP for creating a more learner-centered product.</p> <p> The product strategy is exploring integrating an evidence-based model of memory/retention.</p>	<p> The product team considers memory and/or retention to be an important LDP for creating a more learner-centered product.</p> <p> The product strategy considers memory and/or retention at a high level but does not currently align to an evidence-based model.</p>	<p> The memory LDP does NOT align to the product strategy and is not necessary to explore further.</p>	= ____
Memory Application	<p> The product uses a computational cognitive model of memory to facilitate long-term retention.</p> <p> A form of distributed practice is used to maximize retention.</p>	<p> Principle is applied only to a specific area of the product and more focus on enhancing memory is needed to improve principle application.</p>	<p> Product team thinks applying this principle would add value to their product strategy.</p> <p> Product team has applied similar principles to their product strategy.</p>	<p> This principle is NOT currently being applied to any area of the product and is NOT needed to improve the product.</p>	= ____
Delivery	<p> Memory/retention on a capability or service aligned to this principle has been gathered/reported on.</p>	<p> Product team is in early discussions about partnering with LD team to validate this principle with learners.</p> <p> Product team has specific capabilities they need to validate this principle with.</p>	<p> Product team needs more information about how this principle might be tested with learners using LD's validation services.</p>	<p> This principle does NOT need to be validated in order to inform product design & development.</p>	= ____
Learner Characteristics	<p> Design & development are currently using validation reports to further align the principle and the product strategy.</p>	<p> Product team is currently exploring how validation results and recommendations could be used in product design & development.</p>	<p> Product team feels there is time in the schedule to include validation data to inform product design & development.</p> <p> Product team needs a consultation to learn more about validation services and results reports.</p>	<p> Validation data will NOT be used to inform product design & development.</p>	= ____