

Glossary for Session 1: Learner

Memorization and Learning

When information is not committed to long-term memory, students' working memory has duration and capacity limitations (Sweller, 1994). Students cannot hold random disconnected information in working memory for a long period of time – the new information must connect to information stored in long-term memory. Students require adequate knowledge of how all these facts fit together. “Facts that are placed into a rich structure are easier to remember than isolated or disconnected ones” (NAS, 2018, p. 50).

Construction-Integration Model: Comprehension and Learning

“When we read, we use our knowledge along with our perceptions of what we think the text says to literally build, or construct, mental representations of what the text means. Once those representations are constructed, we can merge, or integrate, the information in those models with the knowledge stored in our minds. When we achieve that integration, we call it learning; we literally know more than we did before the reading” (Duke et al., 2011, p. 53).

Surface representation – exact wording

Text-based representation – what the text says – meanings of words and clauses

Situation model – what the text means or the state of affairs described in a text beyond the text itself; prior knowledge is needed.

Transfer: Transfer is the students' ability to “treat” a new concept, problem, or phenomenon as similar to one(s) experienced before. Transfer can also consist of two sets of processes: *Initial learning* followed by *reusing* or *applying what was learned*.

Relevance: Information can be applied to personal interests, contexts, or cultural experiences of students (personal relevance). Information can be connected to real-world issues, problems, and contexts (life relevance). Teachers can set learning goals and guide students' attention to relevant information.

Glossary for Session 2: *Text: Determining information that transfers*

Surface Features: Information that is directly stated in text (facts, events, characters, setting).

Deep Structure: Information that is implied in text (concepts, themes, categories, situations, etc.).

Concepts: Concepts are abstract, implicit, and often unstated. Mental representations of a person's "organized information about objects, events, actions, qualities, or relationships" and include ways of thinking, feeling, or behaving.

Aspects of Text Complexity:

Quantitative Dimension: Measures that determine readability such as a Lexile measure. Quantitative aspects of text include word length, sentence length, vocabulary and others.

Qualitative Dimension (taken from the CCSS Appendix A, Page 5):

- a. **Levels of Meaning (literary texts) or Purpose (informational texts).** Literary texts with a single level of meaning tend to be easier to read than literary texts with multiple levels of meaning. Similarly, informational texts with an explicitly stated purpose are generally easier to comprehend than informational texts with an implicit, hidden, or obscure purpose
- b. **Text Structure:** Texts of low complexity tend to have simple, well-marked, and conventional structures, whereas texts of high complexity tend to have complex, implicit, and (in literary texts) unconventional structures. Simple literary texts tend to relate events in chronological order, while complex literary texts make more frequent use of flashbacks, flash-forwards, multiple points of view and other manipulations of time and sequence. Simple informational texts are likely not to deviate from the conventions of common genres and subgenres, while complex informational texts might if they are conforming to the norms and conventions of a specific discipline or if they contain a variety of structures. Graphics tend to be simple and either unnecessary or merely supplementary to the meaning of texts of low complexity, whereas texts of high complexity tend to have similarly complex graphics that provide an independent source of information and are essential to understanding a text.
- c. **Language Features:** Texts that rely on literal, clear, contemporary, and conversational language tend to be easier to read than texts that rely on figurative, ironic, ambiguous, purposefully misleading, archaic, or otherwise unfamiliar language (such as general academic and domain-specific vocabulary)
- d. **Knowledge Demands:** Texts that make few assumptions about the extent of readers' life experiences and the depth of their cultural/literary and content/discipline knowledge are generally less complex than are texts that make many assumptions in one or more of those areas.

Glossary for Session 3: Teacher: Determining transferrable ideas

Cognitive Load Theory: Working memory holds a small amount of information at one time. “Long-term memory is where large amounts of information are stored semi-permanently. Information is stored in the long-term memory in ‘schemas’, which provide a system for organizing and storing knowledge. If a student’s working memory is overloaded, there is a risk that they will not understand the content being taught and that their learning will be slow and/or ineffective.”

Therefore, instructional methods should avoid overloading memory. “With extensive practice, information can be automatically recalled from long-term memory with minimal conscious effort. This ‘automation’ reduces the burden on working memory, because when information can be accessed automatically, the working memory is freed up to learn new information.” Report summary: Cognitive load theory: Research that teachers really need to understand. Centre for Education Statistics and Evaluation; Retrieved from: <https://education.nsw.gov.au/about-us/educational-data/cese/publications/literature-reviews/cognitive-load-theory>

Depth of Instruction: First, teach the concept with relevant information so that students learn the concept with ideas that connect to students’ prior knowledge – information that is relevant to their lives. For instance, rebellion, citizens’ rights, elections, or the water cycle are part of students’ everyday lives, they just need to know it. When new information connects to their lives, and they understand that connection, they realize that they are not separate from the events of the world. These relevant connections also provide a solid foundation to build from, and then become connections between the known event and the unknown events. For instance, before teaching about the Boston Tea Party, secure students’ understanding about the concept of rebellion by including relatable situations of activism such as a local strike, school petition, or a children’s book with a rebellious story character. Discuss the ideas in depth including causes, methods of activism, and outcomes. The key point is selecting a relevant example of a concept that students understand. This example can then serve as an anchor for learning or prior knowledge.

Breadth of Instruction: The next goal must be to ensure that students can determine that different events or facts involve the same concept. This involves teaching the concept widely with varied examples. Students require “constant practice in generalization.” Therefore, when teaching rebellion, teachers can provide students repeated exposure of the concept in various contexts (e.g., Boston Tea Party, women’s suffrage, a petition to save a park) and time periods (e.g., contemporary and historical accounts). Provide students opportunities to detect differences and similarities of the same concept (patterns) across various situations. Students must understand how the learned concept in one situation is also present in the second situation, detecting what is the same and what is different in both situations. This is a critical step that leads to transfer. For instance, there are many accounts of activism/rebellion – past and present – and all of these events are held together by one key idea. Students must learn concepts well enough to achieve *automation (or automatic retrieval) and be able to recognize* these concepts in varied settings.