THE SOI MODEL | SELECT → ORGANISE → INTEGRATE
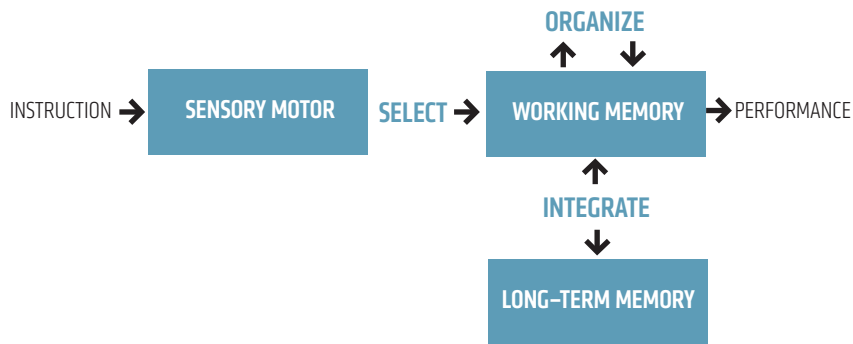
ORGANIZE

INSTRUCTION → **SENSORY MOTOR** — **SELECT** → **WORKING MEMORY** → PERFORMANCE

INTEGRATE

LONG–TERM MEMORY

LEARNING AS A GENERATIVE ACTIVITY

Eight Learning Strategies that Promote Understanding

CAMBRIDGE UNIVERSITY PRESS

Logan Fiorella   Richard E Mayer

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1 SUMMARIZING — EFFECT SIZE: 0.5

DEFINITION Restate the main ideas of a lesson in one's own words.

RESEARCH Beneficial in 26 of 30 studies.

BOUNDARY CONDITIONS Best when summary skills directly taught. Less effective when lesson content contains complex spatial relations, as in Physics and Chemistry.

2 MAPPING — EFFECT SIZE: 0.62

DEFINITION Convert a text lesson into a spatial arrangement of connected key words.

RESEARCH Beneficial in 23 of 25 studies.

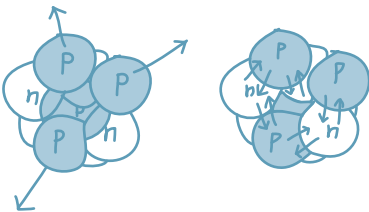**BOUNDARY CONDITIONS** Best for novices — low knowledge base or young in age.

3 DRAWING — EFFECT SIZE: 0.4

DEFINITION Create a drawing to illustrate content of a lesson

RESEARCH Beneficial in 26 of 28 studies.

BOUNDARY CONDITIONS Best when drawing skills directly taught, and lessening cognitive load by providing partially-drawn illustrations.

4 IMAGINING — EFFECT SIZE: 0.65

DEFINITION Form internal images to illustrate the content of a lesson

RESEARCH Beneficial in 16 of 22 studies.

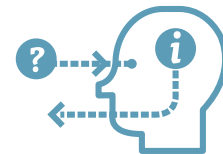**BOUNDARY CONDITIONS** Best when students have experience in the content and it is well designed.

5 SELF–TESTING — EFFECT SIZE: 0.62

DEFINITION Test one's self on previously studied content by answering practice questions.

RESEARCH Beneficial in 44 of 47 studies.

BOUNDARY CONDITIONS Best when receiving corrective feedback following practice testing in free-recall or cued-recall format. Less effective when demanding only recognition (eg MCQ).
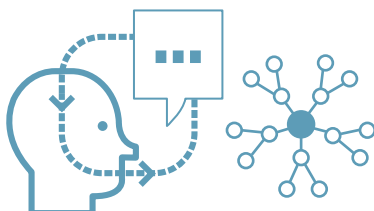

6 SELF–EXPLAINING — EFFECT SIZE: 0.61

DEFINITION Explain the content of a lesson to oneself by elaborating on the material covered.

RESEARCH Beneficial in 44 of 54 studies.

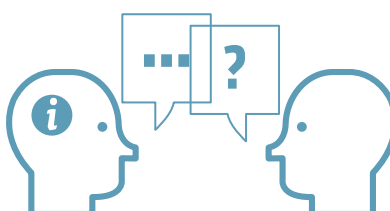**BOUNDARY CONDITIONS** Best when studying diagrams and conceptual materials, for novices and with focused prompts.

7 TEACHING — EFFECT SIZE: 0.77

DEFINITION Teach others about previously studied material.

RESEARCH Beneficial in 17 of 19 studies.

BOUNDARY CONDITIONS Best when students study the material knowing they will later be teaching it and, so, reflect on their own understanding, as well as answering peers' deep questions.

8 ENACTING — EFFECT SIZE: 0.51

DEFINITION Engage in task-relevant movements during learning.

RESEARCH Beneficial in 36 of 49 studies.

BOUNDARY CONDITIONS Best when students already have relatively high knowledge base, as well as receiving guidance and practice. Mainly for younger children.