COGNITIVE LOAD ON PROBLEM SOLVING ACTIVITY

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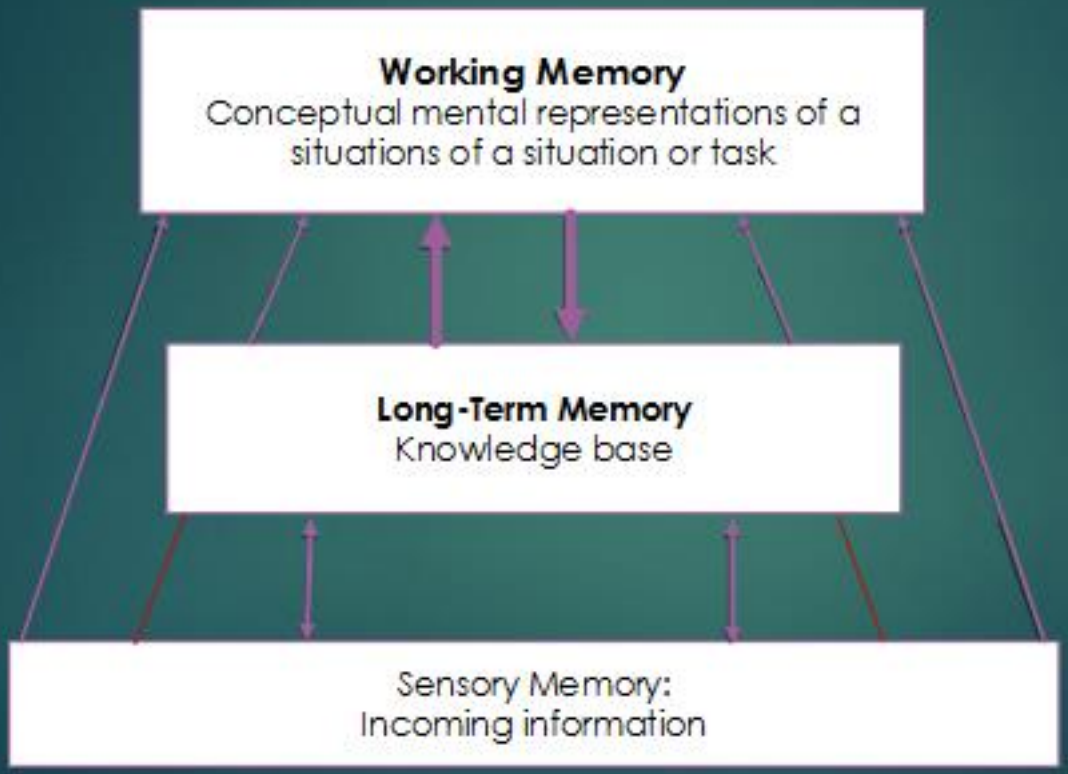
Cognitive architecture



Cognitive Load Theory

Design your instruction in a way that helps students to acquire schemas and automate them, thus reducing WM overload

Element Interactivity

- Elements of information: all input attributes that could be encoded as memory traces
- Relations between elements of information define the structure of information
- Substantial WM capacity and conscious effort could be required for processing and encoding relations among elements of information (WM load)

Transitive interference problems:

Halford, Maybery, and Bain (1986).

a is larger than b

b is larger than c

b is larger than c, is larger than b,

Which is the largest?

When the cognitive load is heaviest?

The integration of two premises requires considering all the elements (a, b, and c) and their relations concurrently bringing element interactivity to its highest point

Cognitive Load

Load that performing a particular task imposes on working memory

(due to processing interacting elements of information)

Why is learning difficult?

Productive load

Vs

Wasteful load

Intrinsic cognitive load

Determined by the degrees of interactivity between essential for learning elements of information (relative to levels of learner prior knowledge)

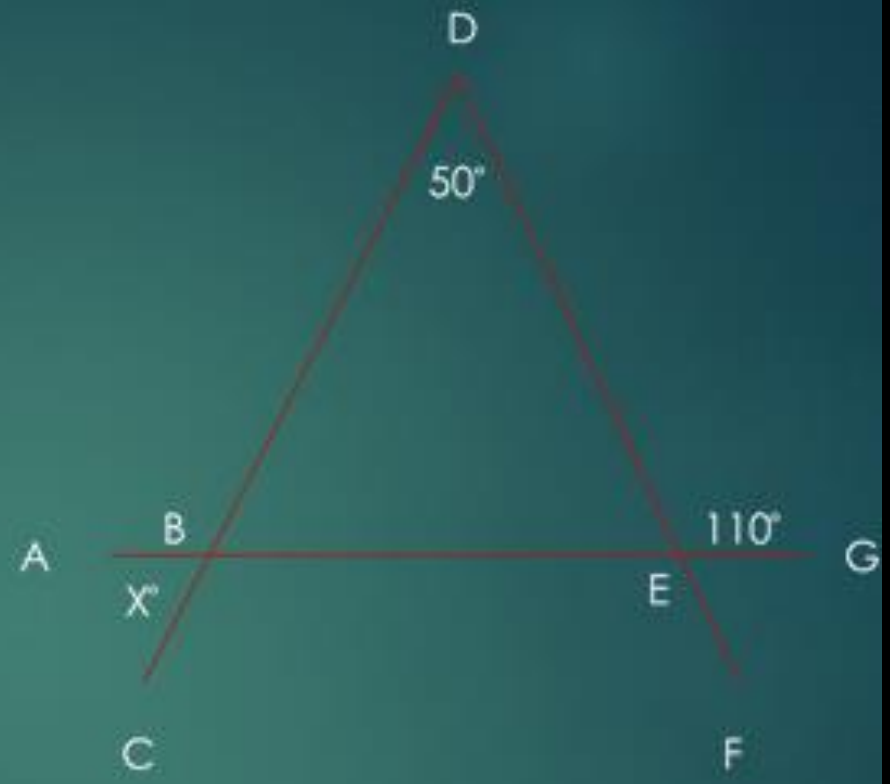
Managing intrinsic load:

Simplify task by omitting some of the interacting elements initially

Appropriately segment and sequence tasks from simple to complex

Extraneous Cognitive Load

Determined by the manner in which the information is presented to learners and he learning activities required of them



- Procedure of finding Angle X:

Angle DBE= Angle DEG- Angle BDE (external angle of triangle equal the sum of the opposite internal angles)

$= 110^{\circ} - 50^{\circ}$

$= 60^{\circ}$

Angle x= Angle BDE (vertically opposite angles are equal)

$= 60^{\circ}$

Germane Cognitive Load

Cognitive activities enhancing learning (self-explanations, varying problem contexts etc.)

Part of intrinsic load

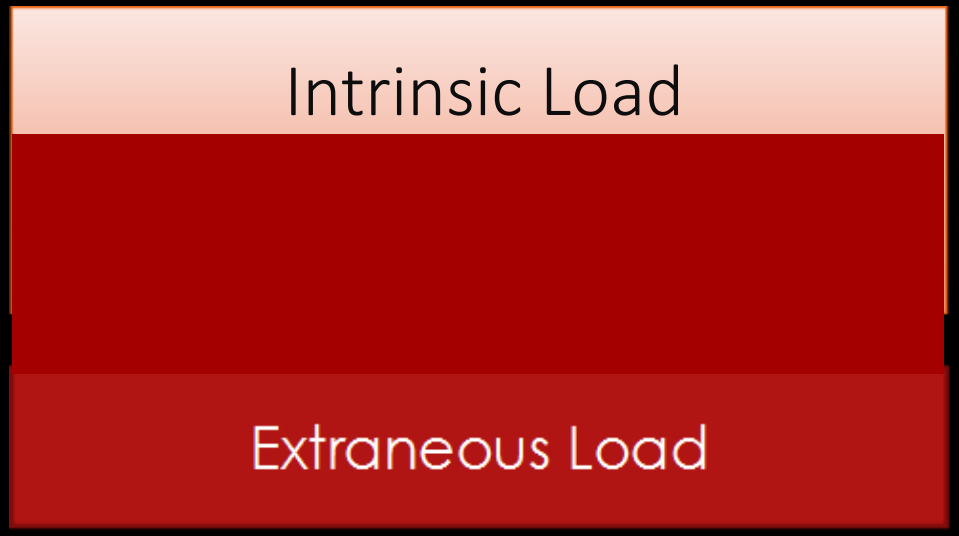
Germane resources: actual working memory resources devoted to productive learning (to intrinsic load)

Productive Load

Wasteful Load

No overload situation

Overload situation due to heavy demand of extraneous load



Cognitive Load Theory: reduce extraneous load, increase productive load

Cognitive load due to excessive intrinsic load