

Depth of Processing

CIRTL: IMPROVING TEACHING WITH PSYCHOLOGY

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Learning Analytics & Knowledge Conference

2017 Conference website: <http://lak17.solaresearch.org/>

2018 conference will be in Sydney, Australia

- Submission deadlines: October

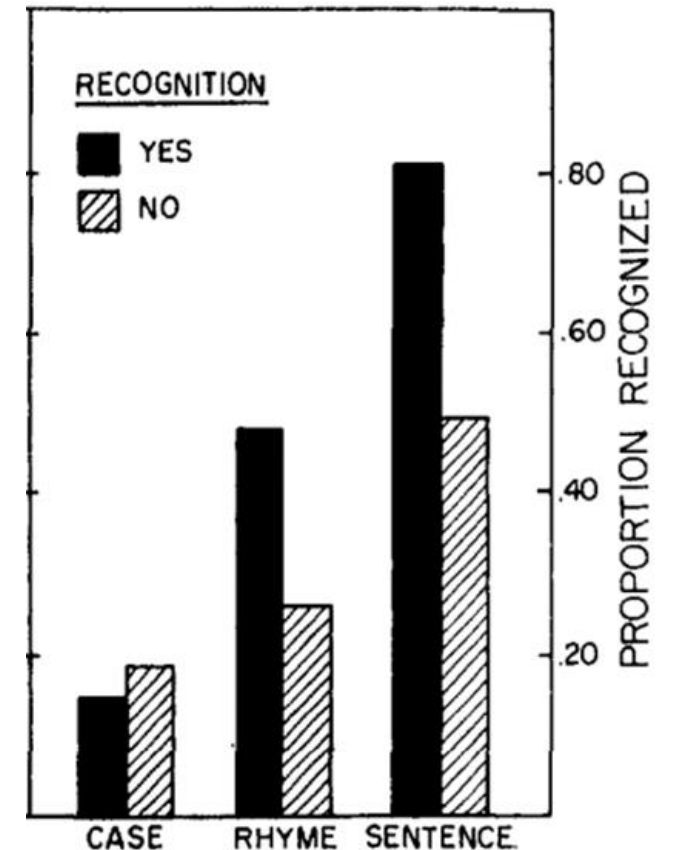
Focus

- Learning analytics
 - Characterization of variables related to student success
 - Blackboard use, online classes, testing procedures, physiological measures (HR, SCR, EEG), voice and video recordings of student interactions, socioeconomic factors, retention, etc. -really anything that may relate to student success/failure
 - Experiments on teaching and learning outcomes
 - Teaching-as-Research (TAR) project

Depth of Processing: basic research

Craik, F.I.M. & Tulving, E. (1975). Depth of processing and the retention of words in episodic memory. *Journal of Experimental Psychology*, 104(3), 268-294.

- Depth of Processing
 - Durability of a memory trace is a positive function of “depth” of processing
 - Depth referring to greater degree of semantic involvement
- Study words in three ways:
 - “Is the word printed in capital letters?”
 - “Does the word rhyme with _____?”
 - “Would the word fit into the following sentence: the girl placed a _____ on the table”?
- Recognition was best when words were deeply processed



How to encourage deep processing?

Essentially, all effective learning strategies revolve around methods that increase depth of processing

Some ideas:

- Relate material throughout the course
 - This would also encourage distributed practice
- Provide a big picture to circle around in lectures
 - And an overall big picture for the course
- Taking notes by hand?
 - Writing by hand is slow, so you can't write everything the teacher says
 - Taking notes by hand requires you to think more deeply about the information so that you only write what is most important
- Essays and paper assignments
 - Would require a deep understanding of the material
- Designing multiple choice questions?
 - Testing as teaching
 - Can be done online

How to encourage deep processing?

Elaborate multiple choice questions

- Try to create questions that require deeper processing to use as a teaching/learning tool

Goal: Test student knowledge of neurotransmitter deactivation

Example 1: Shallow processing

- Which is not a method of neurotransmitter deactivation?
 - A. Reuptake of neurotransmitters from the synaptic cleft
 - B. Retrograde neurotransmission
 - C. Enzymatic breakdown of neurotransmitters
 - D. Uptake by glia cells

Example 2: Deep processing

- Which would reduce norepinephrine signaling?
 - A drug that increases norepinephrine reuptake
 - A drug that increases norepinephrine release
 - A drug that blocks enzymatic breakdown of norepinephrine
 - A drug that reduces glial cell norepinephrine uptake

Ideas?
