Review last lecture

- Behaviorist vs cognitivist
- Learning from cognitive psychologists perspective

Cognitive approach on learning process

Instructional manipulations

The sequence of external events including the organisation and content of instructional materials and behaviors of the teacher.

This includes what is taught, how it is taught and depends on the characteristics of the teacher and on the curriculum
Learner characteristics

The learner’s existing knowledge, including facts, procedures and strategies that may be required in the learning situation

The nature of the learner’s memory system, including its capacity and mode of representation in memory.

Cognitive approach on learning process

Instructional manipulation → Learning process → Learning outcomes → Outcome Performance

Learners characteristics

Learning process

The learner’s internal cognitive processes during learning, such as how the learner selects, organises & integrates new information with existing knowledge
Cognitive approach on learning process

Instructional manipulation

Learning process

Learning outcomes

Outcome Performance

Learners characteristics

Outcomes

- Learning outcomes
  - The cognitive changes in the learner's knowledge or memory system, including newly acquired facts, procedures and strategies

- Outcome performance
  - The learner's performance & behaviour on tests that measure the amount of retention or the ability to transfer knowledge to new learning tasks

Two main points on learning process:

- Learner centered approach
  - Learner characteristics
  - Learning process and outcomes
  - Instructional manipulations affects changes in the learner's knowledge

- Learner is an active information processor
  - Knowledge is constructed by learner
  - HOW AND WHERE IS KNOWLEDGE IS CONSTRUCTED?
INFORMATION PROCESSING SYSTEM

- Human memory
  - Human cognitive architecture
  - The modal model

The primary and secondary memory system
(Waugh & Norman, 1965, p. 93)

The information flow
(R.C. Atkinson & Shiffrin, 1971, p. 82)
SENSORY MEMORY

1. Sight
2. hearing,
3. Smell
4. Taste
5. Touch

Most researched

ICON

Visual sensory register

ECHO

Auditory sensory register
Characteristics of sensory memory

- **LIMITED IN CAPACITY AND DURATION**
  - Sperling’s & Darwin’s research
  - 7-9 pieces at once
    - only available for approx ½ second (for icon)
    - or approx 3 seconds (for echo)

**WHAT IS THE IMPLICATION ON LEARNING?**

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**STEPS ON SENSORY MEMORY**

- **ATTENTION AND PERCEPTION**
- **PATTERN RECOGNITION**

**PRIOR KNOWLEDGE**

**CONTEXT**
Jika tanggal 4 Juni 2008 jatuh pada hari Senin, jatuh pada hari apakah tanggal 27 Juni 2008?

- Lecture
- Lettuce
- 27
- Kelapa
- Ice cream
- Cot
- Independence
- Building

WORKING MEMORY

- LIMITED IN CAPACITY AND DURATION
- Miller’s research: The magic number of seven
- Cowan’s research: Less amount

- Icon
- 1965
- Sebaiknya
- Charger
- Moonlight
- Gula the kopi
- Bluw
- Amboi
LONG TERM MEMORY

- Permanent storage of knowledge
- Unlimited capacity and duration
- Assist perception, attention, pattern recognition and retrieval processes

LEARNING PROCESS:
organize information, build connection among information and integration with prior knowledge, and eventually construct knowledge, encode knowledge to LTM

GROUP DISCUSSIONS

- Discuss to re-learn and express your understanding about:
  - Learning processes from cognitivist perspective
  - How knowledge is constructed by learner

- Hint:
  - Refer to the diagram we discussed before
Today's remark:

- How information is processed:
  - Human cognitive architecture
  - The modal model
  - Sensory memory, Working memory, Long term memory
  - Educational implication