

# Cognitive Load Theory

Unit 4

EDUC 715 – Spring 2020

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# Agenda

- Check-in
  - Feedback on synthesis in Bb
  - Feedback on Bb Discussion Board
  - Email articles and slides to KY as well as Bb
  - Mid-class break vs more time between classes
- Review of CLT
- Presentations
- Instructional strategies for CLT
- What is instructional design?
- Instructional design application activity
- Final Project planning.
- Next week – Unit 5 Learning Objectives and Assessment
  - Synthesis paragraph
  - Empirical article oral and written presentation

# Break vs Early End

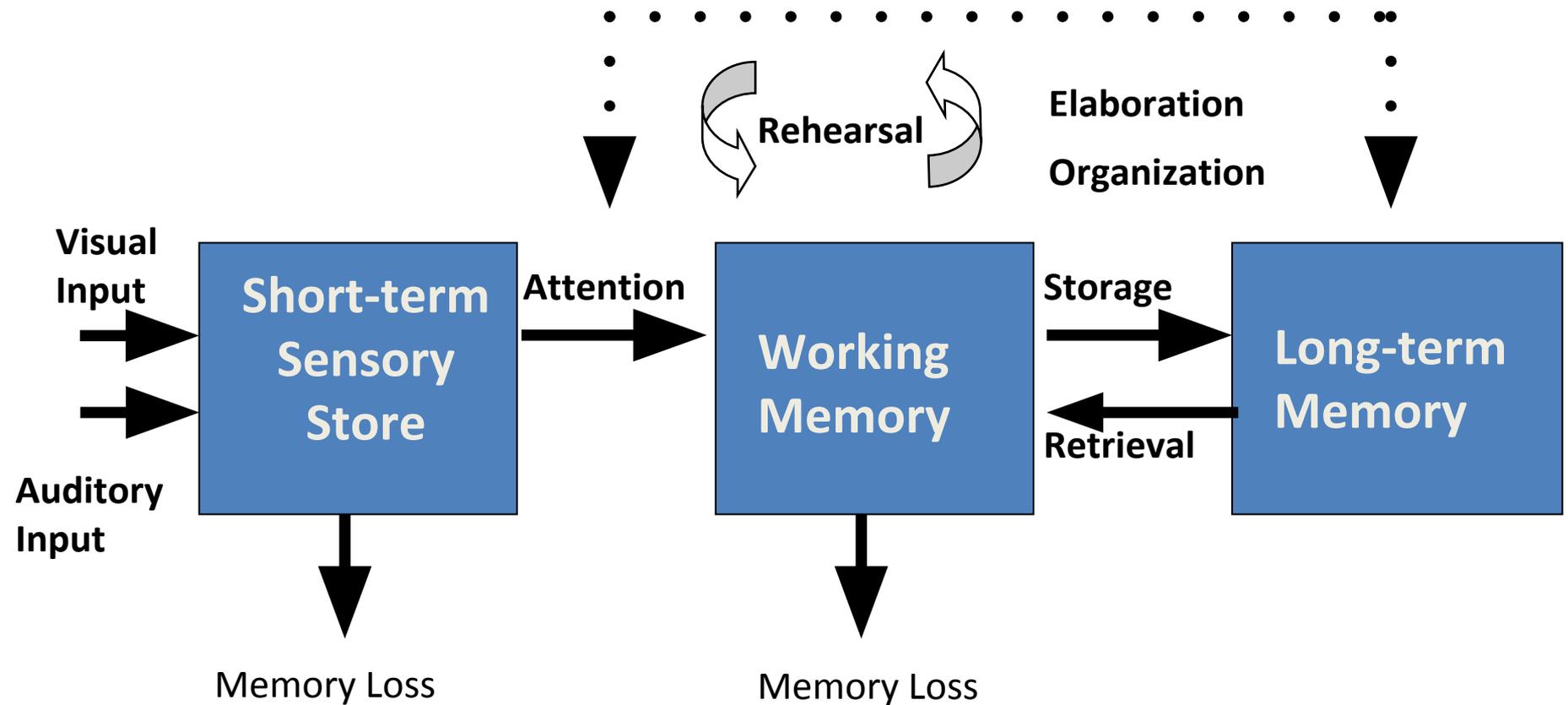
**Eliminate the break during class**

Yes

No



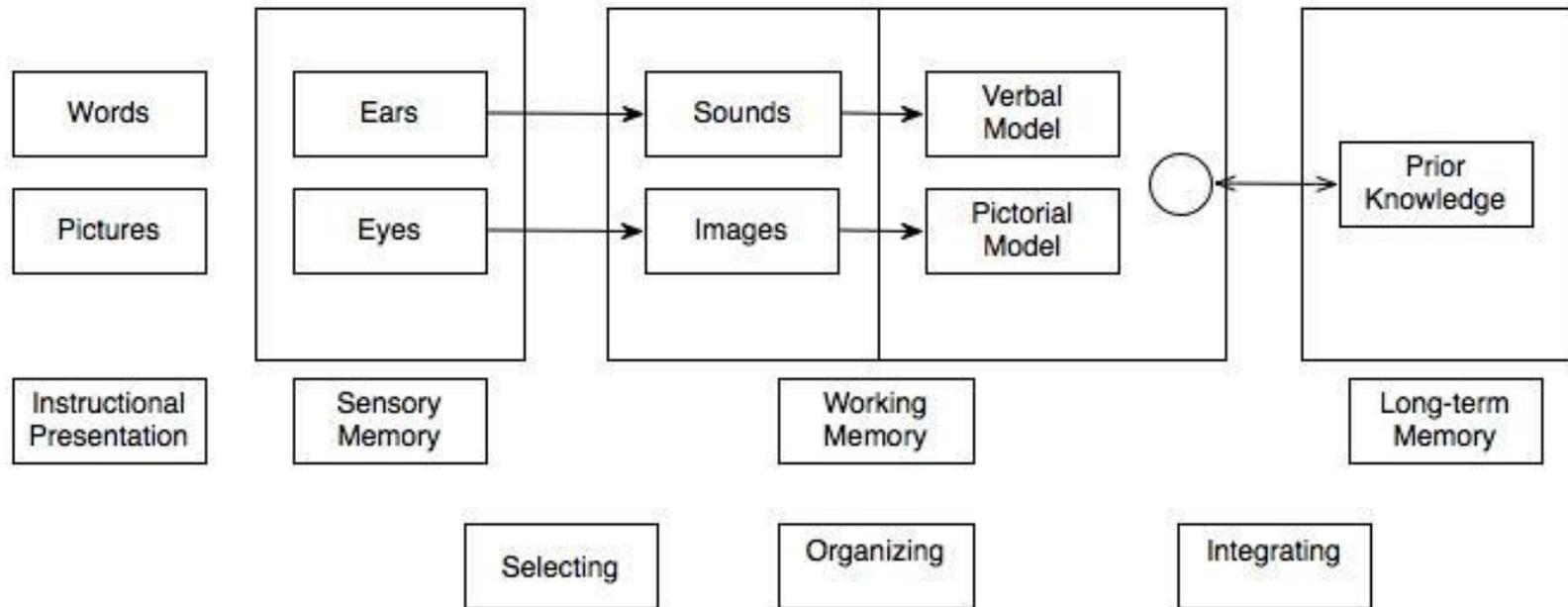
# A Model of the Information Processing System (IPS)



# Major Principles and Concepts of Cognitive Theories

- Behavior is based on cognition (the act of knowing or thinking about the situation in which the behavior occurs)
- How a person thinks affects how they behave and feel
- Focus on prior knowledge; how information is processed, structured, and organized in memory by each individual; and decision-making behaviors
- The goal of learning is to help students manage and control their own learning

# Information Processing Model



# Implications of CLT for Instruction



# Cognitive Load Theory

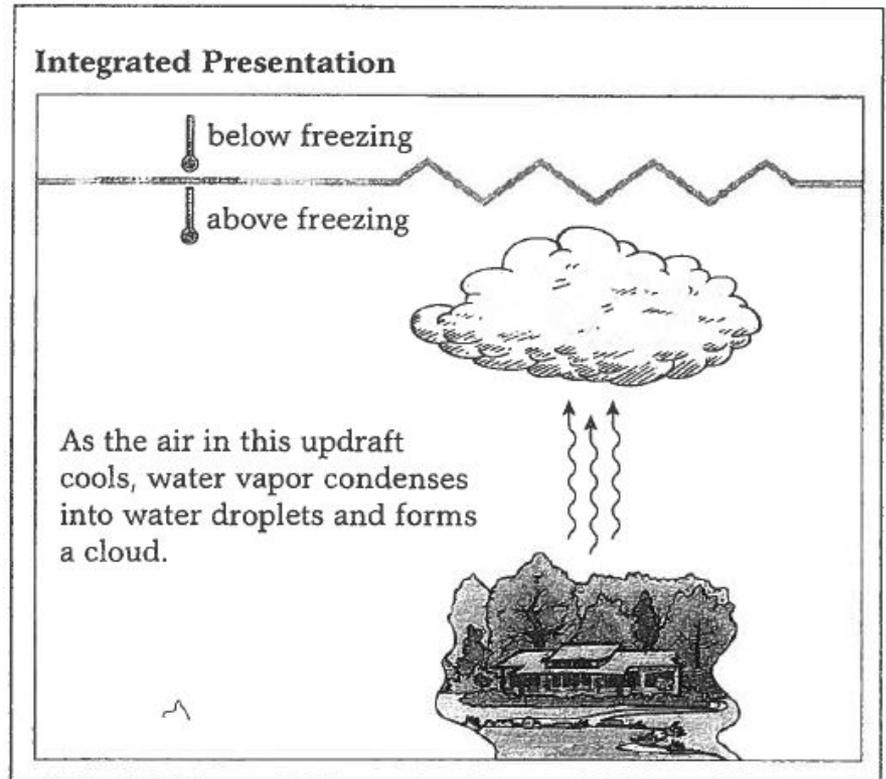
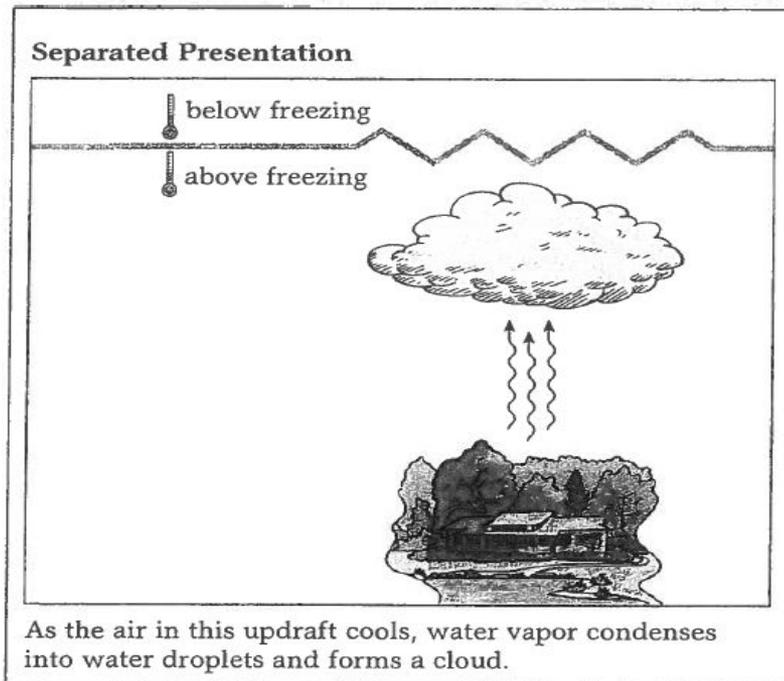
- Related to IPS theories and WM
- Some learning environments are more demanding of information processing and impose more demands on WM
- Types of cognitive load
  - Intrinsic
  - Extraneous
  - Germane

# Presentations

# What is Instructional Design?

- Design and facilitation of learning in different situations, contexts, and conditions.
- Takes into consideration both content (what is being taught) and pedagogy (how to teach the content).
- Learning may vary based on intended outcomes, values of those involved, and the conditions under which learning occurs.

# This is an example of...?



# Important Issues in Instructional Design

- Intrinsic, extraneous, and germane CL are additive
  - Total load cannot exceed WM resources for learning to occur
- Avoid overloading students during instruction, especially if the content of what is to be learned is complex (for the learner)
- Consider ways to increase germane cognitive load (e.g. metacognitive skills)

# Choice Article Discussion

1. What are the main points from the article?
2. What are the implications for instruction that come from the article you read?
3. How do these implications relate to the required articles for this unit?

# Small Group Discussion

- What were the main concepts from the readings for this week?
- Choice article discussion
  - Main points
  - Implications for instruction
- Complete handout: What instructional activities are recommended for:
  - Managing intrinsic cognitive load
  - Increasing germane cognitive load
  - Reducing extraneous cognitive load

# Identify instructional strategies for...

Managing  
Intrinsic Cognitive Load

Increasing  
Germane Cognitive Load

Reducing  
Extraneous Cognitive Load

# Instructional Design Activity

In groups, you will describe how you would teach someone how to do **one** of the following:

- Bake a cake
- Driving safety
- Recycling
- For **one** of the following age groups:
  - 4 to 5 year-olds, (except driving)
  - Adolescents (middle school students), and
  - Adults (over 35).

Your goal is to generate interest, avoid overloading your learner in the design of the learning task. Be prepared to present at least 2 strategies you would use to avoid cognitive overload for your students.

# Application Activity (continued)

1. Create a CTA with the main steps
2. Create a one-paragraph description to give your learners to explain the assignment.
  - *What information needs to be included that aligns with what you know about inquiry-based learning, cognitive task analysis, the development of expertise, and cognitive load theory?*
3. In addition, create a paragraph of recommendation for the instructor that addresses implementation of the assignment.
  - *What information needs to be included that aligns with the research you have read on effective instructional design?*
4. *Create a lesson plan applying the content to date*

## LEARNING ACTIVITIES

Instructional Sequence	Time (mins)	Description of the Learning Activity	Instructor Action/Decision (Supplantive)	Learner Action/ Decision (Generative)
Gain Attention				
Learning Objectives				
<b>Reasons for Learning</b> - Benefits - Risks				
<b>Overview</b> - Prior Knowledge - New Knowledge - Learning Strategies  (What you already know...what you are going to learn...and how you are going to learn it.)				
<b>Prerequisite Knowledge</b>				
<b>Learning Guidance</b> - Lecture - Demo.				
<b>Practice and Feedback</b>				
<b>Authentic Assessment</b>				
<b>Retention and Transfer</b>				
<b>Big Ideas</b>				
<b>Advance Organizer for the Next Unit</b>				
<b>Total Time</b>				

# Final Project Planning

- Upload the template into your Google Doc shared folder
- Open as a Google Doc
- Plan how you will complete the final project
- Recall that the final project also includes a video presentation upload by a specific date
- Insert dates and names to sections, etc.
- Decide how will you communicate and collaborate?

Questions?

# For Next Week

- Unit 5 Learning Objectives and Assessment
- Empirical article oral and written presentation
- Synthesis paragraph due by the beginning of class