Make It Stop!

Avoiding Cognitive Overload for Impactful Learning Experiences

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Applestar Productions
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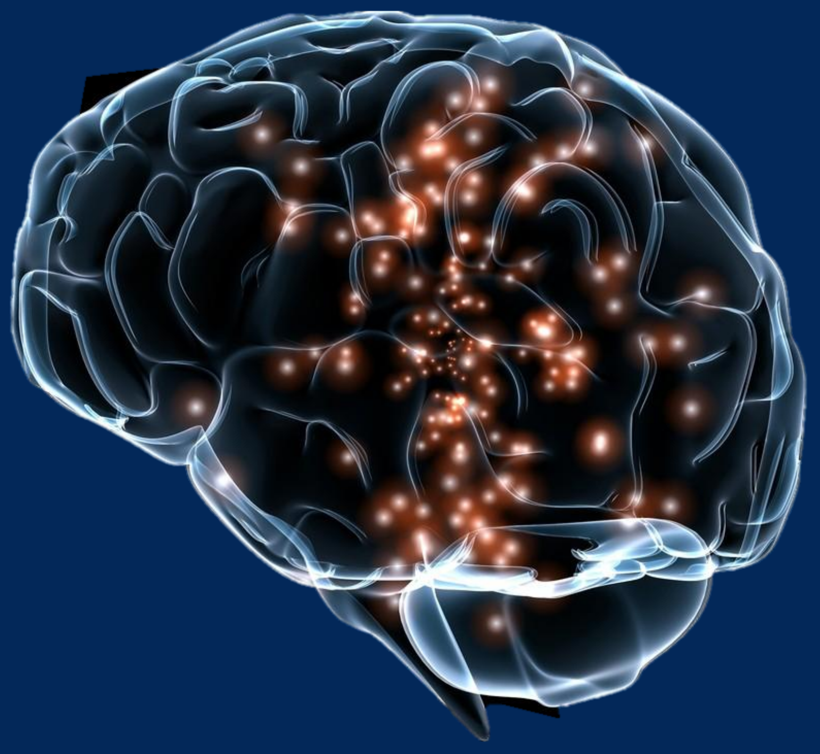
Where We're Going

01 Know the Implications of Cognitive Load Theory

02 Know your goal

03 Hands on Practice to Make it Stop

HOW DOES LEARNING WORK?



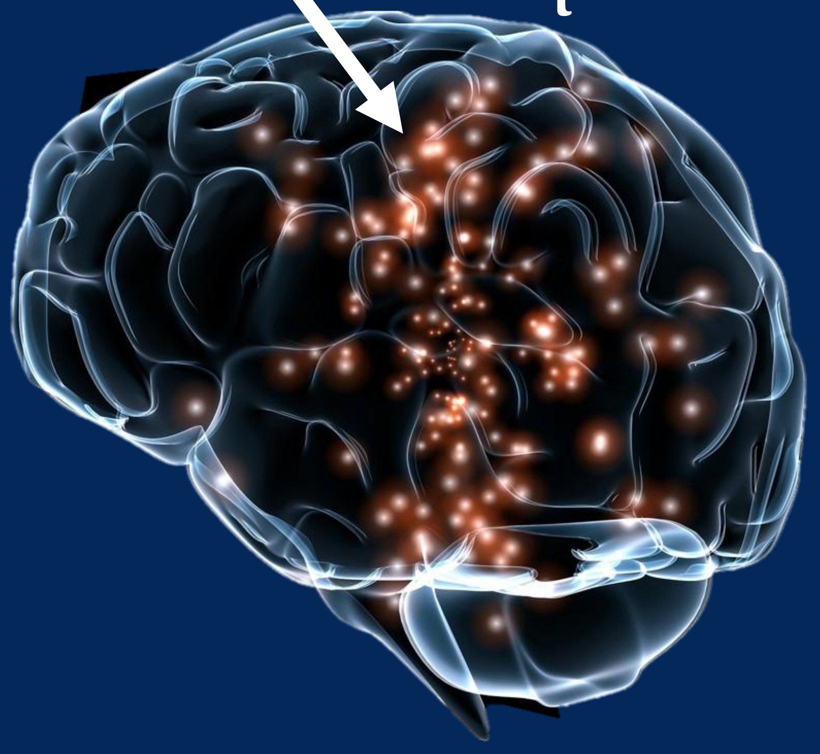
INPUT

Magical Thinking

LONG TERM MEMORY

Just because you taught it doesn't mean they caught it.

SENSORY INPUT
Seeing
Hearing
Touching

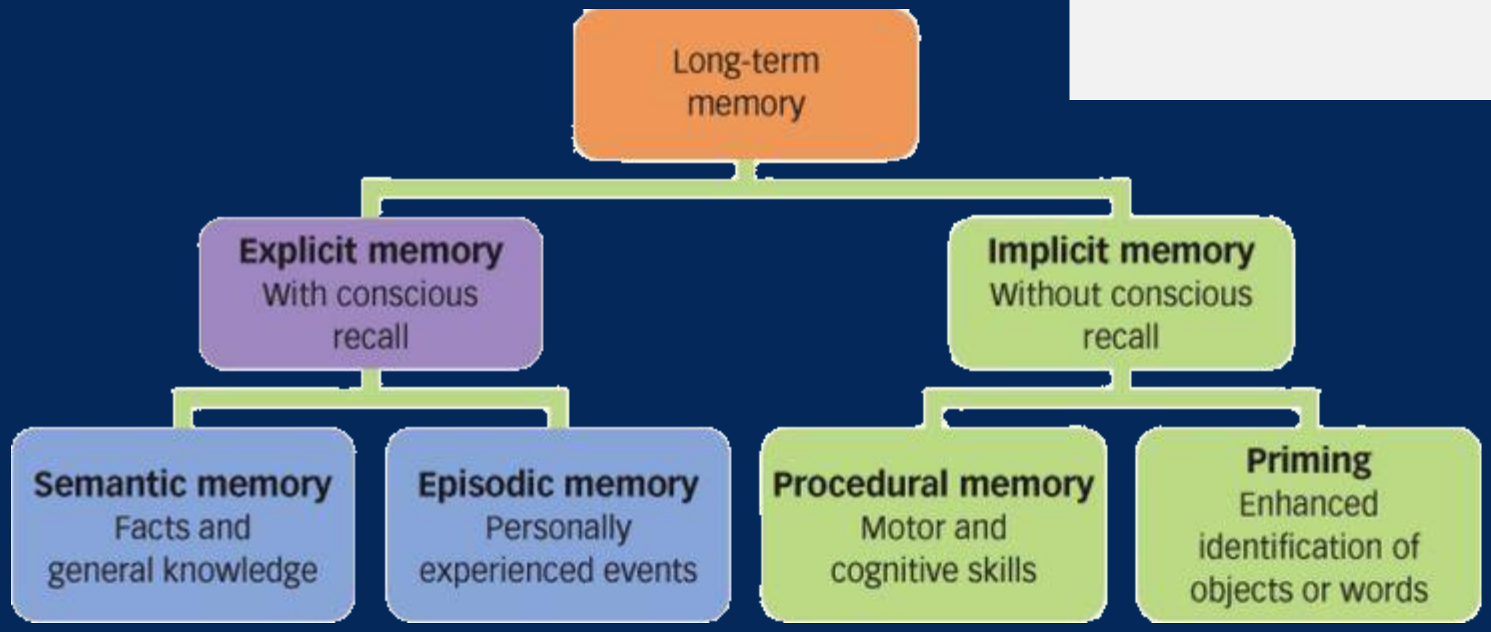


Attention:
Keep or Discard?

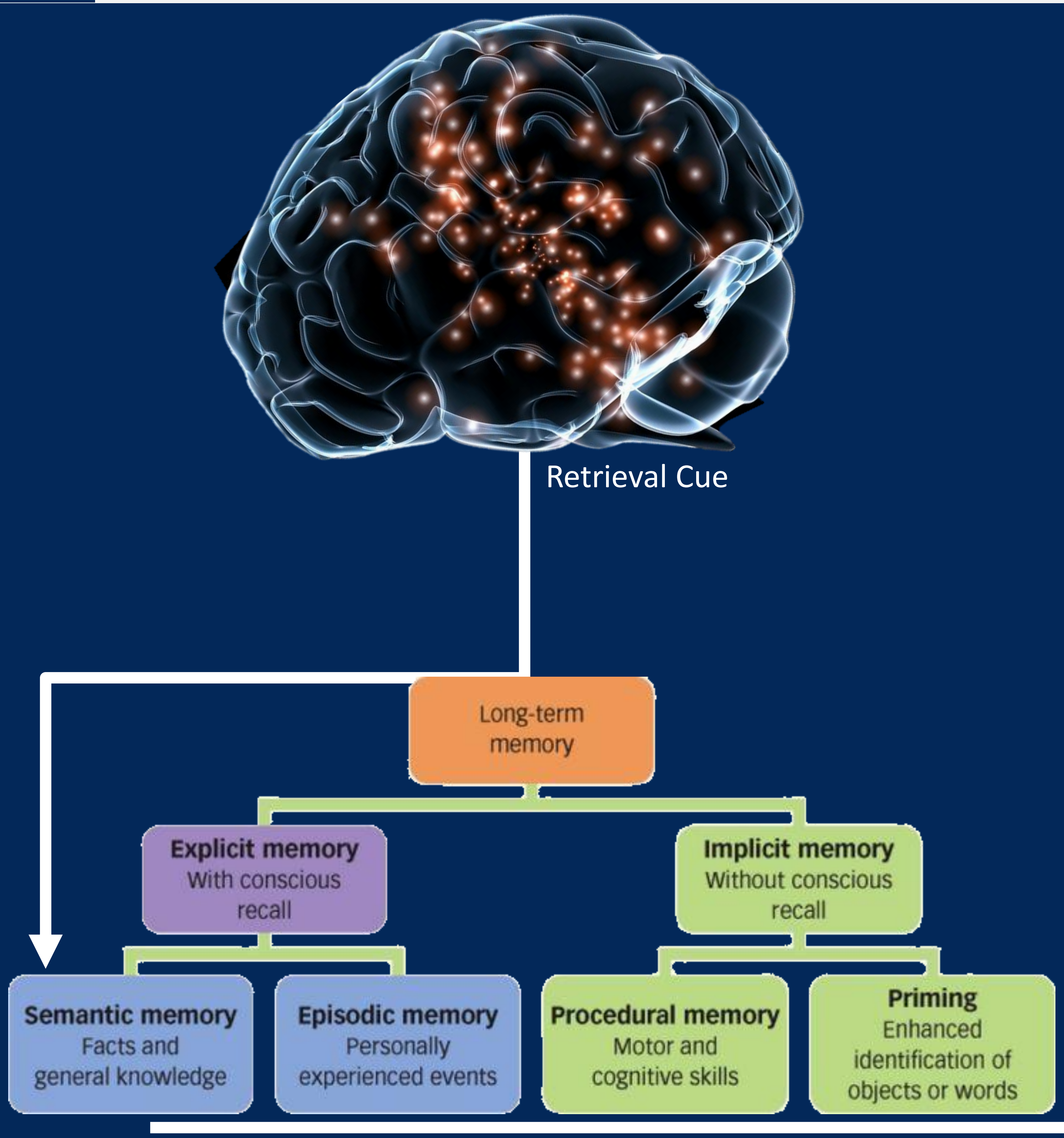
KEEP

WORKING MEMORY
Filter
Organize
Assign meaning
Categorize

LONG TERM MEMORY



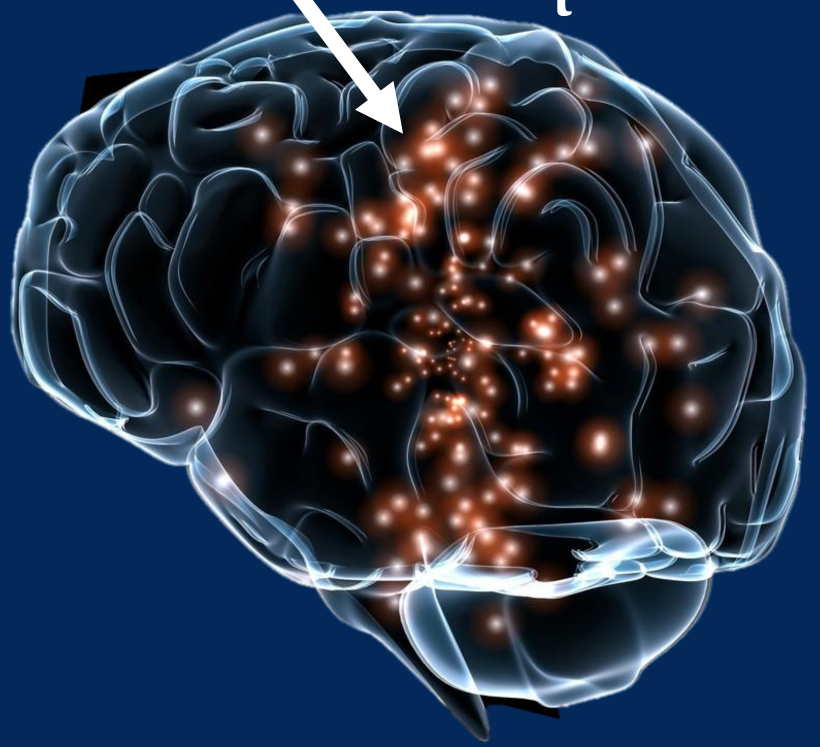
RETRIEVING INFORMATION



WORKING MEMORY

SENSORY INPUT
Seeing
Hearing
Touching

Attention:
Keep or Discard?

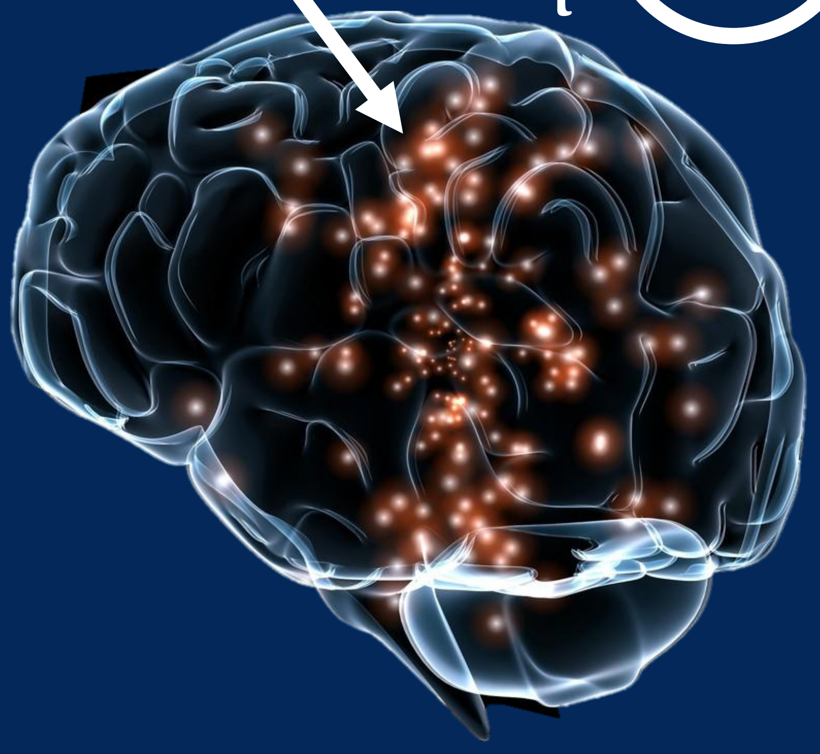


Discard

POOF!

SENSORY INPUT
Seeing
Hearing
Touching

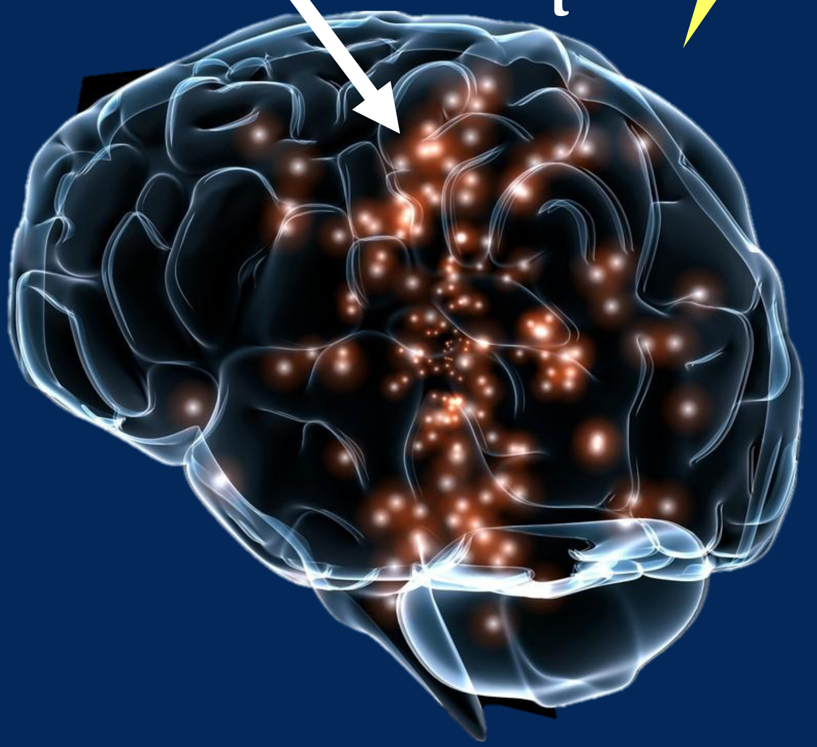
Attention:
Keep or Discard?



Boring
Overly complex
Irrelevant

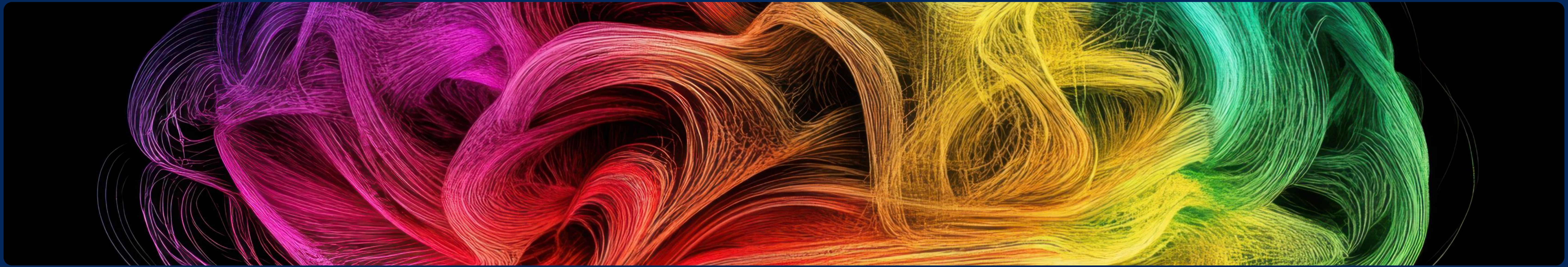
SENSORY INPUT
Seeing
Hearing
Touching

Attention:
Keep or Discard?



Confusing
Disjointed
Overwhelming

STOP the Madness!



Managing Cognitive Load

Effective instructional design minimizes cognitive overload for better learning experiences

Cognitive Load

Understanding how working memory impacts learning effectiveness

01

Cognitive Load Theory highlights the **limitations of working memory** during learning.

02

Overloading working memory leads to **confusion and frustration**, hindering effective learning outcomes.

03

Managing cognitive load allows learners to build **lasting knowledge** through focused instruction.

Types of Cognitive Load

Understanding the three types of cognitive load enhances learning effectiveness.

01

Intrinsic Load refers to the natural complexity of the content being learned.

02

Extraneous Load occurs when information is poorly presented, causing unnecessary mental effort.

03

Germane Load is the effort to organize and make sense of the material learned.

MANAGING INTRINSIC LOAD

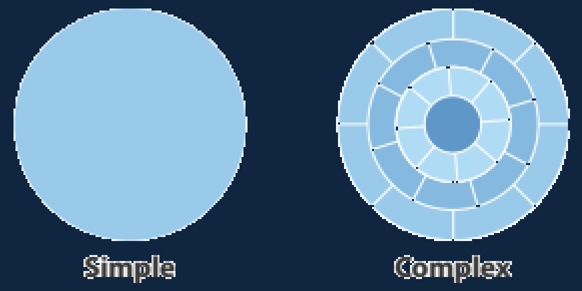
Inherent difficulty of the material

CHUNKING

Break the information down into small manageable pieces

CONNECT TO FAMILIAR

Help to build schemas

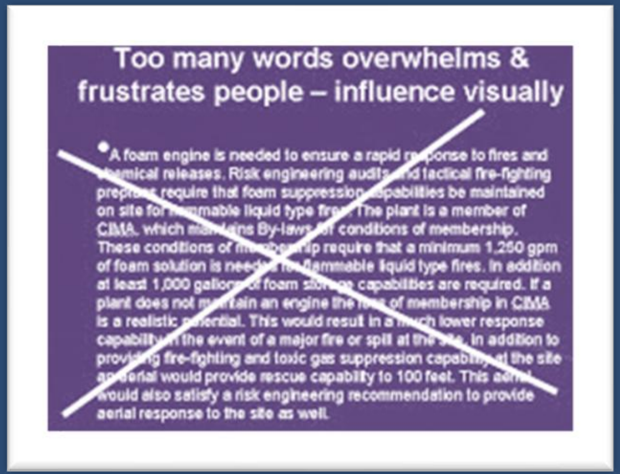


GRADUALLY INCREASE COMPLEXITY

Scaffold and chain the learning simple to complex

MANAGING EXTRINSIC LOAD

Presentation of material



KEEP IT SIMPLE & FOCUSED

Think of slides like billboards: one concept, quickly grasped

ELIMINATE THE FLUFF

No extraneous images, sounds, text, animations

GRADUALLY INCREASE COMPLEXITY

Review and scaffold the learning simple to complex

MANAGING GERMANE LOAD

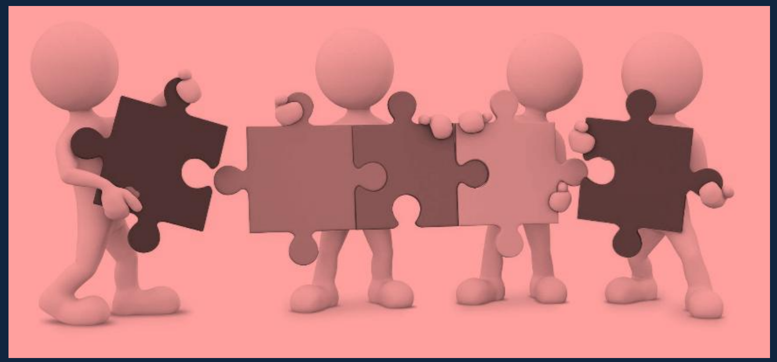
Engage with the knowledge

PROVIDE PRACTICE

Apply what they are using to real situations

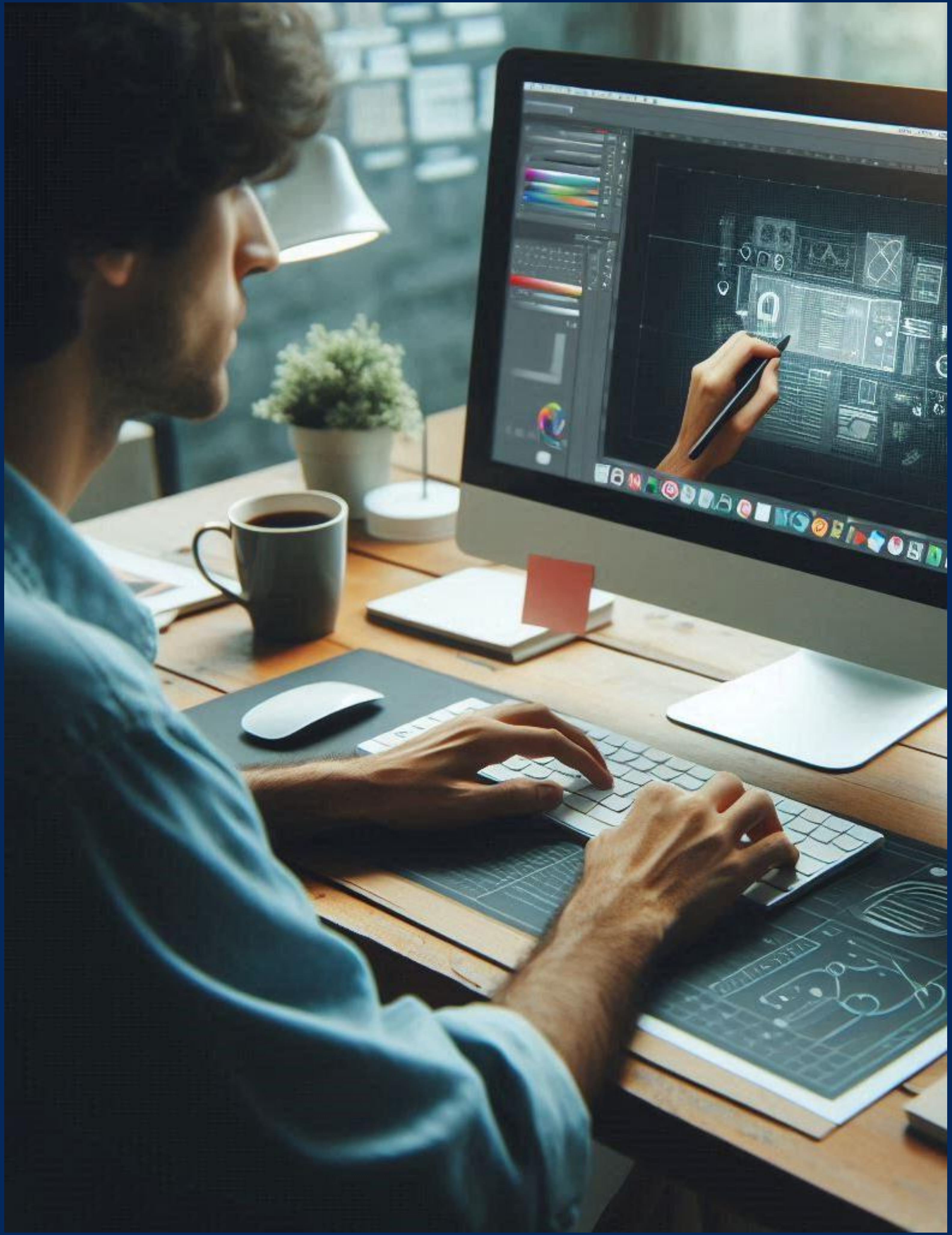
HELP BUILD MENTAL MODELS

Use mindmaps, outlines, pneumonics, metaphors



MAKE CONNECTIONS

Connect new information to existing information, build and synthesize



Follow the rules!

Richard Mayer’s 12 Principles of Multimedia Learning

Goals of Richard Mayer's 12 Principles of Multimedia Learning

Reduce extraneous processing

Manage essential processing

Foster generative processing

Reduce extraneous processing

01 Coherence Principle

Exclude extraneous words, pictures, and sounds.

02 Signaling Principle

Highlight essential material using cues (arrows, bolding, headings, etc.).

03 Redundancy Principle

Do not present identical information in multiple forms (e.g., spoken narration and on-screen text simultaneously).

04 Spatial Contiguity Principle

Place related text and pictures close together.

Reducing extraneous processing

Temporal Contiguity Principle

05

Present corresponding words and pictures simultaneously rather than successively.

Reduce extraneous processing

1. **Coherence Principle**
2. **Signaling Principle**
3. **Redundancy Principle**
4. **Spatial Contiguity Principle**
5. **Temporal Contiguity Principle**

Manage essential processing

06 Segmenting Principle

Break content into learner-paced segments rather than continuous units.

07 Pre-training Principle

Provide learners with names and characteristics of key concepts before the main lesson.

08 Modality Principle

Present words as spoken narration rather than on-screen text when paired with graphics.

Foster generative processing

Multimedia Principle

09

People learn better from words and pictures than from words alone.

Personalization Principle

10

Use a conversational style rather than a formal style.

Voice Principle

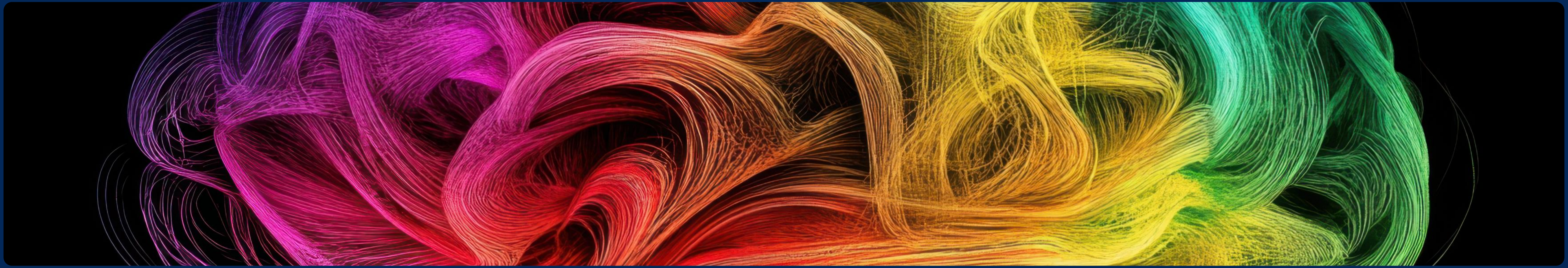
11

Use a human voice rather than a machine-synthe-sized voice.

Image Principle

12

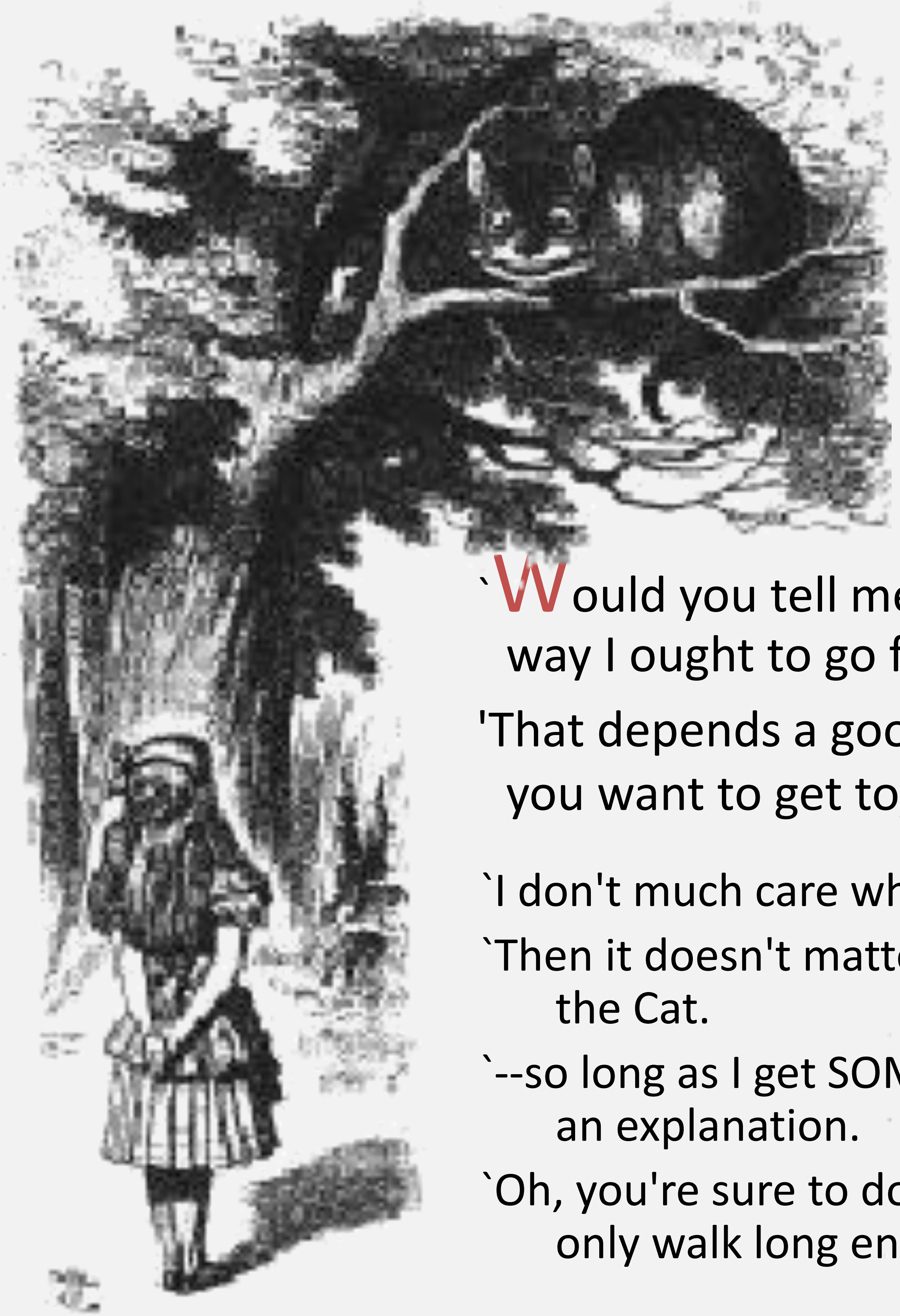
The speaker’s image on screen does not necessarily improve learning.



Know Where You’re Going

Effective instructional design builds toward a goal

Where are you going?



`Would you tell me, please, which way I ought to go from here?'

'That depends a good deal on where you want to get to,' said the Cat.

`I don't much care where--' said Alice.

`Then it doesn't matter which way you go,' said the Cat.

`--so long as I get SOMEWHERE,' Alice added as an explanation.

`Oh, you're sure to do that,' said the Cat, `if you only walk long enough.'"

DEFINE YOUR GOAL

In the end, the learner will know __________ and be able to ________________

GOAL → OUTCOMES → OBJECTIVES

It should solve a problem.

You avoid cognitive overload when you know where you're going

HOW WILL YOU ASSESS IT?

How will they show that they know and can do it?

GOAL → OUTCOMES → OBJECTIVES

GOAL	OUTCOMES	OBJECTIVES
↑	↑	↑
Assess	Assess	Assess

You avoid cognitive overload when you keep the main thing the main thing

HOW WILL THEY LEARN IT?

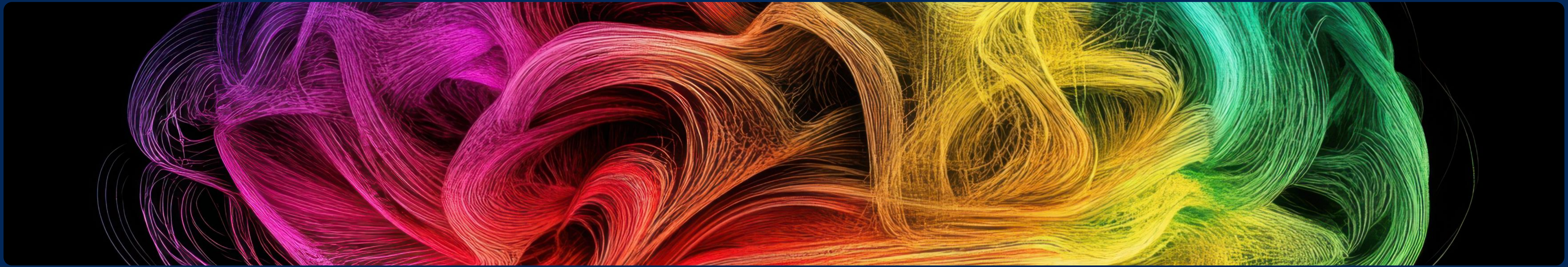
How will you teach it?

Add content and activities to each objective.

GOAL → OUTCOMES → OBJECTIVES

↑ Assess ↑ Assess ↑ Assess

You avoid cognitive overload when you build from a framework that points everything to the goal.



Let’s STOP THE MADNESS

Practice activity cleaning up a mess

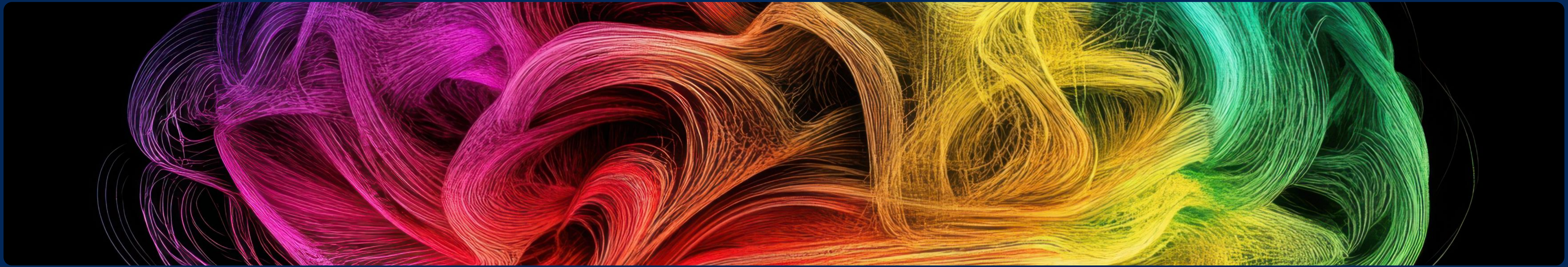
PRACTICE OPTIONS

Find a partner or make a small group

Rev up an all-text PowerPoint

Edit an AI Generated Mess in Google Slides

Start from Academic Journals and build workable lecture



Thanks for coming!

Remember to complete your evaluation.

✭Jean Marrapodi ✭ www.applestar.org ✭ jmarrapodi@applestar.org ✭

Goal

In the end the learner will be able to select, assemble and measure ingredients to

***Prerequisite**: Learner can read a recipe*

Outcomes

Learner will be able to:

- Assemble correct ingredients and supplies
- Accurately measure ingredients and prepare for baking
- Bake to proper doneness

Objectives

Learner will be able to:

- Locate correct supplies in pantry
- Locate correct supplies in refrigerator
- Locate measuring tools, bowls & baking pans
- Measure liquid items
- Measure dry items
- Use appropriate tools for mixing
- Mix to appropriate consistency
- Pour appropriate amount into pan
- Set oven temperature
- Identify time in recipe
- Locate and set oven timer
- Determine doneness and adjust recipe

Goal

Assessment

In the end the learner will be able to select, assemble and measure ingredients to bake blueberry muffins

Prerequisite: *Learner can read a recipe*

Outcomes

Learner will be able to:

Assemble correct ingredients and supplies
Assessment

Accurately measure ingredients and prepare for baking
Assessment

Bake to proper doneness
Assessment

Objectives

Learner will be able to:

- Locate correct supplies in pantry → Assessment
- Locate correct supplies in refrigerator → Assessment
- Locate measuring tools, bowls & baking pans → Assessment
- Measure liquid items → Assessment
- Measure dry items → Assessment
- Use appropriate tools for mixing → Assessment
- Mix to appropriate consistency → Assessment
- Pour appropriate amount into pan → Assessment
- Set oven temperature → Assessment
- Identify time in recipe → Assessment
- Locate and set oven timer → Assessment
- Determine doneness and adjust recipe → Assessment

Objectives

Learner will be able to:

Assessment

In the end the learner will be able to select, assemble and measure ingredients to bake blueberry muffins

Assemble correct ingredients and supplies

Assessment

Locate correct supplies in pantry

Content
Activities
Assessment

Locate correct supplies in refrigerator

Content
Activities
Assessment

Locate measuring tools, bowls & baking pans

Content
Activities
Assessment

Add content and activities to each objective.

Contact us today!

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