Improve Student Learning Outcomes with the

ELAP

Learning Taxonomy

1

THE ELAP LEARNING TAXONOMY

2

What would you like to **see at next year's ABMP** School Forum?

3

Wrong!

The ELAP Learning Taxonomy is based on lots of learning theory and instructional design theory.

4

39 Student Behaviors that Create Obstacles to Teaching and Learning

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What is the most important thing that teachers should do in their classrooms to improve learning outcomes?

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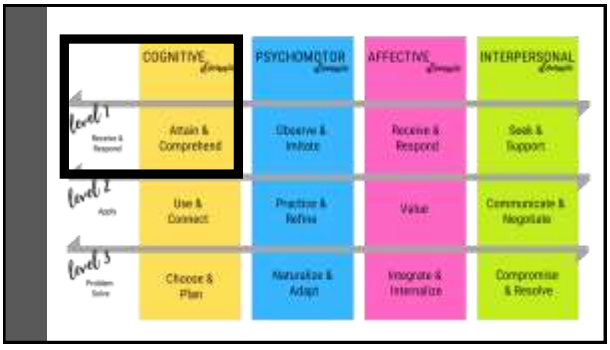
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PSYCHOMOTOR
AFFECTIVE
INTERPERSONAL
level 1
Attain & Comprehend
Observe & Imitate
Receive & Respond
Seek & Support
level 2
Use & Connect
Practice & Refine
Value
Communicate & Negotiate
level 3
Choose & Plan
Automatize & Adapt
Integrate & Internalize
Compromise & Resolve

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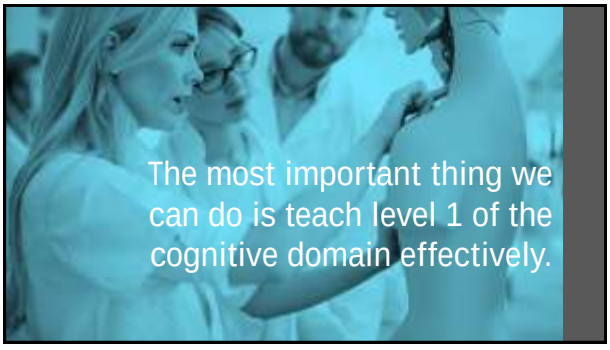
The most important thing we can do is teach level 1 of the cognitive domain effectively.

8


Consciously build learner's
mental representations of basic massage concepts
and anchor them in memory.

9


Designing Exceptional Learning Experiences

10


THE ELAP LEARNING TAXONOMY
COGNITIVE
PSYCHOMOTOR
AFFECTIVE
INTERPERSONAL
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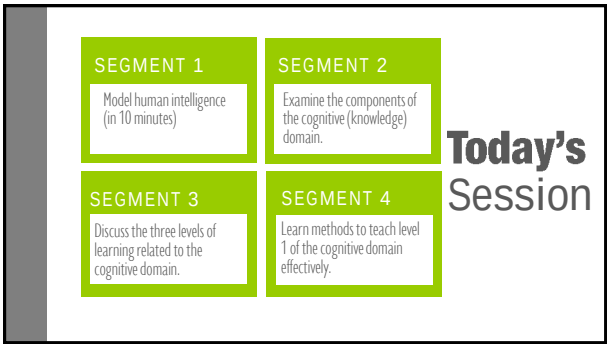
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Model human intelligence (in 10 minutes)
SEGMENT 2
Examine the components of the cognitive (knowledge) domain.
SEGMENT 3
Discuss the three levels of learning related to the cognitive domain.
SEGMENT 4
Learn methods to teach level 1 of the cognitive domain effectively.
Today's Session

12

Session 1. → Session 2.

13

Today's Session

- SEGMENT 1: Model human intelligence (in 10 minutes)
- SEGMENT 2: Examine the components of the cognitive (knowledge) domain.
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- SEGMENT 4: Learn methods to teach level 1 of the cognitive domain effectively.

14

Segment 1. Model Human Intelligence (in 10 Minutes)

15

Relevant learning theories and education theories date to the 1930s.

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Neuroscience

Research is producing new models of thought, emotion, and learning at an accelerated pace.

17

WHY?

Why has there been such a huge expansion into research related to modeling the human brain?

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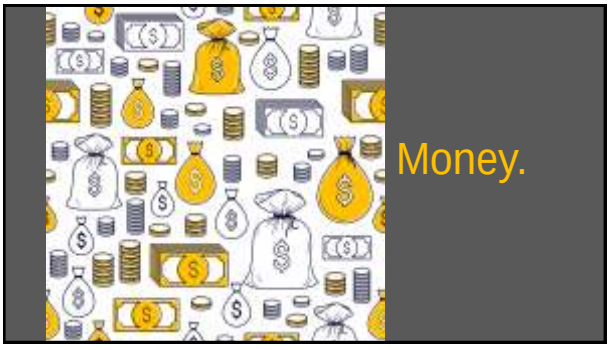

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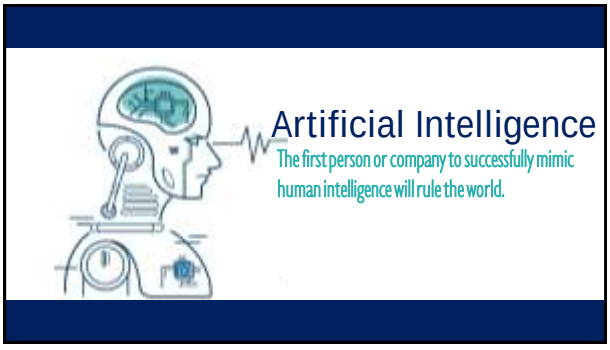

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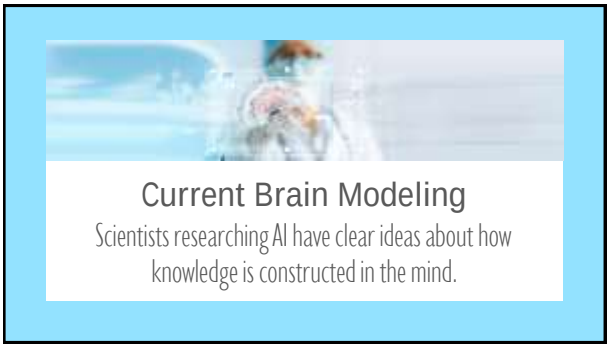

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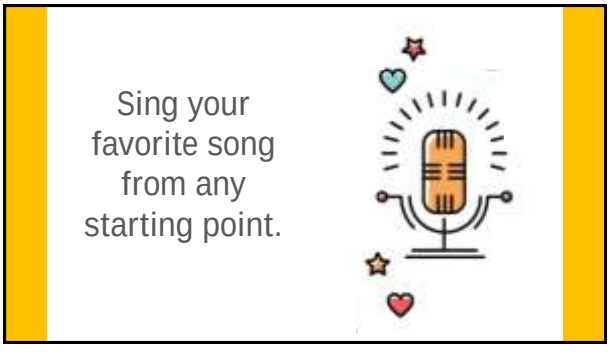

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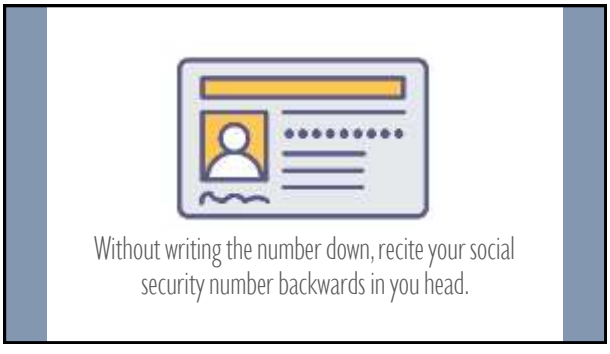

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We Learn and Store Information in Sequences.

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One of you tell the other the plot of your favorite movie in just one minute.

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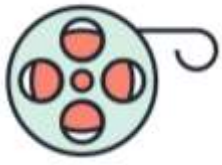

Did your partner convey the plot points in such a way that you understood the beginning, the middle, and the end of the movie?

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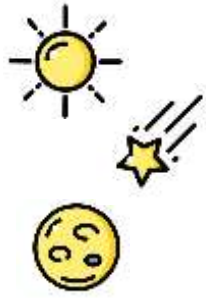

The human brain is hard-wired to look for patterns.

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The beginning, middle, and end of a story is a pattern used since ancient times to help humans learn.

29

Pattern recognition is our brain's core capability.

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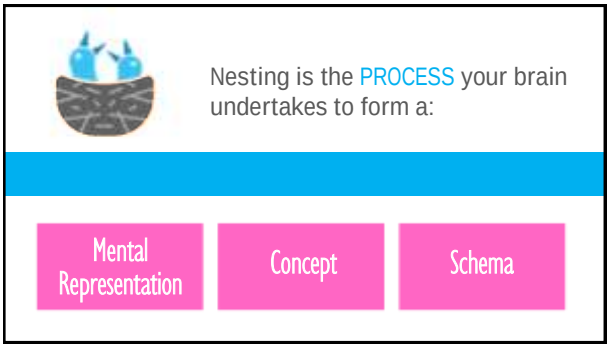

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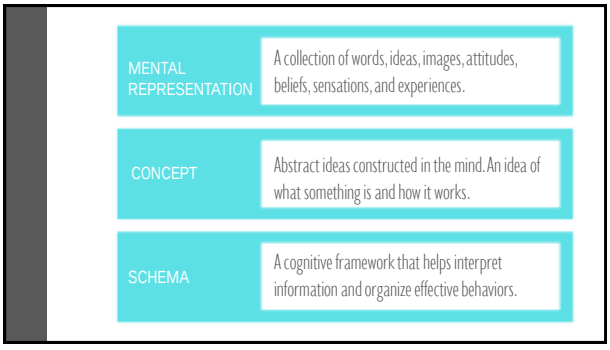

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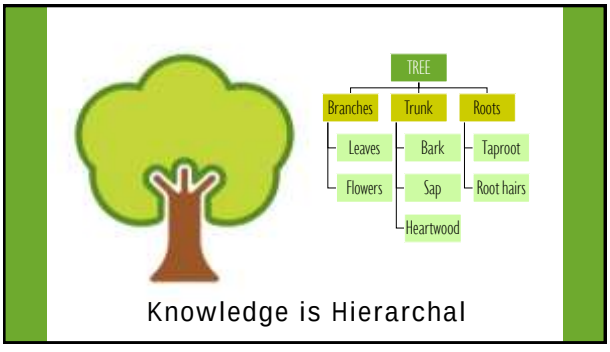

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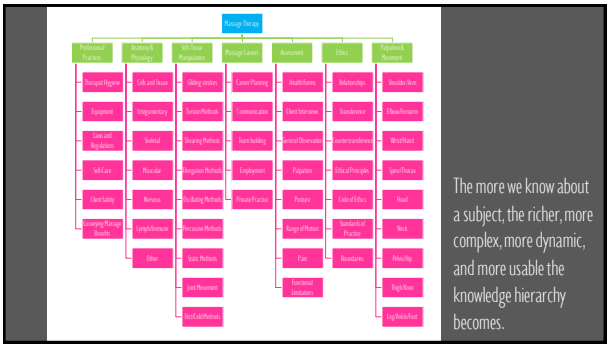

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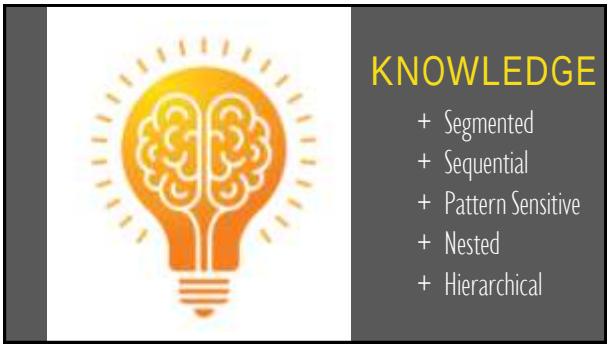

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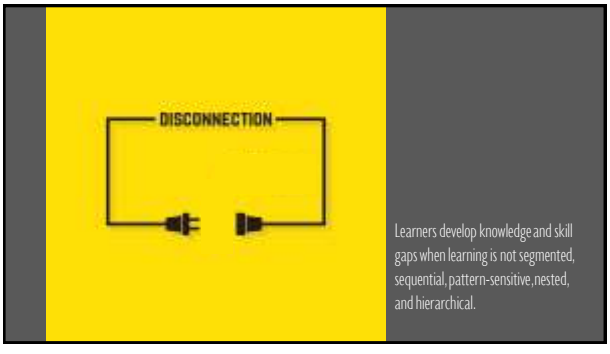

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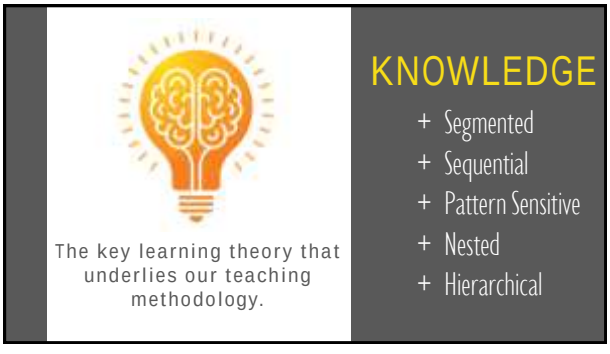

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+ Segmented
+ Sequential
+ Pattern Sensitive
+ Support the nesting process to build functional concepts and knowledge hierarchies

LESSONS

43

Question

Knowledge is learned and stored in segments. What does this statement suggest about the ideal structure of the lessons we teach?

?

44

Answer

Break down concepts into component parts (segments).	Starting with the simplest part, rebuild concepts segment by segment.	The simplest part of a concept is a term and its definition.

45

Question

Knowledge is pattern sensitive. What does this statement suggest about the ideal structure of the lessons we teach?

?

46

Answer

We should approach content systematically (be predictable).	Protocols should be defined and reinforced.	When appropriate, categorize, type, group, and sort content.

47

Segment

1. Model Human Intelligence (in 10 Minutes)

48

49

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Today's Session

50

Segment

2.

Examine the Components of the Cognitive (Knowledge) Domain

51

Learning Domain

A specific area (or kingdom) of inquiry, activity, feeling, or behavior.

52

Cognitive (Knowledge) Domain

Learning related to the acquisition of information, understanding, and mental skills.

53

Components of the Cognitive Domain

+ Terms
+ Concepts
+ Using Concepts
+ Connecting Concepts
+ Problem Solving

54

Components of the Cognitive Domain

- TERMS
- Concepts
- Using Concepts
- Connecting Concepts
- Problem Solving

55

ADRENALS
Endocrine glands located superior to each kidney.

HOMEOSTASIS
The tendency of the body's internal environment to remain relatively constant.

MUSCLE SPASM
An involuntary contraction of a muscle that often causes pain.

MASSAGE
The therapeutic manipulation of soft-tissue structures.

Terms
are words that have exact meanings.

56

You need 2,400 terms to speak massage conversationally.

57

"Humans think in words and pictures. A thought unembodied by words, remains a shadow."
Lev Vygotsky

58

Components of the Cognitive Domain

- Terms
- CONCEPTS
- Using Concepts
- Connecting Concepts
- Problem Solving

59

Concepts

Abstract ideas constructed in the mind.

An idea of what something is and how it works.

60

Concepts are Mental Representations

- Words & Images
- Facts & Examples
- Beliefs & Attitudes
- Physical Sensations
- Emotions
- Experiences

61

ETHICS

+ Words
+ Images
+ Facts & Examples
+ Beliefs & Attitudes
+ Physical Sensations
+ Emotions
+ Experiences

62

The more chicks in the nest, the more functional the concept.

Lower conceptual functionality; fewer chicks in the nest.

Higher conceptual functionality; more chicks in the nest.

63

Components of the Cognitive Domain

+ Terms
+ Concepts
+ USING CONCEPTS
+ Connecting Concepts
+ Problem Solving

64

Using Concepts

When you can apply concepts in new ways and in new situations.

DISCUSSING IDEAS | GENERATING QUESTIONS | COMPARING OR CONTRASTING | IDENTIFYING IDEALS

65

Components of the Cognitive Domain

+ Terms
+ Concepts
+ Using Concepts
+ CONNECTING CONCEPTS
+ Problem Solving

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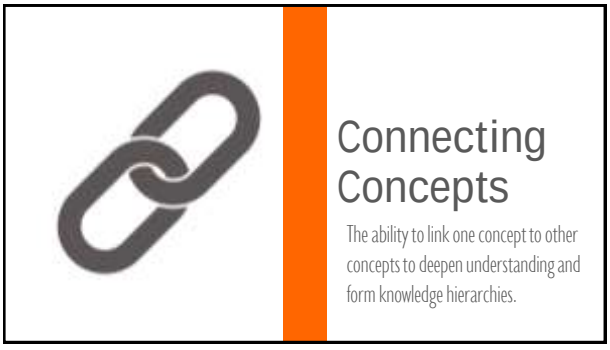

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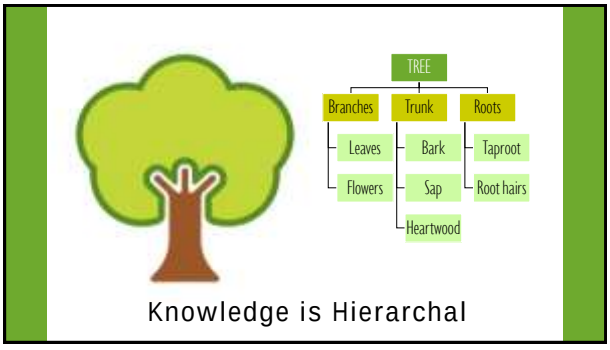

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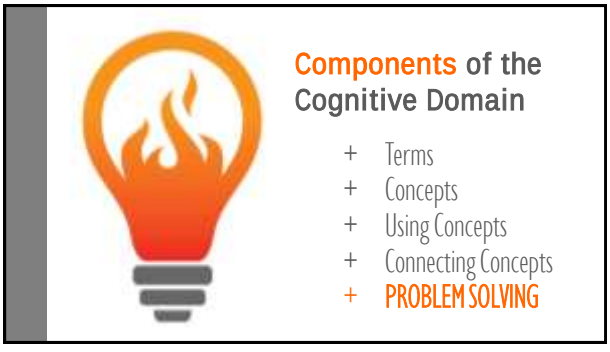

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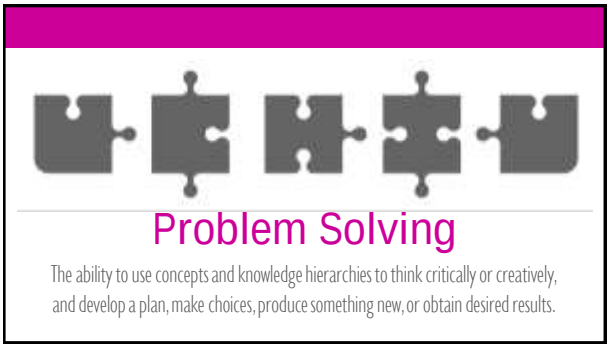

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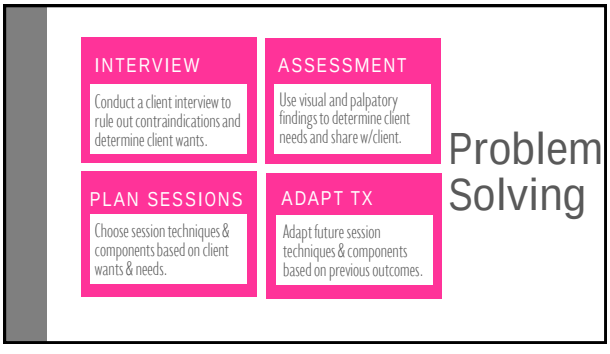

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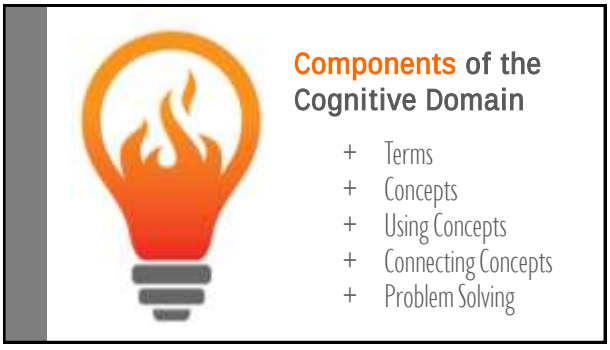

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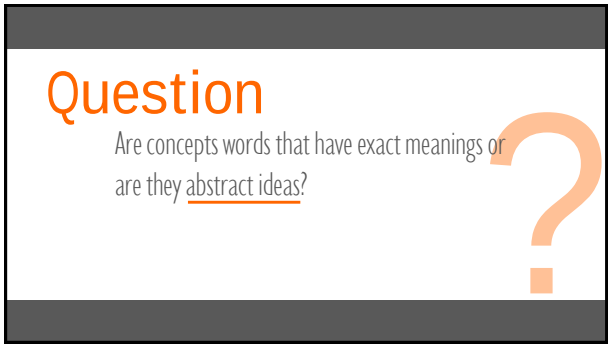

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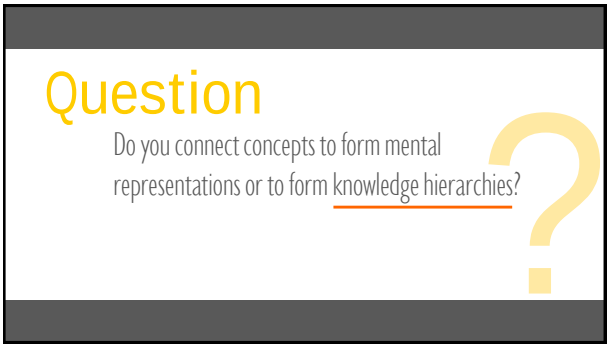

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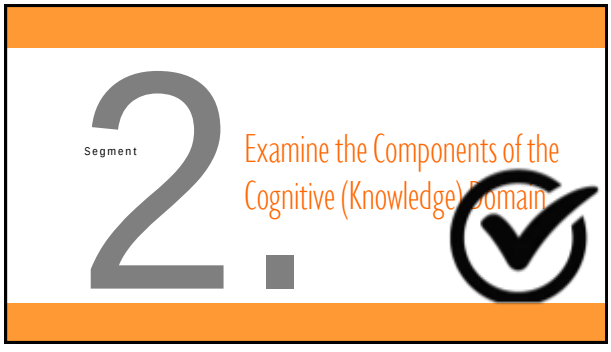

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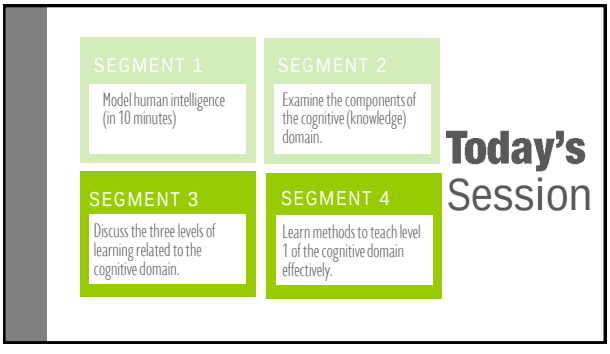

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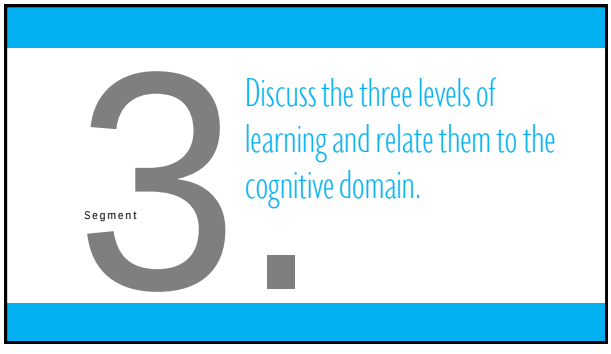

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Learning happens at three levels (in all domains).

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Level 1 Introduction to New Content

Level 2 Gaining Experience

Level 3 Demonstrating Competence

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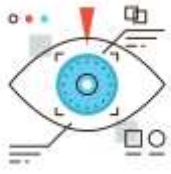


LEVEL ONE
RECEIVE AND RESPOND

Pay attention and understand what you are thinking, observing, feeling, or seeking.

81

WHAT HAPPENS at level 1 of the cognitive domain?

Learners are introduced to new words (terms)…

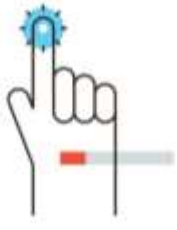
…and through participation in learning experiences they turn…

…new words into basic mental representations (concepts).

82

LEVEL TWO: APPLY

Apply concepts, hands-on skills, language, and behaviors in new ways or new situations.



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WHAT HAPPENS at level 2 of the cognitive domain?

Learners use the basic concepts they formed at level 1 in learning

…experiences that connect them to other concepts…

… and turn them into knowledge hierarchies.

84

LEVEL THREE PROBLEM SOLVING

Use concepts and hands-on skills to make choices, choose options, or adapt to situations in the moment.

85

WHAT HAPPENS at level 3 of the cognitive domain?

Learners use the concepts and knowledge hierarchies they formed at level 2…

in learning experiences…

…that require them to choose, plan, adapt and assess outcomes.

86

Level 1	Terms	Concepts
Level 2	Using Concepts	Connecting Concepts
Level 3		Problem Solving

87

Question

What level do teachers skip (or skim) over the most causing learners to develop knowledge gaps?

88

Answer: Level 1

Teachers fail to teach terminology explicitly and systematically.

Teachers fail to consciously build basic functional concepts.

Teachers fail to "rehearse" level 1 content to anchor learning.

89

Question

At which level do we build mental representations of basic massage therapy concepts.

90

Answer: Level 1

We start to build the mental representations of basic massage concepts at level 1. However, we enrich and deepen them at level 2 and level 3.

91

Question

Does all of the content we teach in entry-level massage education need to be taught to level 3?

92

Answer: No.

In fact, some content is only taught to level 1. The Entry-Level Analysis Project (ELAP) is helpful if you want to determine the recommended level to teach particular topics.

93

Segment 3.

Discuss the three levels of learning and relate them to the cognitive domain.

94

Stretch Break

95

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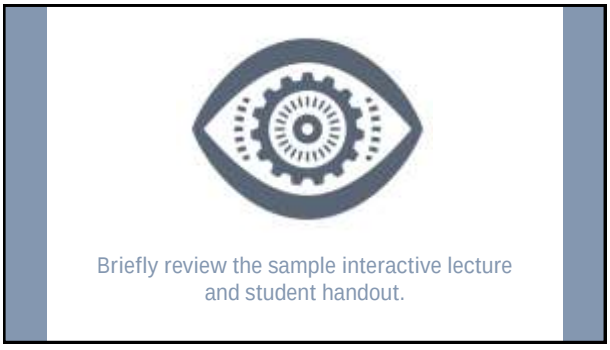

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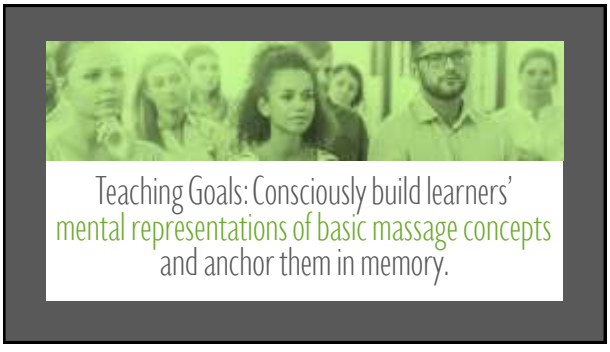

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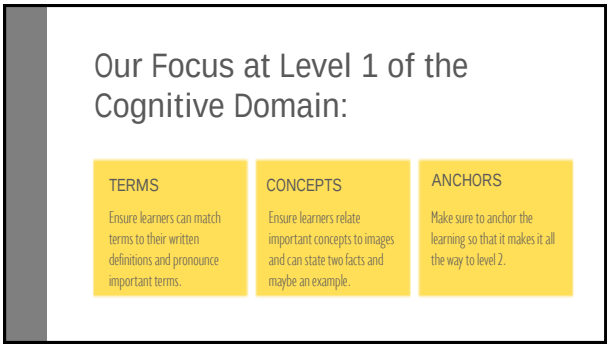

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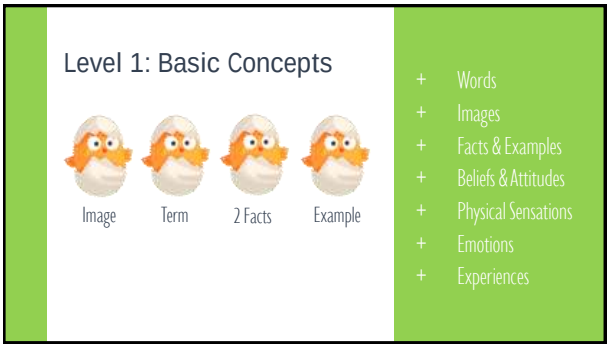

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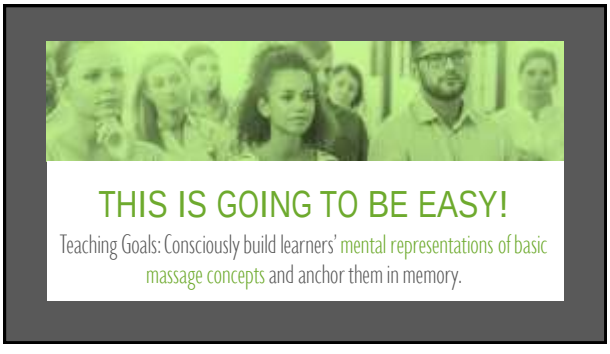

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There is nothing harder than teaching level 1 of the cognitive domain.

Wrong!

Helping learners build functional mental representations of important concepts is tricky.

103

We'll use consistent methods to teach level 1 cognitive content.

104

4.

These are the teaching methods we'll use to teach level 1 of the cognitive domain effectively.

105

Number 1 Prime Learners for Learning	Number 2 Establish Context for Learning	Number 3 Teach Terminology Explicitly & Systematically
Number 4 Consciously Build Basic Concepts	Number 5 Add Scaffolding to Everything	Number 6 Drill and Practice Level 1 Regularly

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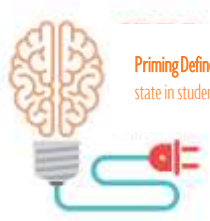

Priming Defined: Methods that facilitate an open and focused body-mind state in students to enhance their receptivity to new information.

NUMBER 1
Prime Learners for Learning

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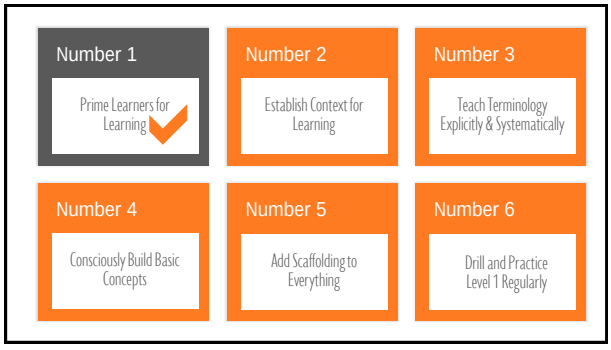

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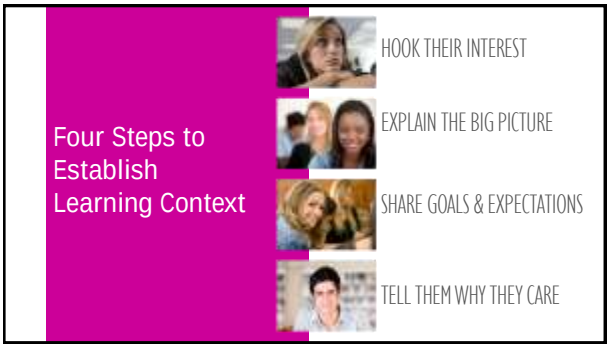

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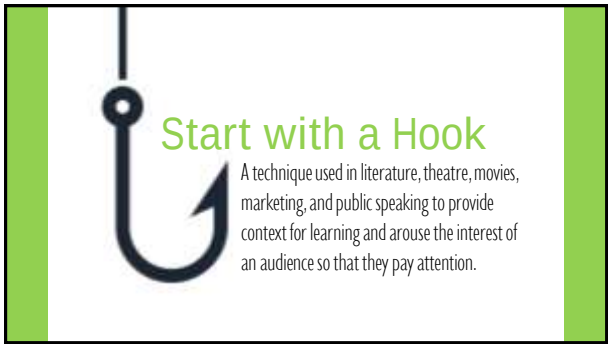

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EXAMPLE HOOK:

In a hands-on profession like massage, why does 62% of teaching and learning take place in the cognitive domain?

116

39 Student Behaviors that Create Obstacles to Teaching and Learning

117

Four Steps to Establish Learning Context

HOOK THEIR INTEREST

EXPLAIN THE BIG PICTURE

SHARE GOALS & EXPECTATIONS

TELL THEM WHY THEY CARE

118

The Big Picture

How does today's lesson fit into the universe of this unit, module, or course? I want to know what planet I'm going to land on!

119

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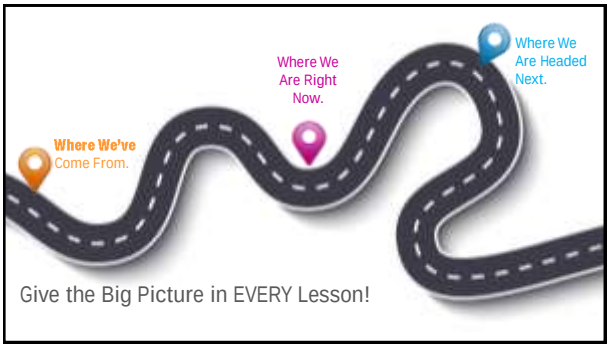

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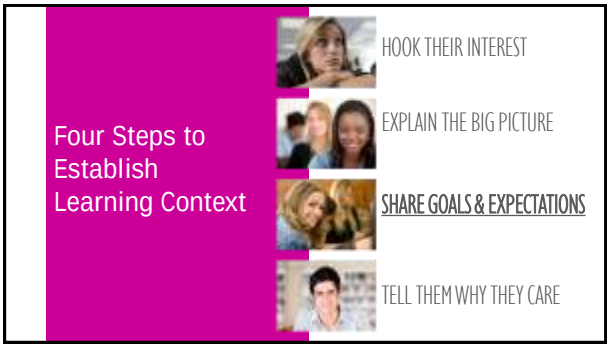

122

THE INTEGUMENTARY SYSTEM

- Define the cutaneous membrane.
- Understand the epidermis including cell type, tissue type, layers, and functions
- Understand the dermis including cell type, tissue type, layers and functions
- List the layers of the epidermis in order from stratum basale to stratum corneum
- Compare and contrast the papillary layer and reticular layer of the dermis
- Discuss the hypodermis including cell type, tissue type, and functions
- Discuss the structure and function of the accessory organs of the skin
- Explain the structure and function of hair
- Explain the structure and function of nails
- Explain the structure and function of sudoriferous glands
- Explain the structure and function of sebaceous glands
- Outline the different cutaneous receptors in the skin
- Preview aging and the integumentary system
- Explore the body-mind effects of massage as a response to touch

123

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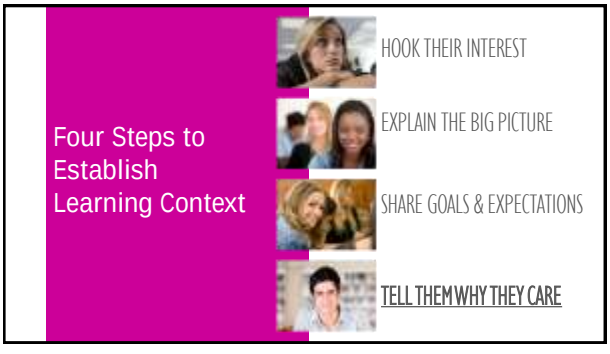

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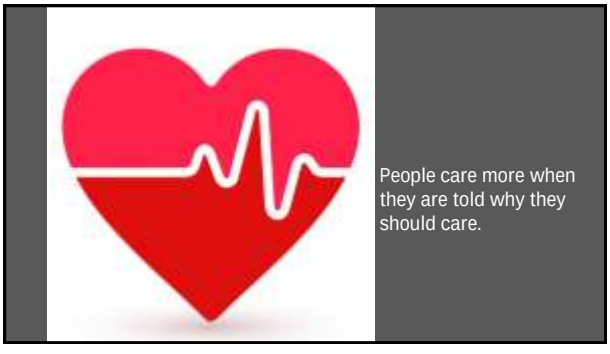

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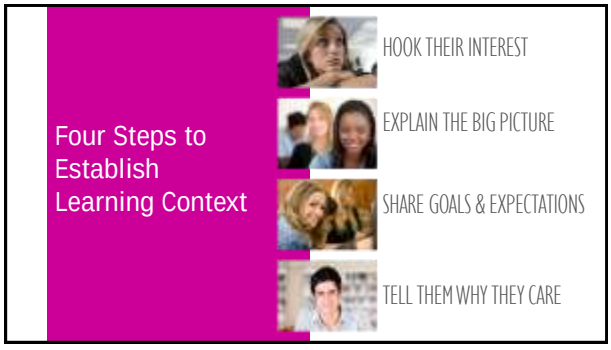


128

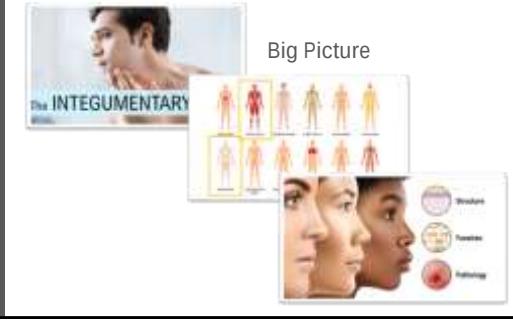
Activity

In the sample interactive lecture, identify the hook, big picture, goals & expectations, and why they care.

129

Hook

130



131

Goals & Expectations

132

1. If you don't learn this stuff, you may catch a skin condition or cause another person harm.

Why They Should Care

2. It will be on the quiz!

133

Four Steps to Establish Learning Context

- HOOK THEIR INTEREST
- EXPLAIN THE BIG PICTURE
- SHARE GOALS & EXPECTATIONS
- TELL THEM WHY THEY CARE

134

Number 1 Prime Learners for Learning ✓	Number 2 Establish Context for Learning ✓	Number 3 Teach Terminology Explicitly & Systematically
Number 4 Consciously Build Basic Concepts	Number 5 Add Scaffolding to Everything	Number 6 Drill and Practice Level 1 Regularly

135

Teach
TERMINOLOGY
Explicitly & Systematically

136

1. Identify the key terms you intend to cover in the lesson.

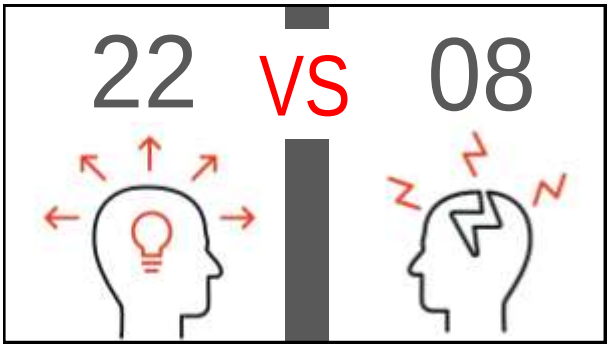
2. Define, pronounce, and discuss these terms before a learning experience.

137

"The epidermis is composed of stratified squamous epithelium and contains four primary types of cells. Keratinocytes produce keratin, a fibrous, water-resistant, structural protein essential for the composition of human skin and hair. Keratin helps the skin resist damage, microbes, and chemicals and helps the skin resist the entry of foreign materials. Keratinocytes make up about 90% of the cells found in the epidermis.

Melanocytes are another type of cell found in the epidermis along with Langerhans cells and Merkel cells. Melanocytes produce melanin, a dark pigment primarily responsible for skin and hair color. It protects against UV radiation and plays a role in the immune system. Melanocytes have long, slender, projections that extend between the keratinocytes transferring melanin that gathers over the cell nucleus, protecting it from UV rays. Melanocytes make up approximately 8% …"

138



139

290%

MORE LEARNING!

140

141

Methods for
Teaching Terminology
Explicitly and Systematically.

- Provide complete vocabulary lists.
- Practice the pronunciation of terms before the lesson.
- Use textbooks to label diagrams before the lesson.
- Match written definitions to related images using textbooks.
- Pair an image with a term and preview before the learning activity.

142

143

Activity

In the sample interactive lecture, identify the methods I used to preview important terminology.

144

Which of these methods did I use?

Provide complete vocabulary lists.

Practice the pronunciation of terms before the lesson.

Use textbooks to label diagrams before the lesson.

Match written definitions to related images using textbooks.

Pair an image with a term and preview before the learning activity.

145

Which of these methods did I use?

Provide complete vocabulary lists.

Practice the pronunciation of terms before the lesson.

Use textbooks to label diagrams before the lesson.

Match written definitions to related images using textbooks.

Pair an image with a term and preview before the learning activity.

146

Question

Why do I place an emphasis on the use of images when teaching terminology?

?

147

Answer

Because an image is the first chick you need in the nest if you want to build a basic concept.

Image

148

Question

Why do I place an emphasis on pronunciation of terminology? Isn't it enough to recognize the word?

?

149

Answer

We think in words and pictures. If you don't know how to pronounce it, you can't think with it and you won't be able to remember it.

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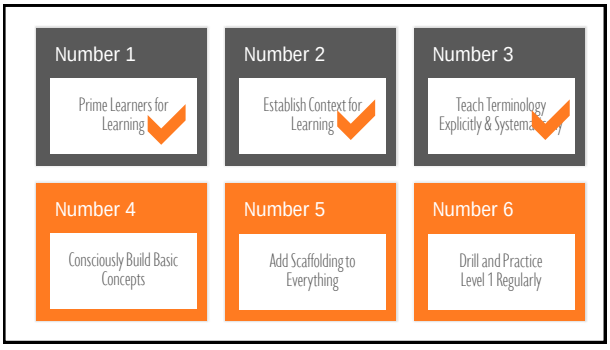

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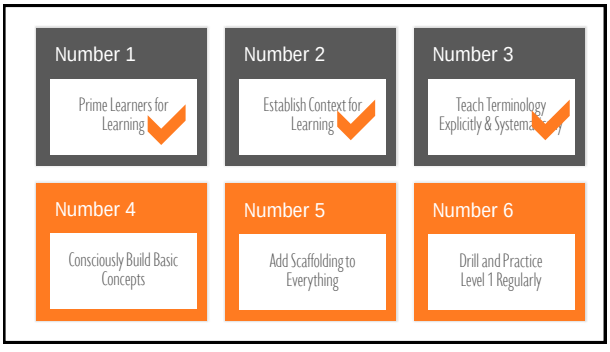

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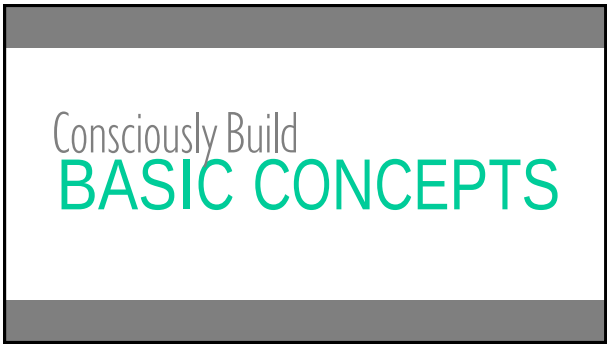

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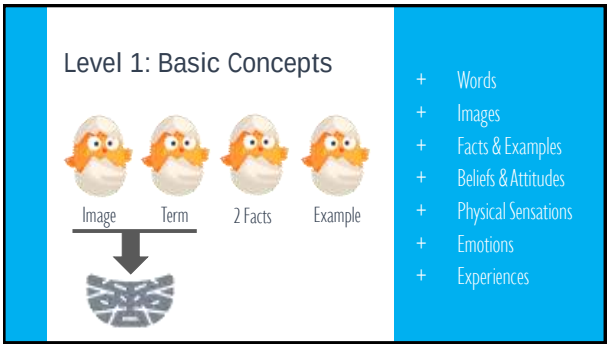

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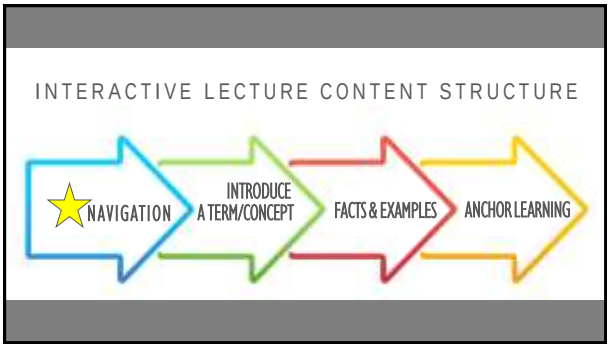

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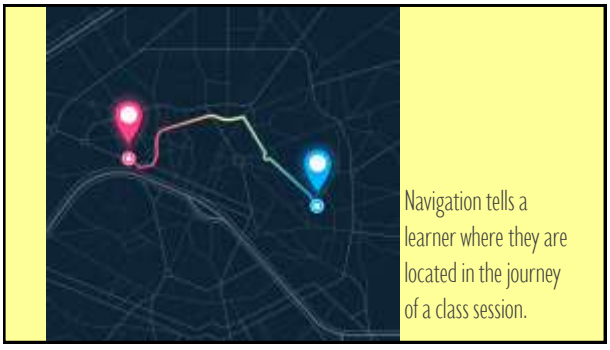

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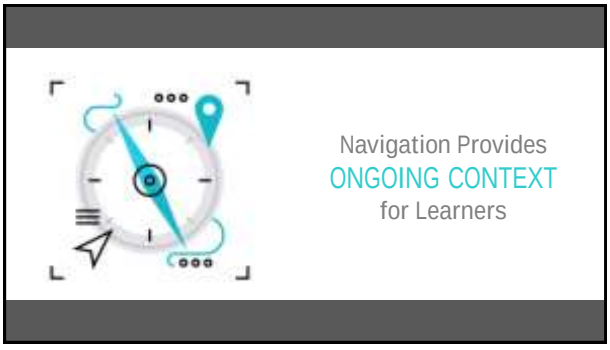

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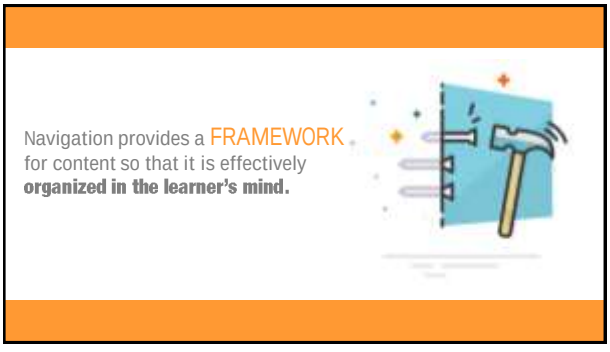

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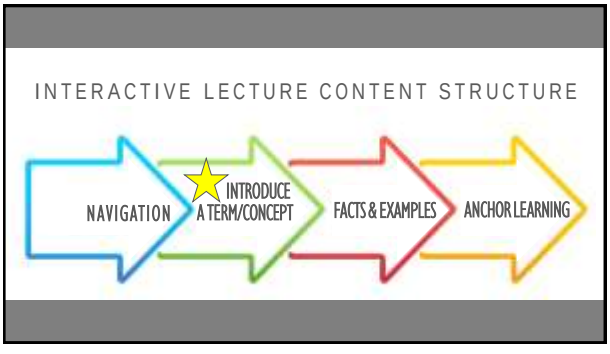

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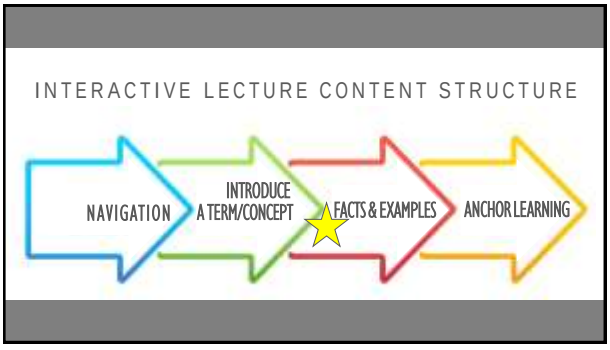

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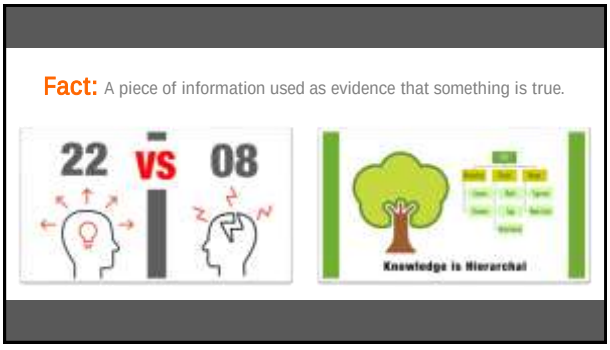

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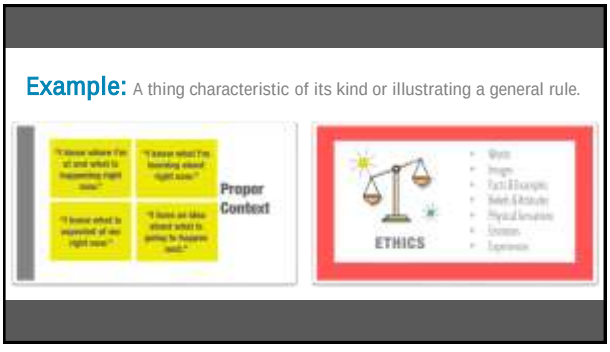

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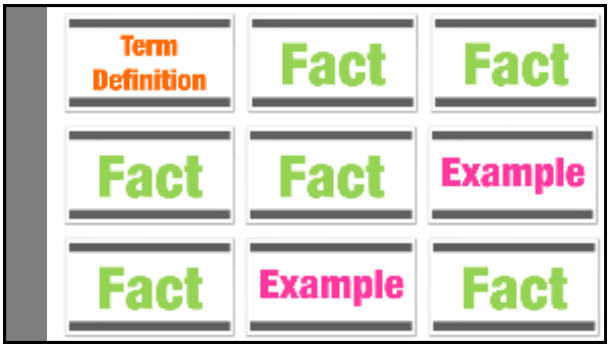

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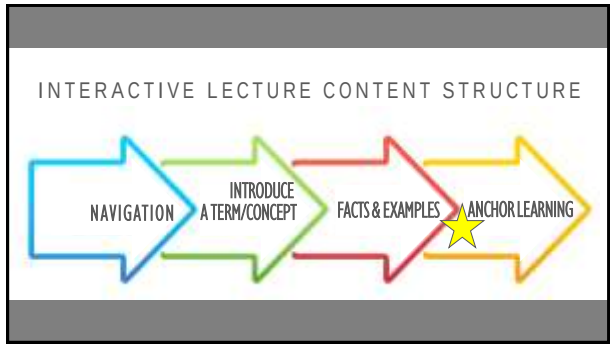
168

Learning Taxonomy

- A learning taxonomy is a model that classifies learning into progressively complex levels.
- A learning taxonomy is shorthand for how learners learn and how teachers should structure lessons.
- Current learning taxonomies are outdated or don't align all four learning domains.
- In the ELAP learning taxonomy, learning happens in four domains and at three levels.
- A domain is a specific area (or kingdom) of inquiry, activity, feeling, or behavior.
- The cognitive domain is the knowledge domain, or learning related to the acquisition of information.

169



170

Anchor Learning

A method used at the end of a learning segment to reinforce key information.

171

QUICK QUIZZES

RESPONSE MOMENTS

Example Anchors

CONCEPT CHECKING QUESTIONS

172

173

One way teachers could establish context for learning is to:

A. Hook the learner with a personal story
B. Teach terminology explicitly and systematically
C. Separate facts and examples onto their own slides
D. Use a learning taxonomy to structure lessons

174

One way teachers could establish context for learning is to:

A. Hook the learner with a personal story
B. Teach terminology explicitly and systematically
C. Separate facts and examples onto their own slides
D. Use a learning taxonomy to structure lessons

175

QUICK QUIZZES

RESPONSE MOMENTS

Example Anchors

CONCEPT CHECKING QUESTIONS

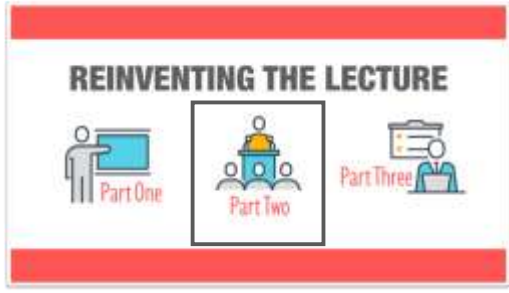
176

Response Moment

A pause in the lecture where learners are asked to think about information on a personal level.

Contemplate your teaching. Based on what you know now about how knowledge is constructed in the mind, what are your strengths and weaknesses related to ensuring learners build strong basic concepts at level 1.

177



178

QUICK QUIZZES

RESPONSE MOMENTS

Example Anchors

CONCEPT CHECKING QUESTIONS

179

Concept Checking Questions

Questions that compare a correct statement with an incorrect statement to check learner comprehension and fill in knowledge gaps.

Is "nesting" a process where the brain gathers together data or is it another word for a concept?

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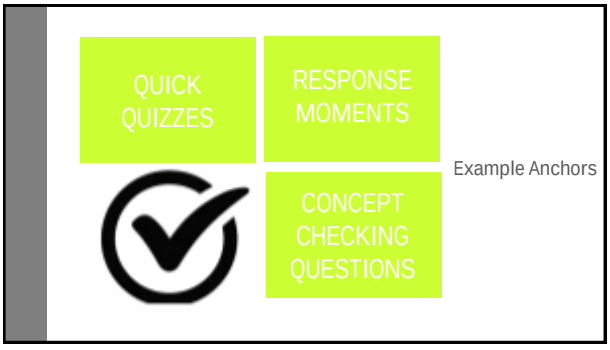

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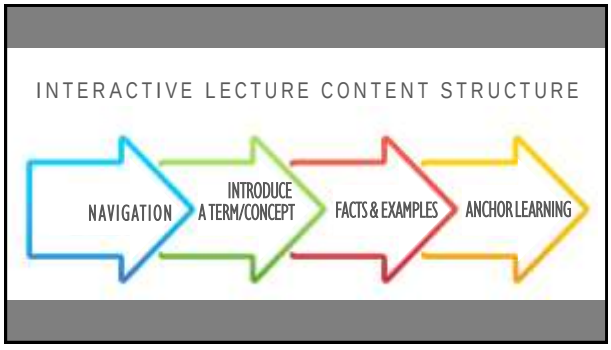

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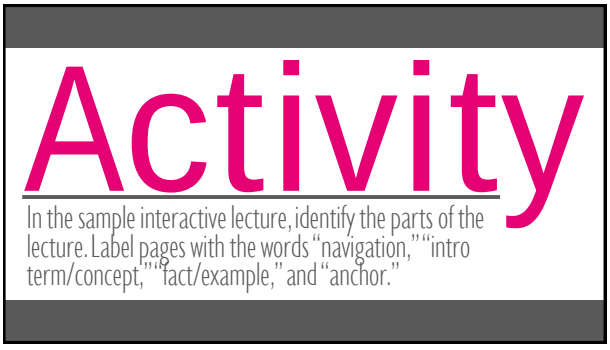

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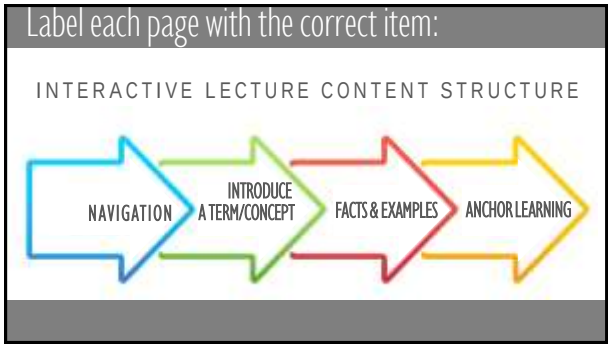

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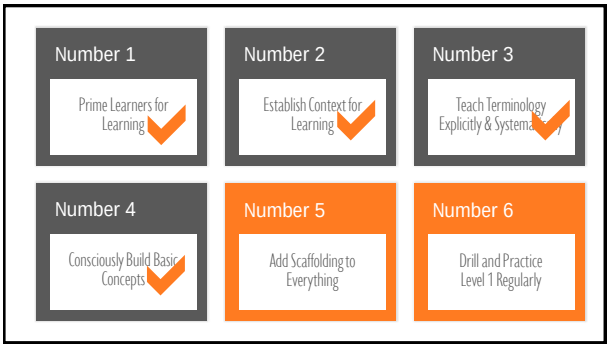

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186

Point B. Where you want them to be at the end of the lesson.

Point A. Where they are now.

Scaffolding is the support you give learners to help them get from point A to point B more easily.

187

Scaffolding Materials Take Many Forms

- Content outlines
- Term definitions
- Lecture notes
- Graphic organizers
- Rubrics
- Checklists

188

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189

The Scaffolding Materials I Provided Today

A complete vocabulary list.	Lecture notes in outline format.	Examples of a lecture and student handout.	A lesson planning checklist and form for teaching cognitive content.

190

A. → B. WITH SCAFFOLDING!

A.  B.

WITHOUT SCAFFOLDING!

191

Number 1 Prime Learners for Learning ✓	Number 2 Establish Context for Learning ✓	Number 3 Teach Terminology Explicitly & Systematically ✓
Number 4 Consciously Build Basic Concepts ✓	Number 5 Add Scaffolding to Everything ✓	Number 6 Drill and Practice Level 1 Regularly

192

Drill & Practice

Level 1 Content Regularly

193

Spaced Practice

Learners must "rehearse" level 1 information to store and retrieve it easily from long-term memory.

194

Rehearse information (drill & practice).

195

Go away and do something else.

196

Rehearse information (drill & practice).

197

Go away and do something else.

198

Rehearse information (drill & practice).

199

Go away and do something else.

200

Rehearse information (drill & practice).

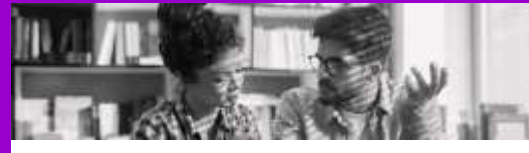
201

Pass the MBLEx!

202

Live happily ever after as an MT!

203



Drill & Practice Level 1 Content

As teachers, we must set up regular opportunities for learners to rehearse terminology and concept knowledge.

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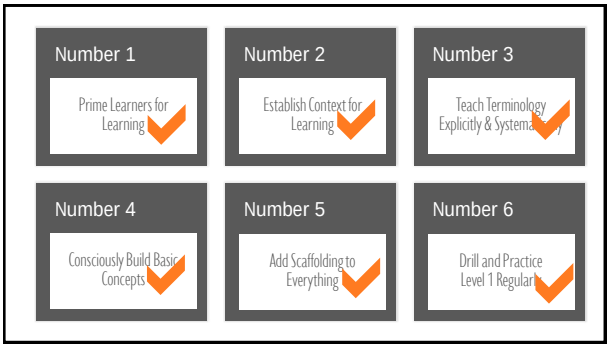


205

Question

During this presentation, what level of learning have we been working at?

206

Answer: Level 1

We are working predominantly at level 1. However, when I ask you to complete the learning activities for the sample lecture we are moving into level 2.

207

Question

What are the four steps to establishing context for learners?

208

Answer:

1. Hook the audience
2. Give them the big picture
3. Share goals and expectations
4. Tell them why they care

209

Question

When you teach terminology explicitly and systematically how many terms can a learner "digest" in a 3-hour class?

210

Answer:

A maximum of 22 terms.

211

Question

What is the interactive lecture sequence we use to build learners' basic concepts?

?

212

Answer:

1. Navigation
2. Introduce a term/concept
3. Facts & Examples
4. Anchor the learning

213

4.

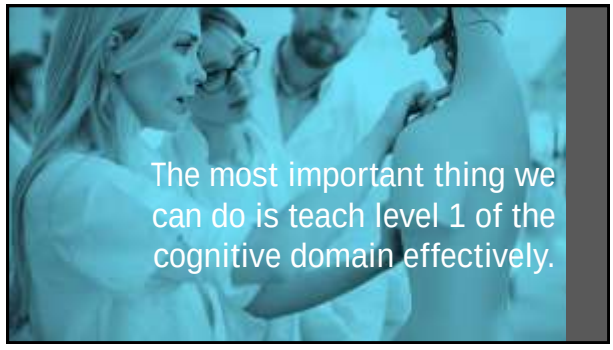
Learn methods to teach level 1 of the cognitive domain effectively.

214

Homework

1. Review the Cognitive Content Level 1 Planning Form
2. Take the textbook material or teaching material for any topic you currently teach and put it into this format.
3. Teach it using the methods we talked about today and compare student learning outcomes.

215



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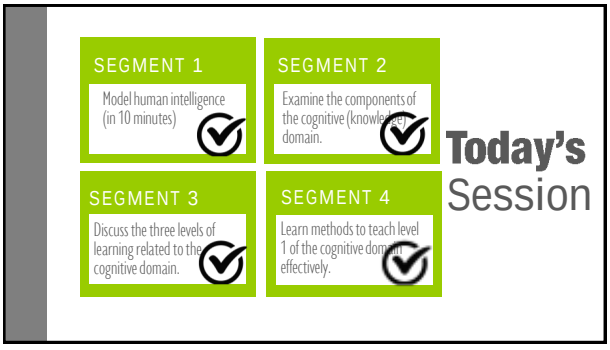

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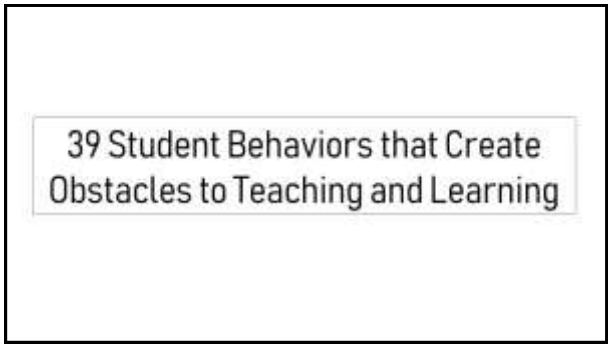

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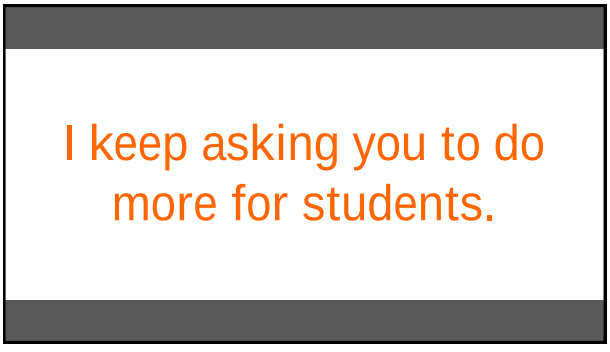

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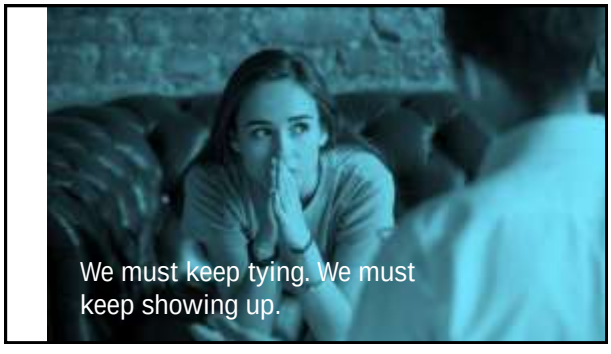

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223

Thank You!

224