Neuronal activity is low during

Figure 9: Continuous skin conductance measurements, removed due to copyright restrictions. Please see: Poh, M., et al. "A Wearable Sensor for Unobtrusive, Long-Term Assessment of Electrodermal Activity." *IEEE TRANSACTIONS ON BIOMEDICAL ENGINEERING* 57, No. 5 (2010): 1243 - 1252.

Poh, M. *et al*. (2010)

Planning a Class or Unit of Instruction

Intended Learning Outcomes

By the end of today's session you will be able to:

- articulate factors that promote effective lectures
- consider ways you can gain students' attention, help them to integrate new material & support their comprehension
- make informed decisions about lecture organization & content to support your ILOs
- create an outline for a unit of instruction

Consider...

WHAT ARE LECTURES GOOD FOR?

WHY DO WE LECTURE?

WHAT'S THE PROBLEM WITH TRADITIONAL LECTURES?

Top 5 Factors that Influence Student Learning*

What do *you* think are factors that support student learning?

1. Clarity
2. Task Orientation
3. Student Opportunity
4. Variety
5. Teacher Enthusiasm

*(Rosenshine, B., & Furst, N. (1973). Chapter 3: Research on teacher performance criteria. In B. Othanel Smith (Ed.), Research in teacher education - A symposium (pp. 37-72). Englewood Cliffs, NJ: Prentice-Hall, Inc.)

3 Key Elements of Effective Lectures

1. They grab the learner's **attention**

2. They help the learner **integrate** new information into existing frameworks

3. They help build learner **comprehension**

*(Rosenshine, B., & Furst, N. (1973). Chapter 3: Research on teacher performance criteria. In B. Othanel Smith (Ed.), Research in teacher education - A symposium (pp. 37-72). Englewood Cliffs, NJ: Prentice-Hall, Inc.)

Attention, integration & comprehension

ATTENTION

1. Clarity
2. Enthusiasm

INTEGRATION

3. Task Orientation
4. Student Opportunity
5. Variety

COMPREHENSION

Active learning
In class and

Assignments & problems to help students construct meaning

Attention & Integration

Logistics and Delivery

Use your structure to create discrete segments-

- Divide it both in terms of time and in terms of material.
- Create 10-15 minute chunks of material.
- Summarize the previous lecture; introduce the topic(s) for the day; present the material; summarize briefly; preview any homework and the next lecture.

1. CLARITY, 3. TASK ORIENTATION,4. STUDENT OPPORTUNITY, 5. VARIETY

Attention & Integration

Logistics and Delivery

Build in interaction -

- Prepare questions– to motivate, solidify understanding, identify misconceptions, etc.
- Set up hypotheticals, problem-solving exercises, brainstorming.
- Work to get everyone involved, even in large classes.

4. STUDENT OPPORTUNITY, 5. VARIETY

Attention & Integration

Logistics and Delivery

Plan for less time than the class period -

- You will NOT start on time
- You will take some time to get up to speed
- Students will/should have questions

1. CLARITY

Attention & Integration

Logistics and Delivery

Plan what your board will look like

- Anticipate space requirements
- Facilitate effective note-taking
- Note likely misconceptions/ problem areas.

1. CLARITY, 3. TASK ORIENTATION,
4. STUDENT OPPORTUNITY

Attention & Integration

Logistics and Delivery

Enhance Credibility -

- Be comfortable and confident presenting material.
- Be enthusiastic.
- Incorporate your research and own ideas.

1. CLARITY,
2. TEACHER ENTHUSIAM

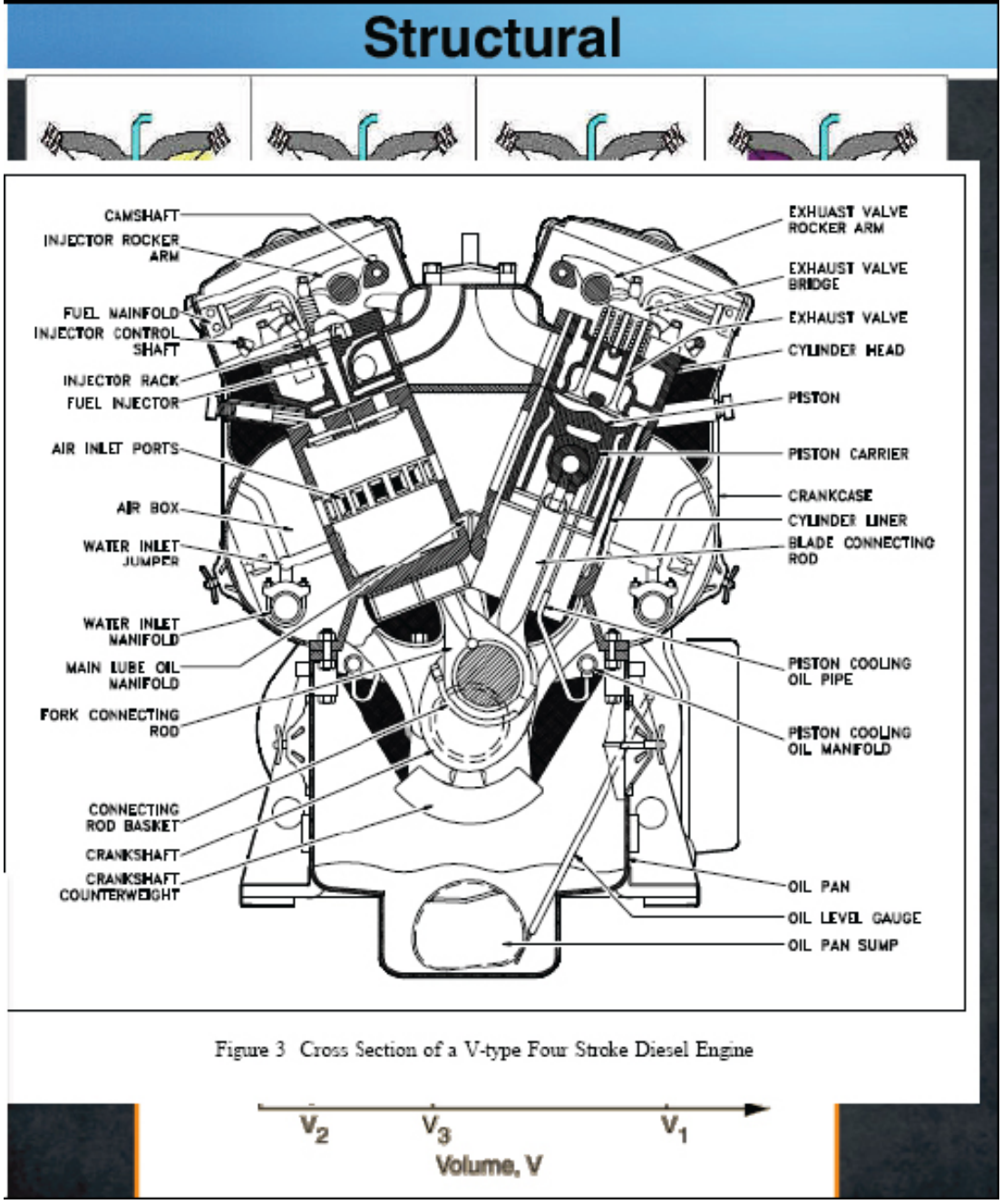
The cycle of problem-centered learning

Phases for Effective Instruction diagram removed due to copyright restrictions.
See: Figure 1, p. 45 in Merrill, M. D. First principles of instruction. Educational Technology Research and Development, 50, no. 3 (2002): 43-59.

From, First Principles of Instruction, M.D. Merrill

The Diesel Engine

Discuss the thermodynamic and physical processes that occur in each stage of the diesel cycle.



Problem-Solution

Problem:
Manufacturer's hammers are breaking

Solution:
The class period is spent discussing the concepts & analytical techniques needed to make a recommendation

Prepare a white cake with mousse filling and buttercream frosting.

1. Make cake

2. Make mousse

3. Make frosting

4. Assemble

Attention, integration & comprehension - this class...

ATTENTION

????

INTEGRATION

????

COMPREHENSION

????

Integration - - Small Group Work

IN SMALL GROUPS

For your assigned topic:

- Create an intended learning outcome(s) - ILO.
- Use the template to outline/describe:
  - How will you address: attention, integrate & comprehension?
  - Necessary questions, supplies/props, etc.
  - The general flow of the class

LARGE GROUP SHARE-OUT

- Each group will present their template to the class

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