

Teaching Theory and Practice

Teaching Theory and Practice

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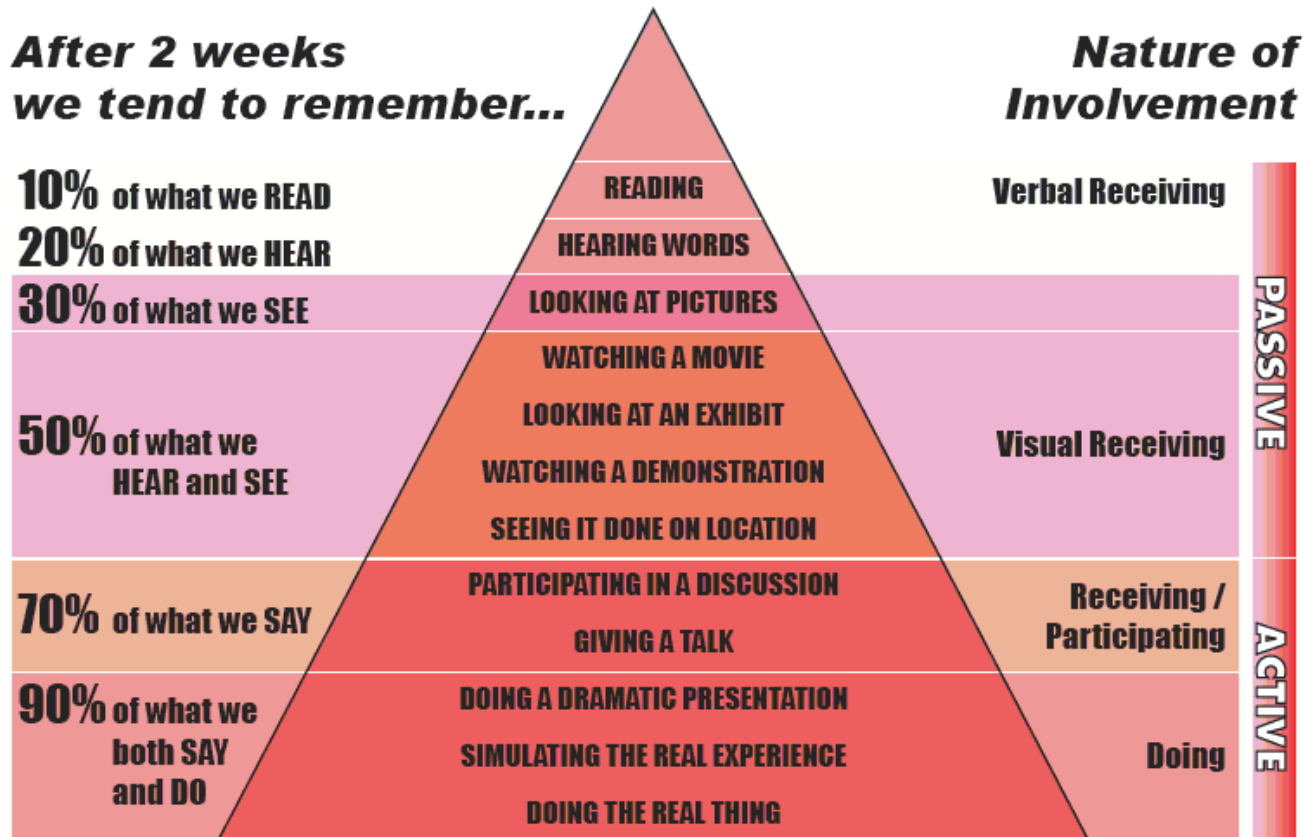
Teaching Theory and Practice

Overview

- 1. Dale's Cone of Learning**
- 2. Behavioral Theory**
- 3. Cognitive Theory**
- 4. Constructive Theory**

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Cone of Learning (Edgar Dale)



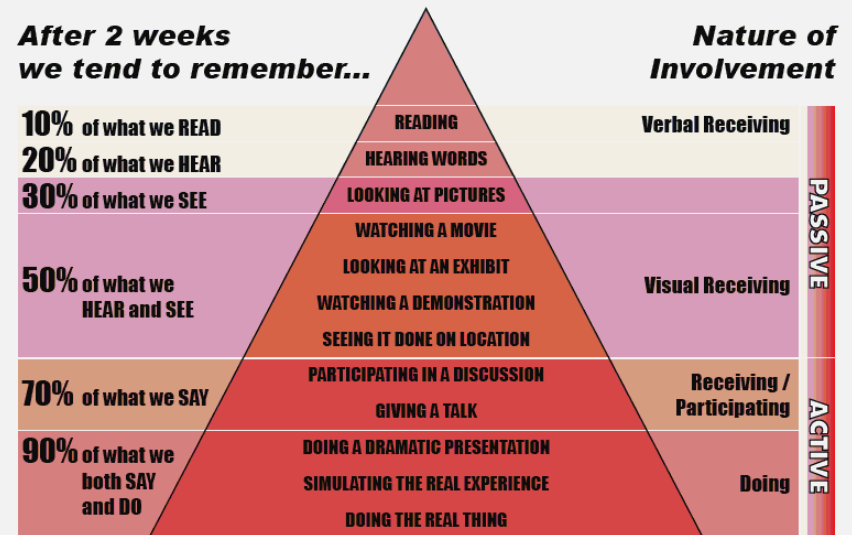
Edgar Dale, *Audio-Visual Methods in Technology*, Holt, Rinehart and Winston.

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Dale's Cone of Learning

1. Top to bottom:
Increase in learning as
more senses are engaged.
2. Separate or uncoordinated
senses are Passive
Learning modalities - not
integrated.

Cone of Learning (Edgar Dale)



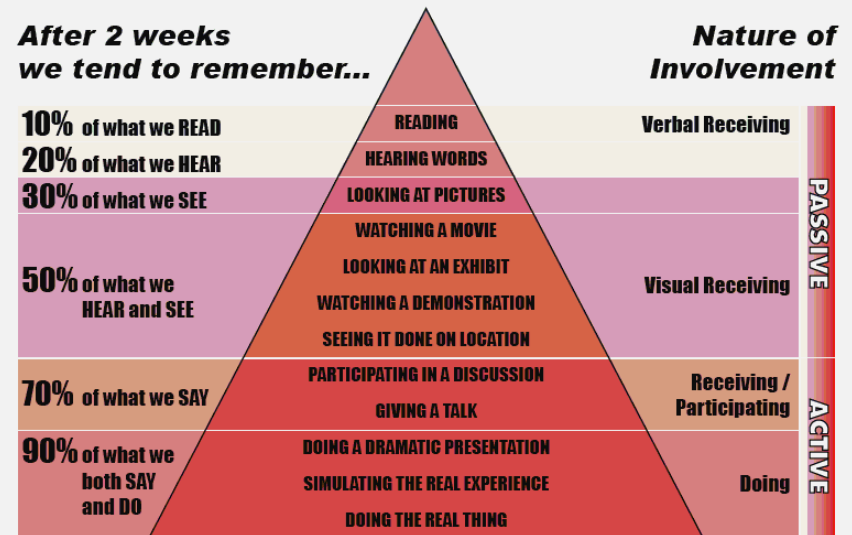
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Dale's Cone of Learning

1. Active Learning: participate, design, demonstrate, simulate, and perform.
2. Harmonious interrelationship with multiple senses—speaking, performing, simulating, designing, etc.
3. Synthesis of the learning modalities: The more learning modalities, the more you will learn.

Cone of Learning (Edgar Dale)



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1. Behavioral Theory

Exemplars

1. B. F. Skinner: Radical Behaviorism & Operant Conditioning
2. Ivan Pavlov: Salivating Dogs

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1. Behavioral Theory

Operant Conditioning

Reward

Withhold Punishment

Withhold Reward

Punishment

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1. Behavioral Theory

Limited Use in Classroom

1. Educational goals
2. Assessments and Examinations
3. Attitude

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1. Behavioral Theory

Educational Goals

Conditions: “After reading a case study of a business problem, ...”

Performance: “...the student will be able to create a SWOT diagram and analysis...”

Acceptability: “...including the five business assessment variables as defined in this course of study.”

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1. Behavioral Theory

Examinations

1. Instructor cannot perceive Student knowledge.
2. Instructor can evaluate Student behavior.
3. Therefore, Assessments = Behavioral Tests.

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1. Behavioral Theory

Attitude

1. Instructor can observe Student behavior.

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2. Cognitive Theory

Psychology is the study of the mental functions and behaviors of humans, including but not limited to perception, cognition, attention, emotion, phenomenology, motivation, brain functioning, personality, behavior, and interpersonal relationships.

Cognitive Theory of Learning is the application of the findings of psychology to the domain of learning and teaching.

Teaching Theory and Practice

2. Cognitive Theory

Psychology is the study of the mental functions and behaviors of humans, including but not limited to perception, cognition, attention, emotion, phenomenology, motivation, brain functioning, personality, behavior, and interpersonal relationships.

Cognitive Theory of Learning is the application of the findings of psychology to the domain of learning and teaching.

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2. Cognitive Theory

Memory

1. Long Term
2. Short Term

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2. Cognitive Theory

Long Term Memory

1. Very large (Immeasurable)
2. Readily Accessible
3. Permanent

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2. Cognitive Theory

Short Term Memory

1. Small (2-3 units)
2. FIFO
3. Analogous to Computer Memory

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2. Cognitive Theory

Computer Memory Analog

Item 1

Item 2

Item 3

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2. Cognitive Theory

**Computer Memory Analog:
One Active Item; Others Inactive**

Item 1

Item 2

Item 3

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2. Cognitive Theory

**Computer Memory Analog:
New Item Replaces Old Item**

Item 1

Item 2

Item 3

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2. Cognitive Theory

Brain & Learning

1. Knowledge stored in cluster of cells
2. Similar or related information accesses cells containing previously stored knowledge.
3. Therefore, relate new knowledge in established Domain to existing knowledge.
4. If new Domain of Knowledge, relate New Domain to existing Domains.

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2. Cognitive Theory

Brain & Mirror Neurons

1. Learn by observation.
2. Vicarious experience.
3. The more senses involved the more rapid and more extensive the learning.

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2. Cognitive Theory

Guided Learning: A Scaffolded Approach

1. Instructor demonstrates activity or process
2. Instructor and students perform "Worked Examples"
3. Students perform examples on their own.

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2. Cognitive Theory

Guided Learning

Problems:

1. Complicated
2. Instructor intensive
3. Slow

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2. Cognitive Theory

Guided Learning

Results:

1. Excellent for learning new knowledge
2. Excellent for learning new domains of knowledge
3. Too 'boring' for advanced students or established domains of knowledge

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3. Constructive Theory

1. Each person is unique
2. Each person perceives an event differently
3. The Knowledge each person gains from a learning experience is unique.
4. That is, each person 'constructs' knowledge.
5. Therefore, there is no 'right' or 'wrong' knowledge, only different knowledge.

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3. Constructive Theory

1. Dale's Cone of Learning tells us that learning is best when 'doing,' i.e. Active Learning
2. Active Learning requires an 'authentic environment,' simulating reality as closely as possible.
3. Real environments involve groups working together to solve real world problems.

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3. Constructive Theory

Discovery Learning Method

1. Authentic Learning Environment.
2. Students work in groups to solve problems.
3. Groups have or can acquire all the tools, equipment and materials needed.
4. Groups learn at their own pace, establishing their own problems, and seeking rational answers.

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3. Constructive Theory

Goal of Discovery Learning Method

Goal of group is to achieve the specified learning goals. It is not important how the goal was achieved, but that the learning goal was achieved.

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3. Constructive Theory

When to Use Discovery Learning

1. To develop, improve, increase or broaden knowledge with an established Domain of Knowledge.
2. When working in groups is indicated
3. When learning to seek and use knowledge
4. To engage advanced learners.
5. Not used to learn new Domains of Knowledge.

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3. Constructive Theory

Discovery Learning Variants

1. Problem-based learning. Students are given a particular problem, provided with all the materials needed to solve the problem, and are left to their own devices.
2. Inquiry-based learning. Students are given a question to answer, etc.
3. Experiential-based learning. Students are allowed to experiment with the materials, developing a task or problem to solve.

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3. Constructive Theory

Discovery Learning Method

1. Instructor provides minimal lecture, orienting learners to activity and providing materials.
2. Learners study materiel, supplementing it as needed with library, internet, etc.
3. Group meets and integrates learners' knowledge into new synthesis
4. Group performs plans and performs learning activities.

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3. Constructive Theory

Discovery Learning Method

5. Group writes report and submits to instructor

6. Instructor assesses report

a. If Group is proceeding along expected lines of action, making progress, and achieving learning goals, instructor encourages group. Instructor provides additional instruction or insight as needed.

b. If Group is not proceeding along expected lines of action, making progress, and achieving learning goals, instructor intervenes to redirect the group's acquisition of knowledge or achievement of goals.

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3. Constructive Theory

Instructor's Role

1. Instructor does not 'teach'. Instead, instructor assists and advises. Instructor interference destroys effectiveness of Constructive Learning methods.
2. Instructor ensure development of group.
3. Instructor ensures individual performance and learning within the group.

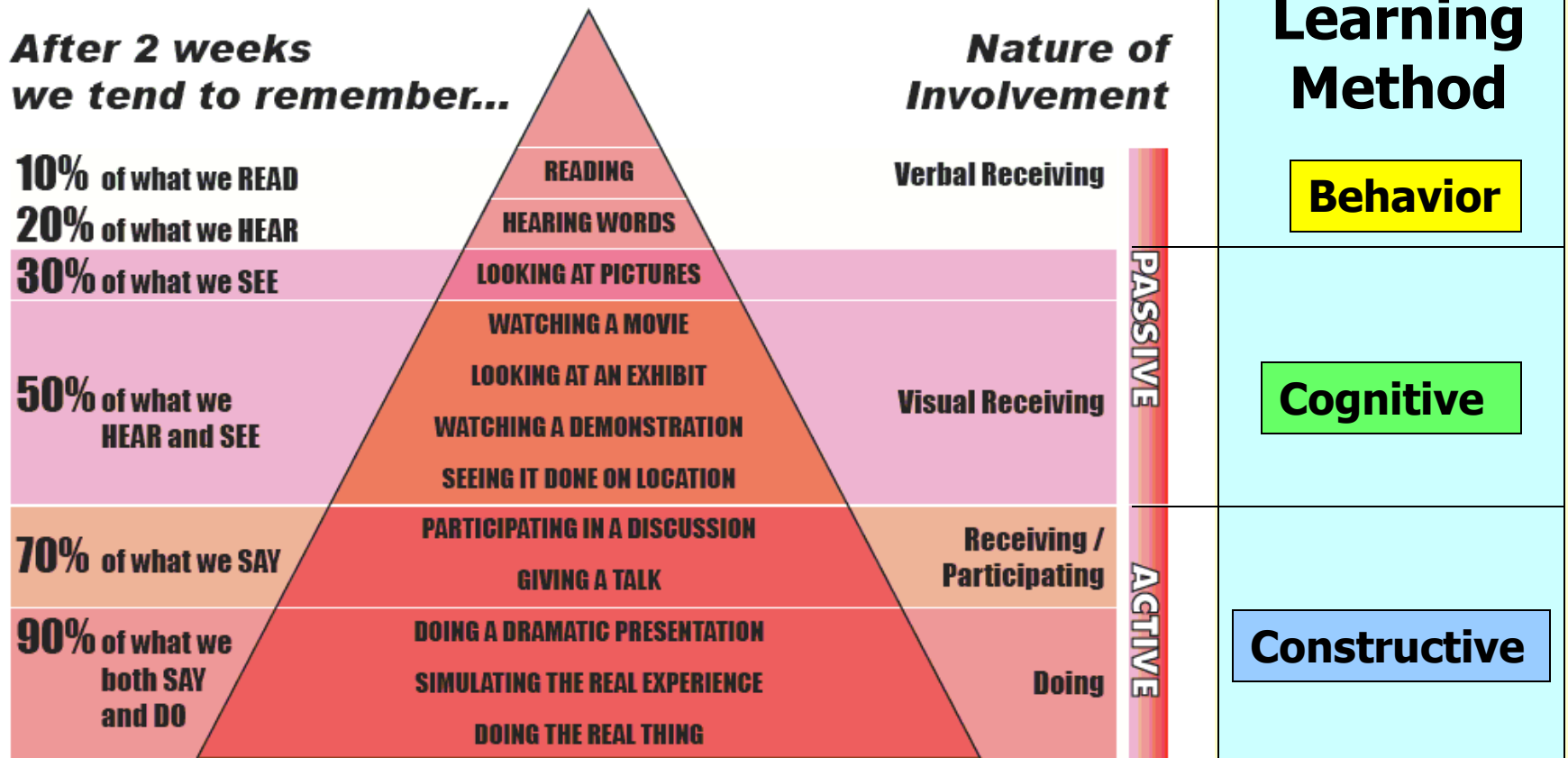
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Teaching & Learning

**The Method of Teaching Is Aligned with
The Student's Knowledge, the Subject
Matter, and the Educational Goal**

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