Effective Teaching with PowerPoint

A Learning Theory Approach

Presented by:
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Learning Theories/Models

- Behaviorism
  - B.F. Skinner
- Case-Based Reasoning
  - Janet Kolodner
- Information Processing
  - Robert Gagné

Information Processing Model

- Receptors
  - Neural Impulse Patterns
- Sensory Register
  - Selective Perception
- Short-term Memory
  - Semantic Encoding
- Long-term Memory
  - Long-term Storage
Information Processing Model

- Long-term Memory
  - Retrieval
- Short-term/Working Memory
- Response Generator
  - Response Organization
- Effectors
  - Performance
  - Feedback
  - Reinforcement

(Continued)

Information Processing Model

- Control Processes
  - Executive Control Process
  - Expectancies

(Continued)

Events of Instruction - 1

- Gaining Attention
  - Reception
  - Use abrupt stimulus change
Respiratory System
Anatomy and Physiology

Ancient Egypt

INSECTS
Events of Instruction - 2

- Informing Learner of the Objective
  - Expectancy
  - Tell learners what they will be able to do after learning

Learning Goal:
Understand the four major schools of philosophy:
- Idealism
- Realism
- Pragmatism
- Existentialism

Objectives:
- Given the chemical formula for an inorganic compound, you will be able to name the compound.
- Given the name of an inorganic compound, you will be able to write the chemical formula for the compound.
What speed of film should you use for different situations?

Events of Instruction - 3
- Stimulating Recall of Prior Learning
  - Retrieval to Working Memory
  - Ask for recall of previously learned knowledge or skills

Review:
Least Common Denominator (LCD)
1. Factor each denominator into primes
   \[ \frac{4}{2 \times 2} \]
   \[ \frac{6}{2 \times 3} \]
2. Count the number of times each factor appears
   \[ 2, 2, 3 \]
3. Find the product of these factors
   \[ 2 \times 2 \times 3 = 12 \]
Supply and Demand

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td>Demand</td>
</tr>
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</table>

Impressionism Review

- Themes
- Color
- Composition
- Brushwork

Regatta at Argenteuil by Claude Monet

Events of Instruction - 4

- Presenting the Stimulus
  - Selective Perception
  - Display the content with distinctive features
Change Process

• Plan
• Design
• Implement
• Evaluate
• Revise

Network Topology

• Point to Point
• Complete
• Star
• Bus
• Ring
• Tree
• Irregular

Thanks to:
Gwen Woods &
Craig Klimczak

Dave’s Syndrome

NORMAL  ABNORMAL
Solve:
\[
\int 6x^2 \, dx \\
6 \int x^2 \, dx \\
6\left[\frac{1}{3+1}(x^{3+1})\right] + C \\
6\left[\frac{1}{4}(x^3)\right] + C \\
2x^3 + C
\]

Punnett Square Example

<table>
<thead>
<tr>
<th>Parents</th>
<th>P</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>P</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>p</td>
</tr>
</tbody>
</table>

Skandia IC Value Scheme

Market Value

Financial Capital

Intelectual Capital

Human Capital

Structural Capital

Customer Capital

Organizational Capital

Innovation Capital

Process Capital
What is teaching?

- **Education:** All learning experiences
- **Instruction:** Planned learning experiences
- **Training:** Specific skills
- **Teaching:** Human facilitation

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**Treatment of Scapes and Abrasions**

- **Able to remove foreign material?**
  - Yes: Home Treatment
  - No: Signs of infection?
    - Yes: Contact Physician
    - No: Home Treatment

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**Bandwidth**

<table>
<thead>
<tr>
<th>Internet Type</th>
<th>Bandwidth</th>
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<tbody>
<tr>
<td>56K Modem</td>
<td>4,525 s</td>
</tr>
<tr>
<td>ISDN Phone</td>
<td>1,980 s</td>
</tr>
<tr>
<td>384 DSL</td>
<td>660 s</td>
</tr>
<tr>
<td>T-1</td>
<td>169 s</td>
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<tr>
<td>Cable Modem</td>
<td>84 s</td>
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<tr>
<td>10M Ethernet</td>
<td>25 s</td>
</tr>
<tr>
<td>100M Ethernet</td>
<td>2.5 s</td>
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*Thanks again: Gwen Woods & Craig Klimczak*
Events of Instruction - 5

- Providing Learning Guidance
  - Semantic Encoding
  - Suggest a meaningful organization

ADDIE: INSTRUCTIONAL DESIGN PROCESS

- Analysis
- Design
- Development
- Implementation
- Evaluation

F.O.I.L.

First
Inside
Outside
Last

(2x + 5) (3x - 4)

Binomial Multiplication
### Aruba and Bermuda Comparison

<table>
<thead>
<tr>
<th></th>
<th>Aruba</th>
<th>Bermuda</th>
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<tbody>
<tr>
<td><strong>Area (sq mi)</strong></td>
<td>193</td>
<td>59</td>
</tr>
<tr>
<td><strong>Climate</strong></td>
<td>Tropical Marine</td>
<td>Subtropical</td>
</tr>
<tr>
<td><strong>Arable Land</strong></td>
<td>7%</td>
<td>6%</td>
</tr>
<tr>
<td><strong>Population</strong></td>
<td>70,000</td>
<td>63,500</td>
</tr>
<tr>
<td><strong>Life Expectancy</strong></td>
<td>78.5</td>
<td>77.1</td>
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### Parts of a Report

- **Introduction**
- **Body**
- **Conclusion**

### Events of Instruction – 6 & 7

- **Eliciting Performance**
  - Responding
  - Ask learner to perform
- **Providing Feedback**
  - Reinforcement
  - Give informative feedback
What architectural style is this?

Answer: Art Deco

What is the median of the following scores:

<table>
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<th>9</th>
<th>Answer: 1</th>
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<tbody>
<tr>
<td>1</td>
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</tr>
<tr>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>8</td>
<td>9</td>
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Find the error:

```plaintext
x = 20
For i = 1 to 10
  Print "Record: ", i, x, (x-1)^2
x = x/2
Next x
```
Events of Instruction - 8
- Assessing Performance
  - Retrieval and Reinforcement
  - Require additional learner performance with feedback

Events of Instruction - 9
- Enhancing Retention and Transfer
  - Retrieval and Generalization
  - Provide spaced reviews and varied practice

Readability Analysis Assignment
- Read Chapter 7 in Brown & Wang
- Do Questions 1-5, p. 145
- Estimate the readability of the following website:
  http://tasc.umkc.edu
Find a current product at each stage in the Product Life Cycle:

- Introduction
- Growth
- Maturity
- Decline

Draw one the following in art nouveau:

- Bookends
- Doorknob
- Salt & Pepper Shakers

Events of Instruction - Summary

- Gaining Attention
- Informing Learner of the Objective
- Stimulating Recall of Prior Learning
- Presenting the Stimulus
- Providing Learning Guidance
- Eliciting Performance
- Providing Feedback
- Assessing Performance
- Enhancing Retention and Transfer