CREATIVE THINKING

OUTLINE

- Bloom’s taxonomy
- Two ways of thinking:
  - Critical vs. creative thinking
  - Creative thinking process
- Thinking in hats

BLOOM’S TAXONOMY

- Created in 1956 under the leadership of educational psychologist Dr. Benjamin Bloom
- The goal is to promote higher forms of thinking in education
- It is commonly used, but also controversial, as with most theoretical models
- A set of 3 lists used to classify educational learning objectives
  * Cognitive domain (knowledge-based)
  * Affective domain (emotion-based)
  * Psychomotor domain (action-based)
- Cognitive domain is the primary focus of most traditional education
- Frequently used to structure curriculum learning objectives, assessments, & activities

BLOOM’S TAXONOMY IN COGNITIVE DOMAIN

CREATIVITY & EDUCATION

- Gordon A. MacKenzie:
  * “The higher the grade, the fewer children raised their hands... Every school I visited was participating in the suppression of creative genius.”
  * Orbiting the Giant Hairball, 1998
- Pablo Picasso:
  * “Every child is an artist. The problem is how to remain an artist once we grow up.”
  * Most people are born creative. As children, we revel in imaginary play, ask outlandish questions... But over time, because of socialization and formal education, a lot of us start to stifle those impulses. We learn to be wary of judgment, more cautious, more analytical. The world seems to divide into “creatives” and “noncreatives,” and too many people consciously or unconsciously resign themselves to the latter category.

CREATIVITY & EDUCATION (CONT’D)

- George Land administered a creativity test, which he had developed for NASA to identify innovative scientists & engineers (Land & Jarman, 1992)
  * In 1968, 98% of 1,600 tested 5-year-old children registered at a genius level on the creative scale.
  * 3 years later, those 10-year-old children were tested again and only 30% of them scored at the genius level of creativity
  * After another 5 years, the number dropped to just 12%.
  * The same test, administered to 380,000 adults, found that only 2% registered at the genius level for creativity
  * Land concluded that noncreative thinking is learned
2 Ways of Thinking
• Discussed by Edward de Bono
  • The Use of Lateral Thinking, 1967
  • Critical thinking
    • Linear thinking, vertical thinking
    • Creative thinking
      • Lateral thinking, horizontal thinking
  • Neither is the right answer for every situation
    • Simply different ways to think
    • Both are needed for problem solving

Critical Thinking
• The process of conceptualizing, analyzing, applying, & evaluating information gathered from observation, experience, reflection, reasoning, or communication
  • Includes scientific, mathematical, historical, anthropological, economic, moral, & philosophical thinking

Creative Thinking
• The process which we use when we come up with a new idea
  • The merging of ideas which have not been merged before
  • The process can be either accidental or deliberate

Critical vs. Creative Thinking
<table>
<thead>
<tr>
<th>Analytic</th>
<th>Generative</th>
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</thead>
<tbody>
<tr>
<td>Convergent</td>
<td>Divergent</td>
</tr>
<tr>
<td>Vertical</td>
<td>Lateral</td>
</tr>
<tr>
<td>Probability</td>
<td>Possibility</td>
</tr>
<tr>
<td>Objective</td>
<td>Subjective</td>
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<tr>
<td>Closed</td>
<td>Open-ended</td>
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<td>Linear</td>
<td>Associative</td>
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<tr>
<td>Reasoning</td>
<td>Speculating</td>
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<td>Logic</td>
<td>Intuition</td>
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<tr>
<td>Judgment</td>
<td>Suspended judgement</td>
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<tr>
<td>Hypothesis testing</td>
<td>Hypothesis forming</td>
</tr>
</tbody>
</table>

Lateral Thinking Quiz
• A man built a rectangular house, each side having a southern view. He spotted a bear. What colour was the bear?
• If you were alone in a deserted house at night, and there was an oil lamp, a candle and firewood and you only have one match, which would you light first?
• The 60th and 62nd British Prime Ministers of the UK had the same mother and father, but were not brothers. How do you account for this?
• Name three consecutive days in English without using the words Tuesday, Thursday, or Saturday

Creative Thinking Process
• Accidental creative thinking does occur
  • Something happened by chance, making you think in a different way than discovering a beneficial change
  • Other changes happen slowly through pure use of intelligence & logical progression
  • Often takes a long time for ideas to develop & improve
• Deliberate creative thinking can be used to develop new ideas
  • Requires special techniques
  • The process can be either accidental or deliberate

Thinking in Hats
• Proposed by Edward de Bono
  • Six national hats that can be put on and taken off easily
    • Each hat indicates a role or mode of thinking
    • Based on the principle of parallel thinking
**THE RED HAT**

- The intuitive hat
  - What do you feel about the suggestion?
  - What are your gut reactions?
  - What intuitions do you have?
- Red represents emotions & feeling
  - Does not aim to understand the reason behind these feelings
  - Don’t think too long or too hard

**THE WHITE HAT**

- The informative hat
  - What are the facts?
  - What information is available?
  - What is relevant?
- White is neutral color
  - Share information about the problem and take notes
  - No further development in the thinking process should be done

**THE YELLOW HAT**

- The constructive hat
  - It is positive & constructive
  - What are the benefits & the advantages?
- Yellow represents sunshine & optimistic attitude
  - Spotlight the advantages & benefits of the suggestions

**THE BLACK HAT**

- The cautious hat
  - Points out errors or pit falls
  - What are the risks or dangers involved?
- Black has negative meaning
  - Focusing on the warnings, risks, or difficulties
  - Identify the cons of the suggestion and why it may not work

**THE GREEN HAT**

- The creative hat
  - Lateral thinking
  - Green represents growth & movement
  - When wearing green hat, we look for new ideas & solutions

**THE BLUE HAT**

- The reflective hat
  - Organizes thinking itself
  - Sets the focus, calls for the use of other hats
  - Monitors and reflects on the thinking processes used
  - Blue is for control & planning
  - Meeting leaders manage difficulties during the discussions
**CREATIVITY GAMES**

- Rules:
  - Not a competition
  - Solving problem together, not competing with each other
  - No stupid answers
  - No comments such as "this won’t work"
  - Nobody cannot lose face here
  - A prize for the most freaky idea

- Example game:
  - How many uses can you come up with for coat hanger?

- Facts:
  - On average 12 year old children come up with 25 uses
  - The number drops for adults

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**SURVIVAL SIMULATION**

- You & your companions have just survived the crash of a small plane
- The pilots were killed in the crash
- Your group of survivors managed to salvage 12 items

- Your collaborative thinking task:
  - List the 12 items listed in order of importance for your survival
  - Explain ordering and use of items

- Simulation setting:
  - It is mid-January, and you are in northern Canada
  - The daily temperature is below zero & the night time temperature is -20°C
  - There is snow on the ground
  - The countryside is wooded with several creeks crossing the area
  - The nearest town is 20 miles away
  - You are all dressed in city clothes

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**LIST OF ITEMS**

- A compass
- A sectional air map made of plastic
- A small axe
- A loaded 45 calibre pistol
- A ball of steel wool
- A can of Crisco shortening (Lard)
- Cigarette lighter (without fluid)
- Newspapers (one per person)
- Extra shirt & pants for each survivor
- 20 x 20 ft piece of heavy duty canvas
- Family size chocolate bars
- One quart of 100% proof whisky