Complex Thinking Processes

The task of defining and classifying thinking skills has challenged experts for decades and longer. Bloom's system was developed decades ago and is still widely used to classify learning objectives. However, there exists complex thinking processes that extend beyond the discrete thinking operations identified in Bloom's Taxonomy. Provided below is a summary of a set of broader, more all-encompassing complex thinking strategies that depend on a series of steps to reach a conclusion.

Problem Solving

1. Identify the goal(s) and obstacle(s)
2. Identify/research alternative ways to solve the problem
3. Select an alternative based on evaluation criteria
4. Try out the alternative
5. Evaluate results

Creative Problem Solving

1. Identify the goal(s) and obstacle(s)
2. Brainstorm alternative ways to solve the problem (invent new ideas or extend known patterns to new situations)
3. Choose an alternative (using insight from previous activity)
4. Try out the alternative
5. Evaluate results

Decision-making

1. Prioritize outcomes desired
2. Identify alternative actions
3. Make decision (choose alternative action based on established criteria)
4. Carry out decision

Reasoning

1. Inductive inference: predict a likely conclusion by using important unstated facts or observations
2. Deductive inference: predict a likely conclusion by using important priciples/ generalizations.

Investigation

1. Identify type of investigation (e.g., concept; past event - "how/why"; hypothetical event - "what if"
2. Identify previous knowledge
3. Determine confusions/contradictions
4. Research new information
5. Provide and justify clarifications

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Experimental Inquiry

1. Observe/measure phenomenon (collect data)
2. Analyze data
3. Draw conclusions/develop hypothesis
4. Test conclusion/hypothesis
5. Summarize/evaluate outcome in terms of original conclusions or hypothesis

Reflective Thinking

1. Identify thinking strategies
2. Assess strengths and weaknesses or strategies applied in various situations
3. Select strategies most likely to be helpful in accomplishing purpose
4. Assess results/appropriateness of strategy selected

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