Critical and Creative Thinking - Bloom's Taxonomy

Benjamin Bloom (1956) developed a classification of levels of intellectual behavior in learning. This taxonomy contained three overlapping domains: the cognitive, psychomotor, and affective. Within the cognitive domain, he identified six levels: knowledge, comprehension, application, analysis, synthesis, and evaluation.

Critical thinking involves logical thinking and reasoning including skills such as comparison, classification, sequencing, cause/effect, patterning, webbing, analogies, deductive and inductive reasoning, forecasting, planning, hypothesizing, and critiquing.

Creative thinking involves creating something new or original. It involves the skills of flexibility, originality, fluency, elaboration, brainstorming, modification, imagery, associative thinking, attribute listing, metaphorical thinking, forced relationships. The aim of creative thinking is to stimulate curiosity and promote divergence.

While critical thinking can be thought of as more left-brain and creative thinking more right brain, they both involve "thinking." When we talk about HOTS "higher-order thinking skills" we're concentrating on the top three levels of Bloom's Taxonomy: analysis, synthesis, and evaluation.

Knowledge

- collect
- describe
- identify
- list
- show
- tell
- tabulate
- define
- examine
- label
- name
- retell
- state
- quote
- enumerate
- match
- read
- record
- reproduce
- copy
- select

Examples: dates, events, places, vocabulary, key ideas, parts of diagram, 5Ws

Comprehension

- associate
- compare
- distinguish
- extend
- interpret
- predict
- contrast
- describe
- discuss
- estimate
- group
- summarize
- order
- cite
- convert
- explain
- paraphrase
- restate
- trace
- differentiate

Examples: find meaning, transfer, interpret facts, infer cause & consequence, examples
Application
apply classify change illustrate solve demonstrate
calculate complete solve modify show experiment
relate discover act administer articulate chart
collect compute construct determine develop establish
prepare produce report teach transfer use

Examples: use information in new situations, solve problems

Analysis
analyze arrange connect divide infer separate
classify compare contrast explain select order
breakdown correlate diagram discriminate focus illustrate
infer outline prioritize subdivide points out prioritize

Examples: recognize and explain patterns and meaning, see parts and wholes

Synthesis
combine plan compose generalize modify invent substitute
create formulate integrate rearrange design speculate rewrite
adapt anticipate collaborate compile devise express facilitate
reinforce validate structure substitute intervene negotiate reorganize

Examples: discuss "what if" situations, create new ideas, predict and draw conclusions

Evaluation
assess compare decide discriminate measure rank test
convince conclude explain grade judge summarize support
appraise  criticize  defend  persuade  justify  reframe

Examples: make recommendations, assess value and make choices, critique ideas

**Affective Domain**

Domain Attributes: interpersonal relations, emotions, attitudes, appreciations, values

accepts  attempts  challenges  defends  disputes  joins  judges  contributes  praises  questions  shares  supports  volunteers

*Source: http://eduscapes.com/tap/topic69.htm, Larry Johnson & Annette Lamb, 2011*