



Higher Level Thinking and Questioning, Distilled

**Distilled (di-stild') adj. 4. Separated or extracted essence*

What it is	What it isn't
<ol style="list-style-type: none"> 1. Challenging students' thinking 2. Promoting higher-level thinking skills 3. Providing opportunities for students to make connections among disciplines 4. Asking students to think "outside the box" 5. Creating a culture of exploration and explanation instead of a culture of the "right answer" 6. Providing classroom structures that require exploration and inquiry 	<ol style="list-style-type: none"> 1. Asking students to memorize or recall 2. Giving students more homework 3. Requiring longer assignments 4. Using "big" words and "hard" texts 5. Doing boring or tedious work
Why learners need to do it	
<p>"When choosing strategies, it is important to remember to three things about the brain: it is capable of multiprocessing, it thrives on challenges, and it makes synapses when actively involved with learning. Instructional strategies that provide complex thinking skills and interaction provide opportunities for the brain to work more efficiently" (p. 29).</p> <p>Feinstein, S. (2009). <i>Secrets of the teenage brain</i>. Thousand Oaks, CA: Corwin Press.</p>	
Types of Higher Level Thinking	
<ul style="list-style-type: none"> Analyzing Applying Abstracting Comparing/Contrasting Classifying/Categorizing Constructing Support/Persuading Problem Solving Empathizing with Others 	<ul style="list-style-type: none"> Analyzing Perspectives Reasoning Inductively Reasoning Deductively Analyzing Errors Interpreting Information or Data Synthesizing/Creating Communicating Drawing Conclusions
<p>Important names in Cognitive Complexity and Demand Research:</p> <p>Benjamin Bloom. (1056). <i>Taxonomy of Educational Objectives: The Cognitive Domain</i>. Anderson, D., and Krathwohl, D. (2005). <i>Taxonomy for Learning, Teaching and Assessing: A Revision of Bloom's Taxonomy</i>. Webb, N. (2002). <i>Wisconsin Center of Educational Research</i>, U of Wisconsin. Karin Hess. (2006). <i>National Center for Assessment</i>. Dover, NH.</p>	

Encouraging Higher Level Thinking...	
Asking the Right Questions	
Science: Observe and analyze, hypothesize, experiment, reflect, categorize, etc.	Social Studies: Analyze, hypothesize, interpret, synthesize, compare/contrast, categorize, etc.
Math: Categorize, analyze, hypothesize, interpret, justify or prove, make conjectures, solve, etc.	Physical Education: Compare, categorize, develop, evaluate, defend, propose, design, etc.
Reading: Empathize, interpret, evaluate, communicate, compare, synthesize, etc.	Health: Compare/contrast, categorize, justify, develop, evaluate, apply, defend, etc.
Visual/Performing Arts: Defend, persuade, analyze, evaluate or critique, classify, compare/contrast, generate or create, etc.	Technical Subjects: Construct, design or create, apply, synthesize, evaluate, investigate, etc.
Providing the Right Experiences	
<ul style="list-style-type: none"> Describe and illustrate how common themes and concepts are found across time and place Create an original piece of art or music that reflects a particular point of view. Design a wellness plan for your class or school. Create a composition that demonstrates a distinct voice and stimulates the reader or viewer to consider new perspectives. Conduct a complex experiment using the scientific method with several controlled variables. Given a problem, research, define, describe, and provide alternative solutions. Solve an equation, create a graph from the equation, and explain. Analyze and synthesize information from a variety of sources. Set up an experiment to test different variables affecting an outcome. Connect and relate ideas and concepts within content area or among content areas or across texts or cultures. Apply mathematical model to illuminate a problem or situation. Evaluate the effectiveness of two different artists' works or similar themes conveyed through different media. 	