



## Facilitating Higher Order Thinking

For all Pedagoggles: <http://www.georgianc.on.ca/staff/ctl/publications/pedagoggles>

### Lens on Learning Theory

Facilitating higher order thinking is extremely challenging, but it is crucial in preparing students for employment, relationships, and life in a complex society.

Students are **socialized to be passive learners**. Moving them from being **passive learners** to being **active thinkers** requires planning and persistence.

Thinking at higher levels of Bloom's taxonomy recognizes the following:

- ❖ All thinking is based on assumptions.
- ❖ All thinking is done from some point of view.
- ❖ All thinking is based on data, information, or evidence.
- ❖ All thinking contains inferences from which we draw conclusions.
- ❖ All thinking leads somewhere, and has implications and/or consequences. (Paul & Elder)

### Reflection on Practice

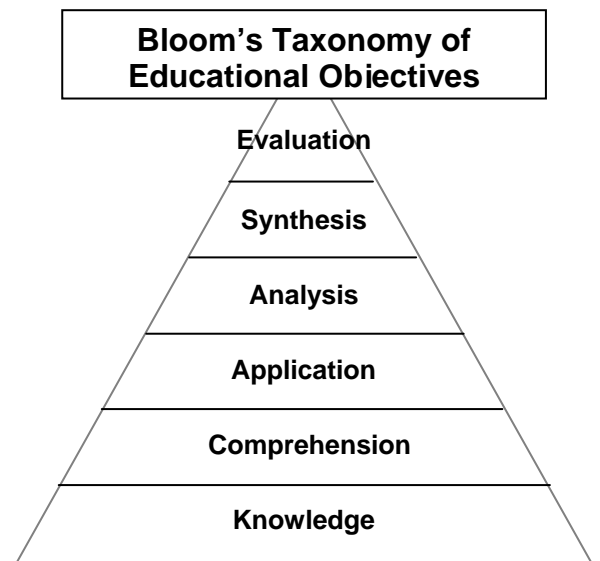
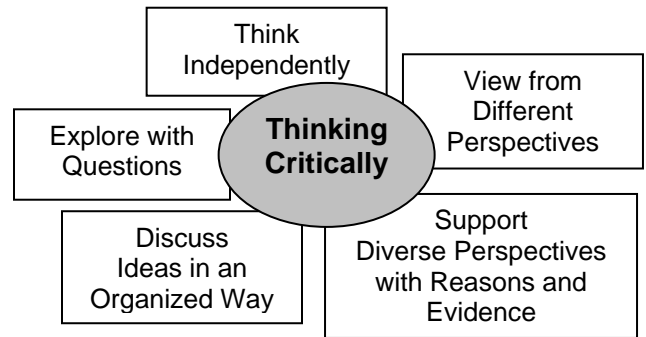
1. How can you facilitate more learning at higher levels of Bloom's taxonomy?
2. What thinking processes do the experts in your field apply to issues, dilemmas, questions, problems, etc.?
3. How can you structure learning to support students in understanding, practicing, and applying those processes?

### Expanding Your Teaching Toolkit

Here are some ideas we've come up with. We look forward to hearing **your ideas** (through e-mail or posted in the Teaching and Learning folder in GroupWise).

#### 1. Model Higher Order Thinking (Cognitive Apprenticeship)

- Think about higher order thinking as a skill just like ones we would teach in an apprenticeship. Model the skills, articulate the criteria for excellence, provide opportunities for practice, coach, and finally evaluate performance on these skills.
- Stimulate your own higher order thinking by engaging in dialogue with your peers to analyze, evaluate, and synthesize information/observations related to your subject area or to teaching and learning.
- Articulate a structured approach to a common problem in the field, and then have students repeat the process with a similar problem.



- Encourage thoughtful “why” and “how” questions, and engage students in evaluating assumptions, points of view, data, conclusions.
- Analyze subject information sources (including the course textbook) for accuracy, objectivity, currency, and authority.  
[http://library.georgianc.on.ca/Help/How\\_do\\_I/Evaluating\\_Resources](http://library.georgianc.on.ca/Help/How_do_I/Evaluating_Resources)
- Dissect and discuss model responses to higher order test and assignment questions

## 2. Structure and Assess Thinking Activities (Layered Curriculum)

- Apply thinking skills to simple tasks first. Then move to more complex tasks.
- Revisit thinking processes often throughout the course.
- Design test questions based on “why” and “how” discussions in class.
- Have students work through a structured problem-solving process  
[http://www.georgianc.on.ca/staff/ctl/wp-content/uploads/2009/02/critical\\_scaffold8\\_problem\\_solving.doc](http://www.georgianc.on.ca/staff/ctl/wp-content/uploads/2009/02/critical_scaffold8_problem_solving.doc)
- Engage students in small group activities where they have to prioritize, identify advantages and disadvantages, compare and contrast, generate a metaphor or image that incorporates certain concepts
- Brainstorm using post-its and poster paper. Have students prioritize, categorize, sequence, or group that information for a particular purpose or problem.
- Use mindmapping activities to expand thinking  
<http://www.mind-mapping.co.uk/mind-maps-examples.htm>
- Present students with challenges and puzzles on a regular basis. Help them improve their skills <http://www.printable-puzzles.com/printable-logic-puzzles.php>

## 3. Formulate Engaging Questions

- Ask questions at higher cognitive levels, both in class and on assessments  
<http://mcckc.edu/longview/ctac/blooms.htm>
- Have students explore questions in pairs or small groups before sharing with the class
- Facilitate Socratic dialogue <http://www-ed.fnal.gov/trc/tutorial/taxonomy.html>
- Teach students how to support their opinions and perspectives. Then, expect it.
- Ask questions that encourage reflective discussion (i.e. What are the influences on our thinking? What are the broader impacts on society of such thinking?)
- Use the six thinking hats to explore ideas <http://c2.com/cgi/wiki?SixThinkingHats>
- Engage students in dialogue that applies course concepts to something in their daily lives (TV programs, current events, social situations, etc.)

### **More Information and Ideas**

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#### **On the Web**

Longview Community College (1996) *Critical thinking across the curriculum*. Retrieved October 2009 from. <http://mcckc.edu/longview/ctac/toc.htm>

Critical Thinking Foundation [http://www.criticalthinking.org/starting/higher\\_ed.cfm](http://www.criticalthinking.org/starting/higher_ed.cfm)

#### **In the Centre for Teaching and Learning**

Boelryk, A. Bergere, T., & Rodgers, B. (2004). *Critical thinking across the curriculum: Essential skills booklet*. Georgian College. Available online at <http://www.georgianc.on.ca/staff/ctl/teaching-methods/critical-thinking>

Bean, J.C. (2001). *Engaging ideas: The professor's guide to integrating writing, critical thinking, and active learning in the classroom*. Jossey-Bass.