

Designing and Teaching a Course with a Critical Thinking Focus

Centre for Excellence in Teaching and Learning (CETL)

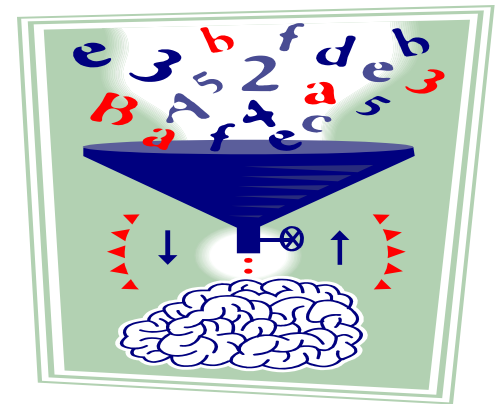
Lunch and Learn Seminar

Facilitator: Dr Mervin E. Chisholm

Manager/Coordinator, CETL

Objectives

- To decide on ways to add critical thinking approaches to courses from the design stage
- To determine how critical thinking approaches can be applied during the teaching of courses.



What is Critical Thinking? and Why is it so Important?

“the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action” (Scriven & Paul, 2007, p. 1).



Why Focus on Critical Thinking?

- Students who are able to think critically are able to solve problems effectively.
- To be effective in the workplace (and in their personal lives), students must be able to solve problems to make effective decisions; they must be able to think critically.



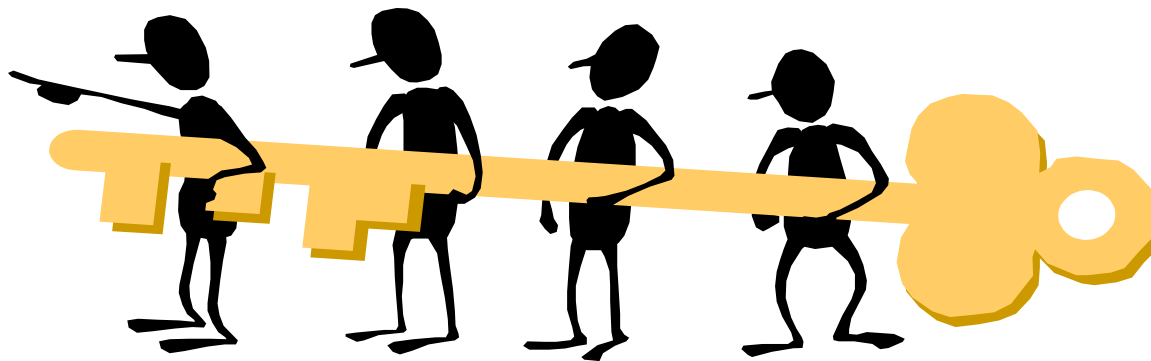
How Critical Thinking Relates to Instructional Design

- Critical thinking is to knowing as listening is to hearing. This implies that critical thinking is a **learned skill**.
- It must be developed, practised, and continually integrated into the curriculum to engage students in active learning.



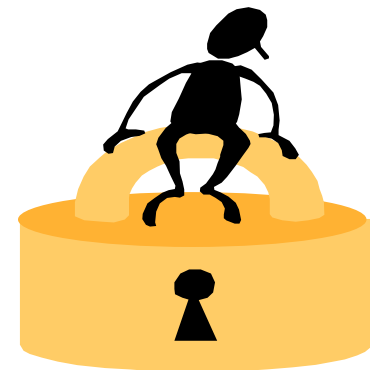
How Critical Thinking Relates to Instructional Design

- To support the premise that critical thinking is learned, focused attention needs to be placed on the **application of content, the process of learning, and methods of assessment.**



Promoting Critical Thinking/ I

- In terms of the application of content, teaching techniques that promote memorization) do not support critical thinking.
- Some content, require memory, however, it is the **application of the content** that stimulates thinking.



Promoting Critical Thinking/2

- Teaching for the development of critical thinking calls for the use of questioning techniques
- Plan questions



Promoting Critical Thinking/3

- Use questioning approaches that call on students to analyze, synthesize, and evaluate information to solve problems and make decisions (think) rather than merely to repeat information (memorize).

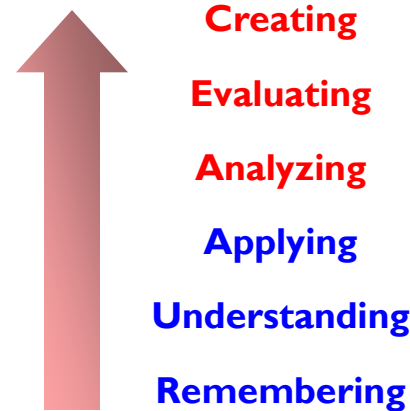


Asking the Right Questions

- What do you think about this?
- Why do you think that?
- What is your knowledge based upon?
- What does it imply and presuppose?
- What explains it, connects to it, leads from it?
- How are you viewing it?
- Should it be viewed differently?

Teaching Strategies

- Teaching strategies that employ students' higher-order thinking skills lead to improved critical thinking skills (Duplass & Ziedler, 2002; Hemming, 2000; Wong, 2007).

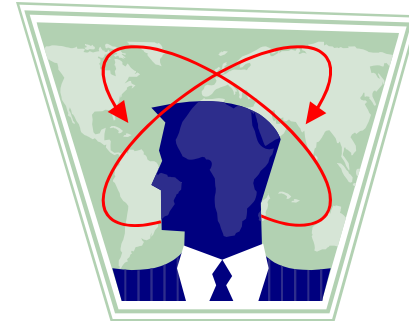


Types of Cognitive Learning

- **Create**
- **Evaluate**
- **Analyse**
- Apply
- Understanding
- Remember



Higher level thinking skills



Lower level thinking skills

Remembering

The learner is able to recall, restate and remember learned information

- Describing
- Finding
- Identifying
- Listing



- Retrieving
- Naming
- Locating
- Recognizing

Can students recall information?

Understanding

Student grasps meaning of information by interpreting and translating what has been learned

- Classifying
- Comparing
- Exemplifying
- Explaining



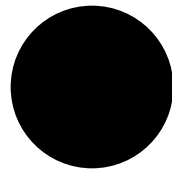
- Inferring
- Interpreting
- Paraphrasing
- Summarizing

Can students explain ideas or concepts?

Applying

Student makes use of information in a context different from the one in which it was learned

- Implementing
- Carrying out



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- Using
- Executing

Can students use the information in another familiar situation?

Analysing

Student breaks learned information into its parts to best understand that information

- Attributing
- Comparing
- Deconstructing
- Finding
- Integrating
- Organizing
- Outlining
- Structuring

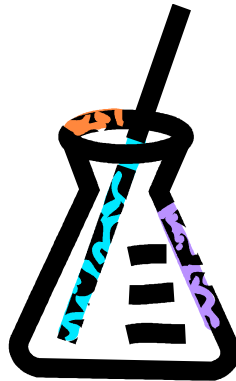


Can students break information into parts to explore understandings and relationships?

Evaluating

Student makes decisions based on in-depth reflection, criticism and assessment

- Checking
- Critiquing
- Detecting
- Experimenting



- Hypothesising
- Judging
- Monitoring
- Testing

Can students justify a decision or a course of action?

Creating

Student creates new ideas and information using what previously has been learned

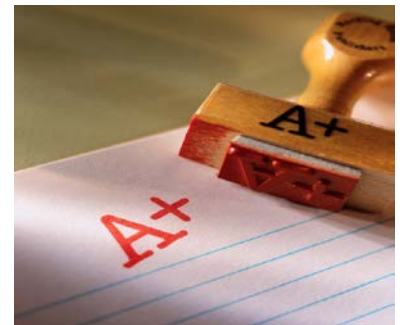
- Constructing
- Designing
- Devising
- Inventing
- Making
- Planning
- Producing



Can students generate new products, ideas, or ways of viewing things?

Assessment/ I

- Assessment activities should emphasize thinking rather than facts (Ennis, 1993).
- Graded assignments, quizzes, or tests should become intellectual challenges rather than memory recall (Schafersman, 1991).



Assessment/2

- Subjective tools such as essay questions and case studies require students to apply their knowledge to new situations and are better indicators of understanding than objective true/false or standardized multiple-choice assessments.



Assessment/3

- It is possible to create multiple-choice questions that require critical thinking. For example, a question that asks students to identify the example that best applies a specific concept requires more critical thinking and analysis than a question that asks students to identify the correct term for a given definition.



Modeling/ I

- Students must learn how to think critically before they can apply the skill to content scenarios.
- Modeling can be demonstrated in a discussion setting by asking a question and “walking students through” the process of critically thinking.



Modeling/2

- To enhance students' processing skills, it is important to review test questions and explain correct answers by modeling the critical thinking process (Brown & Kelly, 1986; Duplass & Ziedler, 2002; Schafersman, 1991)



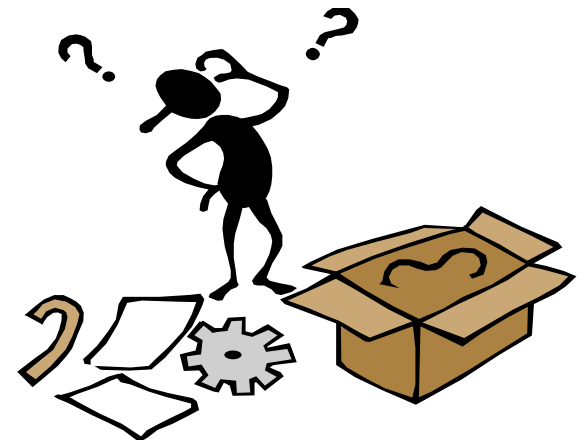
Critical Thinking Activities/ I

- Critical thinking activities should be based on a structure that includes four elements: **“ill-structured problems, criteria for assessing thinking, student assessment of thinking, and improvement of thinking”** (Broadbear, 2003, p. 7).



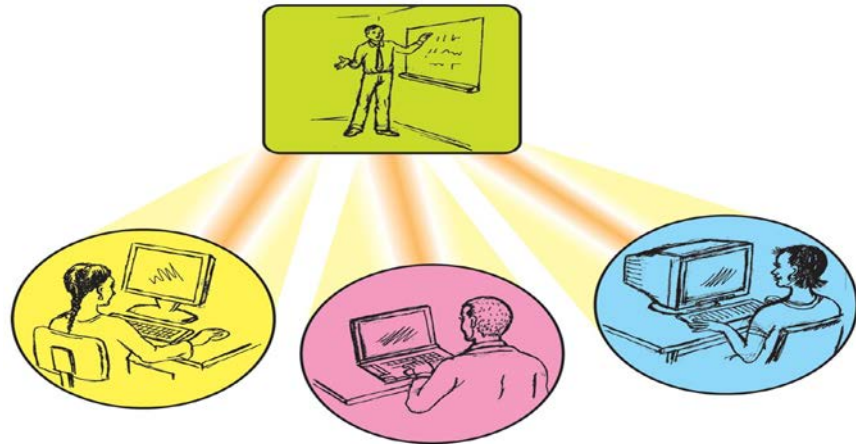
Critical Thinking Activities/2

- **Ill-structured problems** are questions, case studies, or scenarios that do not have a definite right or wrong answer; they include debatable issues that require “reflective judgment.”



Critical Thinking Activities/3

- For example:
 - Asking students to evaluate comparable websites, such as Appliance Traders and Courts, will require them to think about the contents of the websites, their format, and their usability. Right and wrong = X



Critical Thinking Activities/4

- The second element, **criteria for assessing thinking**, provides students with a framework for thinking about their thinking.
 1. Why do you think Appliance Trader's navigational menus are easier to use than Courts?
 2. Why do you like one's colour scheme over the other?
 3. What is your perspective based upon?



Critical Thinking Activities/5

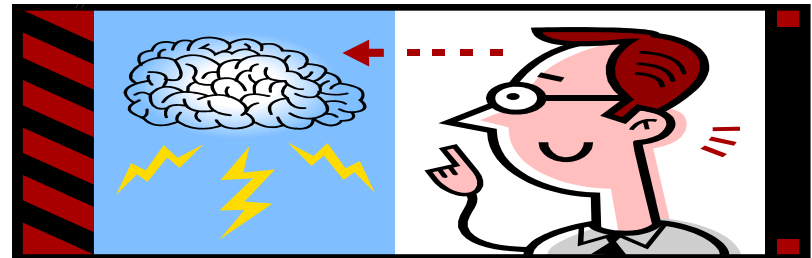
Student assessment of thinking (feedback)

- Providing students with individualized feedback based on their responses allows them to address specific criteria upon which they can **assess their thinking**, which is the third element. Model the criteria for assessing thinking and provide a framework, and students will eventually apply these techniques on their own (Lundquist, 1999).



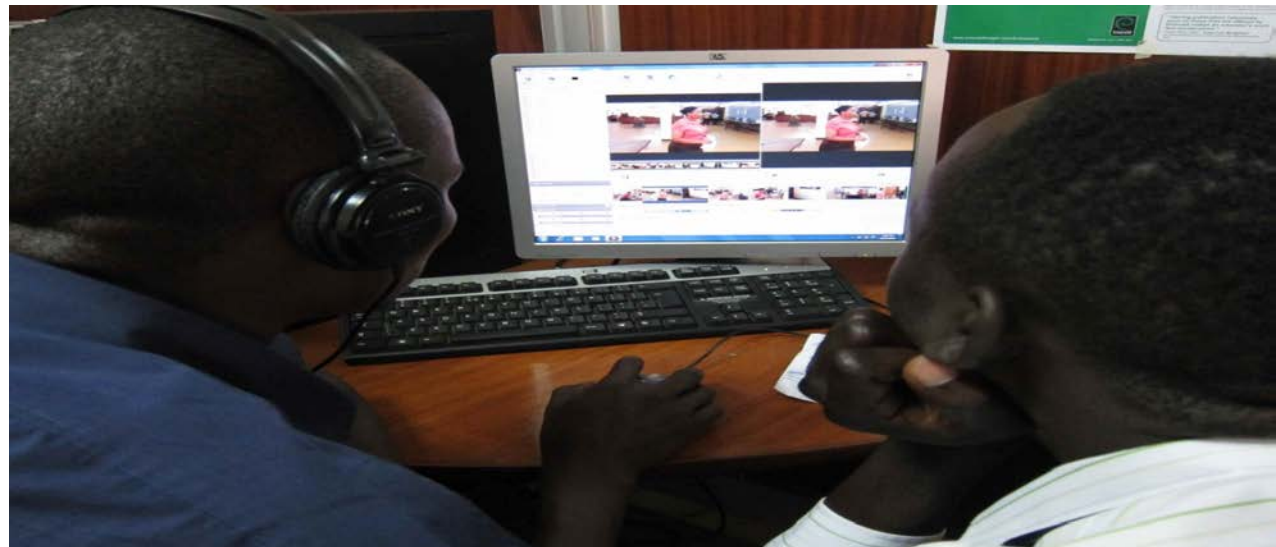
Critical Thinking Activities/6

- Finally, the process concludes with **improvement of thinking**. When opportunities are created for students to think about their thinking processes and practice logical constructs, students will become more willing to reconsider and revise their thinking (Duplass & Ziedler, 2002).



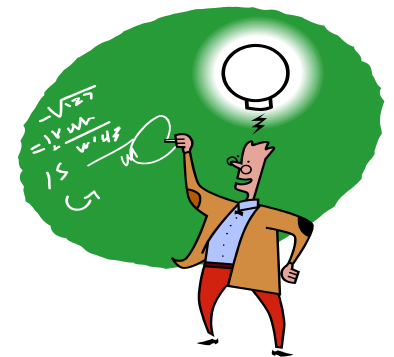
Guiding Students' Critical Thinking

- Assign students to two-person teams; one student might be assigned the role of the problem-solver, and the other is the peer coach.



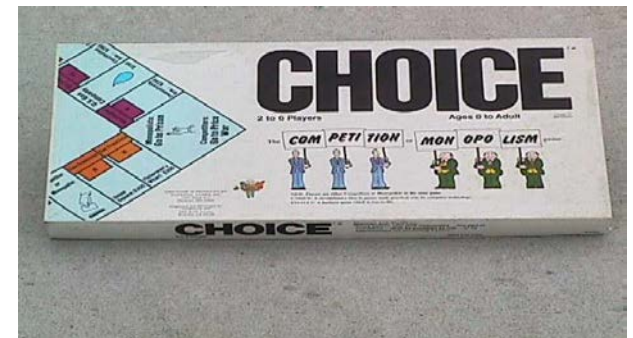
Guiding Students' Critical Thinking

- Using the Six Steps to Effective Thinking and Problem Solving, or “IDEALS” (Facione, 2007), the problem-solver works through a case study or activity by responding to questions from the peer coach.
- The IDEALS are to Identify, Define, Enumerate, Analyze, List, and Self-Correct:



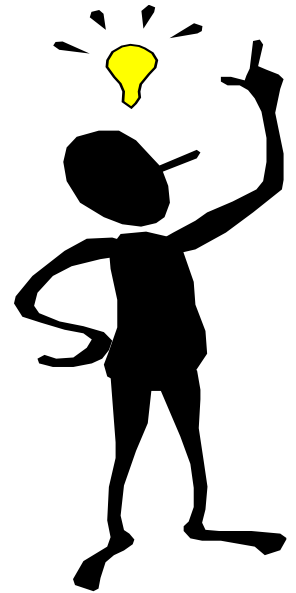
Guiding Students' Critical Thinking

- **I** Identify the Problem: What is the real question we are facing?
- **D** Define the Context: What are the facts that frame this problem?
- **E** Enumerate the Choices: What are plausible options?



Guiding Students' Critical Thinking

- **A** Analyze Options: What is the best course of action?
- **L** List Reasons Explicitly: Why is this the best course of action?
- **S** Self-correct: Look at it again
... what did we miss?



References

- Brown, M. N., & Kelley, S. M. (1986). Asking the right questions: A guide to critical thinking, 7th ed. Englewood Cliffs, NJ: Prentice Hall
- Broadbear, J. T. (2003). Essential elements of lessons designed to promote critical thinking. *Journal of Scholarship of Teaching and Learning*, 3(3), 1–8.
- Duplass, J. A., & Ziedler, D. L. (2002). Critical thinking and logical argument. *Social Education*, 66(5), 10–14.
- Ennis, R. H. (1993). Critical thinking assessment. *Theory Into Practice*, 32(3), 179–186.
- Facione, P. A. (2007). Critical thinking: What it is and why it counts. Retrieved January 2, 2008, from <http://www.telacommunications.com/nutshell/cthinking7.htm>
- Hemming, H. E. (2000). Encouraging critical thinking: “But...what does that mean?” *Journal of Education*, 35(2), 173.

References

- Ladyshewsky, R. K. (2006). Peer coaching: A constructivist methodology for enhancing critical thinking in postgraduate business education. *Higher Education Research and Development*, 25(1), 67–84.
- Lundquist, R. (1999). Critical thinking and the art of making good mistakes. *Teaching in Higher Education*, 4(4), 523–530
- Scriven, M., & Paul, R. (2007). Defining critical thinking. *The Critical Thinking Community: Foundation for Critical Thinking*. Retrieved from <http://www.criticalthinking.org/aboutCT/d>
- Schafersman, S. D. (1991). An introduction to critical thinking. Retrieved from <http://www.freeinquiry.com/critical-thinking.html>
- Tempelaar, D.T. (2006). The role of metacognition in business education. *Industry and Higher Education*, 20(5), 291–297.