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# Intentional Integration of Critical Thinking Instruction and Technology

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# Intentional Integration of Critical Thinking Instruction and Technology

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## BACKGROUND

- A course was redesigned to purposefully integrate critical thinking instruction and incorporate technology-enhanced learning environments to support student learning.
- The ability to critically think and to gain efficiency and proficiency with the use of information and communication technology has been deemed of importance for students upon graduation and a necessity for employment in today's work environment (Roschelle, Bakia, Toyama, & Patton, 2011).
- Formal instruction in critical thinking and integration of technology into education has been emphasized, alluding to their importance for institutions, educators and the graduating professionals (Chan, 2013; Kim, Kim, Lee, Spector, & DeMeester, 2013).
- In-class and online technology-enhanced learning, using a classroom response system, and an online discussion forum, were integrated into an undergraduate course to facilitate the development of critical thinking.
- Classroom response systems have potential to engage students in active learning and in eliciting immediate feedback to ascertain student understanding, application of knowledge learned, and critical thinking capability (Dallaire, 2011; Mincer, 2013; Trew & Nelsen, 2011).
- Online discussion forums provide students with time for absorption and reflection of course information and can contribute to more profound learning, realizing the achievement of critical thinking (Garrison, 2011; Lai, 2012; Lee & Baek, 2012).



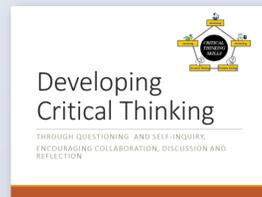
## LEARNING OUTCOMES

- To purposefully instruct critical thinking aligned with domain-specific course content.
- To incorporate technology into a course to support development of critical thinking.
- To guide development of critical thinking and self-inquiry to encourage individual student growth.
- To provide opportunity to gain familiarity with the use of information and communication technology.

## COURSE DESIGN AND IMPLEMENTATION

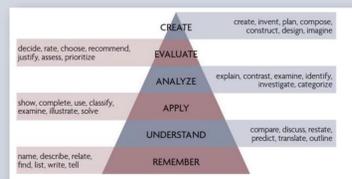
The design and the implementation of the course needs to include:

- Critical thinking instruction intentionally integrated into course and aligned with content:
  - What critical thinking is and its importance to the discipline of study
  - Questioning and self-inquiry to develop critical thinking
    - Introduce Bloom's Taxonomy
  - Relevance and application to domain-specific practice situations
- Specific development of technology-enhanced learning environments:
  - Supportive to encourage active participation
  - Safe to promote inquiry, thinking, discussion, and reflection
  - Appropriate technology to support the planned instructional practices
    - Aligning the course content and instruction with the desired outcomes and the chosen technology
- Instructor presence projected in-class and online needs to be:
  - Approachable and personable
  - Enthusiastic and engaging
  - Genuine and trustworthy
  - Knowledgeable with discipline and practice experience
- Developing relevant questions aligned with domain knowledge which:
  - The Instructor models to facilitate student development of own self-inquiry
  - Promote inquiry, critical thinking, and reflection
  - Connect and apply course learning to real life situations
  - Enable students to personalize course content
  - Lead to further discussion
  - Target applying, analyzing, and evaluating levels of Blooms' revised Taxonomy (Krathwohl, 2002)
- Orientation and IT support for instructor and students on the use of the chosen technology:
  - Faculty development to ensure that the technology is purposefully selected to support the pedagogical practice
  - Faculty development to foster knowledge, capability, peer collaboration for enhancing learning with technology
  - Easily accessible and available IT support



### Questions Guided by Bloom's Taxonomy

- Remember:** Can you recall information you have read or heard?
- Understand:** Can you explain the ideas or concepts you have read or heard about?
- Apply:** Can you use the information in another context or a different situation or for a different task?
- Analyze:** Can you break the information down into its component parts?
- Evaluate:** Can you assess the value of the input information?
- Create:** Can you use the input to create something new?



### Questions: The "Guidance System" to Critical Thinking

- Guidance System—to guide/direct the path of learning:
  - Input—information and knowledge you take in
  - Processing—integrating the information and deciding next steps
  - Output—determine action to take



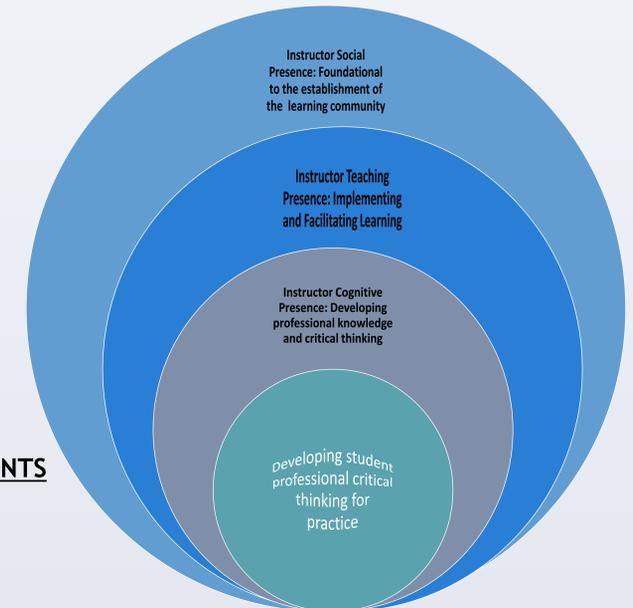
### Questioning to Develop Critical Thinking

"The Critical Mind is a Questioning Mind"



## THE IMPORTANCE OF INSTRUCTOR PRESENCE

The quality of the instructor as social presence can have a significant influence on student social presence, group participation, and quality of learning, with "instructor immediacy" essential to the establishment of the community (Pollard, Minor, & Swanson, 2014).



## THE INSTRUCTOR "PREPARES" STUDENTS FOR LEARNING AND THINKING

P: Prepare for Participation

R: Respect and Responsive

E: Engage in Learning

P: Promote Interpersonal Communication and Building Connections

A: Awareness of Inquiry to develop Critical Thinking and Reflection

R: Relating Knowledge to Practice

E: Encourage Self-Inquiry to develop Professional Critical Thinking in Practice

## THE ROLES OF THE INSTRUCTOR IN FACILITATING STUDENT CRITICAL THINKING

### Instructor as Social Presence

- Develop and sustain a safe and supportive learning environment.
- Initiate communication with a welcome, ensuring tone is warm, friendly, and approachable.
- Project enthusiasm and interest in students and their learning, engaging them interpersonally.
- Demonstrate respect, understanding, sensitivity and valuing for student perspectives.
- Easily accessible to students, prompt and responsive to their questions and needs.
- Develop the social community to initiate group cohesion and functioning (Oskoz, 2013; Pollard, Minor, & Swanson, 2014).



### Instructor as Teaching Presence

- Provide clear guidelines to learning activities.
- Develop instructional materials and questions to facilitate student engagement and understanding of their learning.
- Facilitate in-class and online discussions:
  - Use question prompts and responses to further thinking and enable deeper understanding.
  - Encourage participation by all students.
- Utilize questions and facilitation prompts to encourage student inquiry, discussion, and reflection to develop critical thinking (Richardson, Sadaf, & Ertmer, 2013).

### Instructor as Cognitive Presence

- Provide professional practice knowledge aligning theory and practice.
- Encourage development of self-inquiry and reflection to develop own practice.
- Encourage integration of new learning into practice.
- Share real life practice examples to consolidate learning and "make learning real".
- Provide domain-specific knowledge to guide and develop student understanding towards attaining critical thinking (Garrison, 2011; Kupczynski, Ice, Wiesenmayer, & McCluskey, 2010).

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