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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).



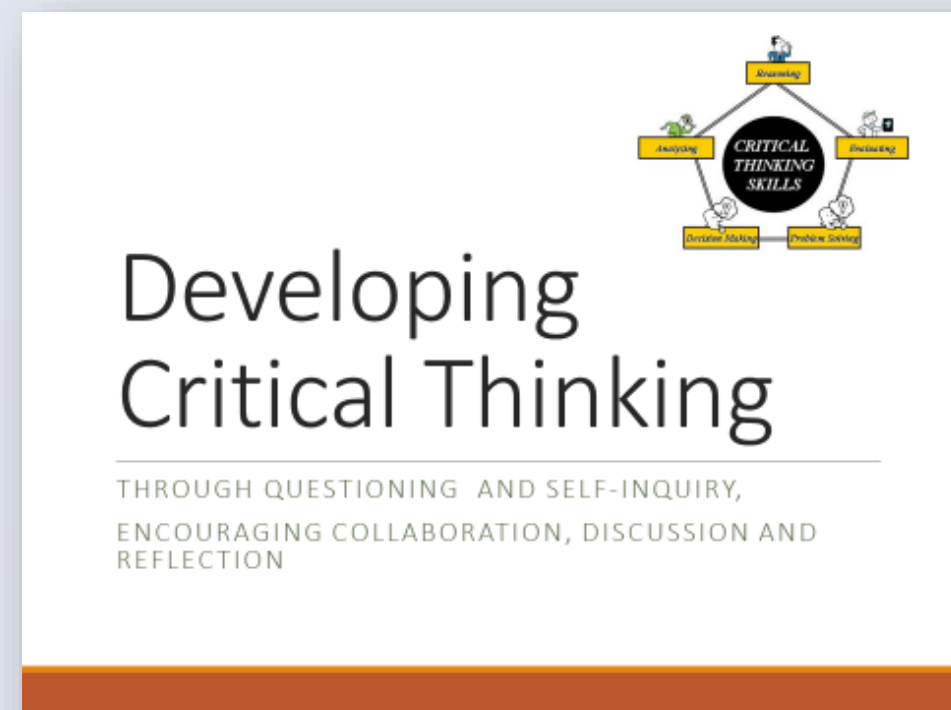
LEARNING OUTCOMES

- 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

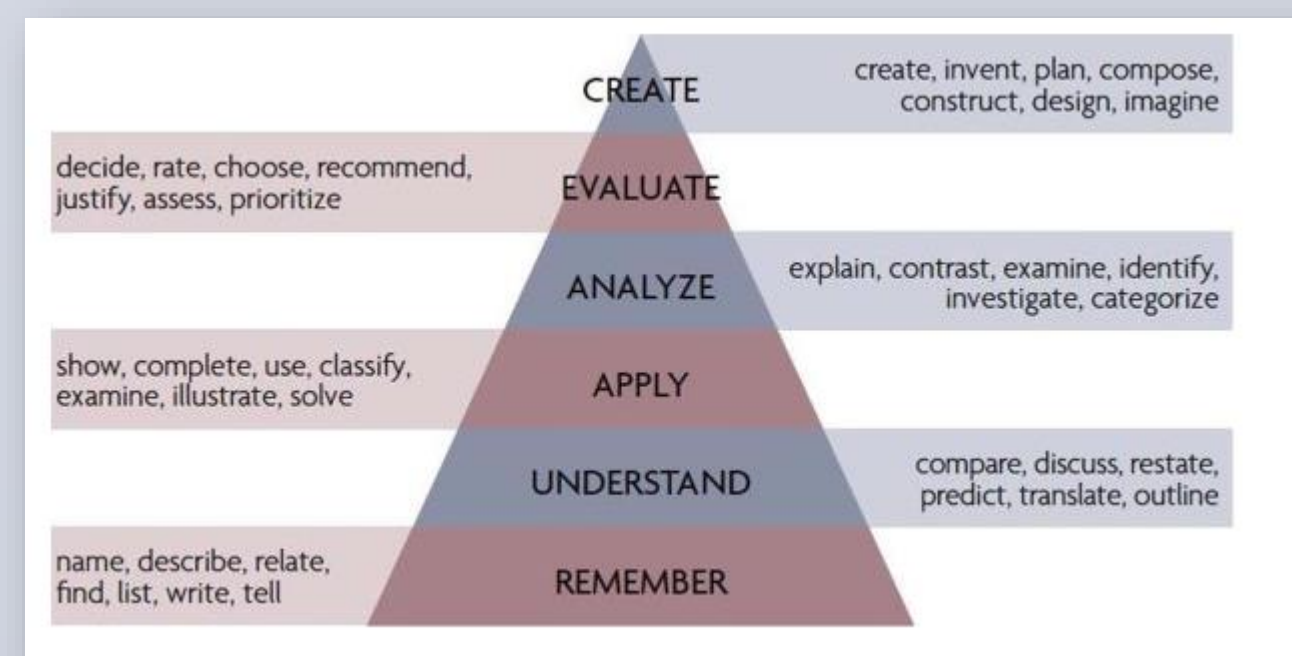
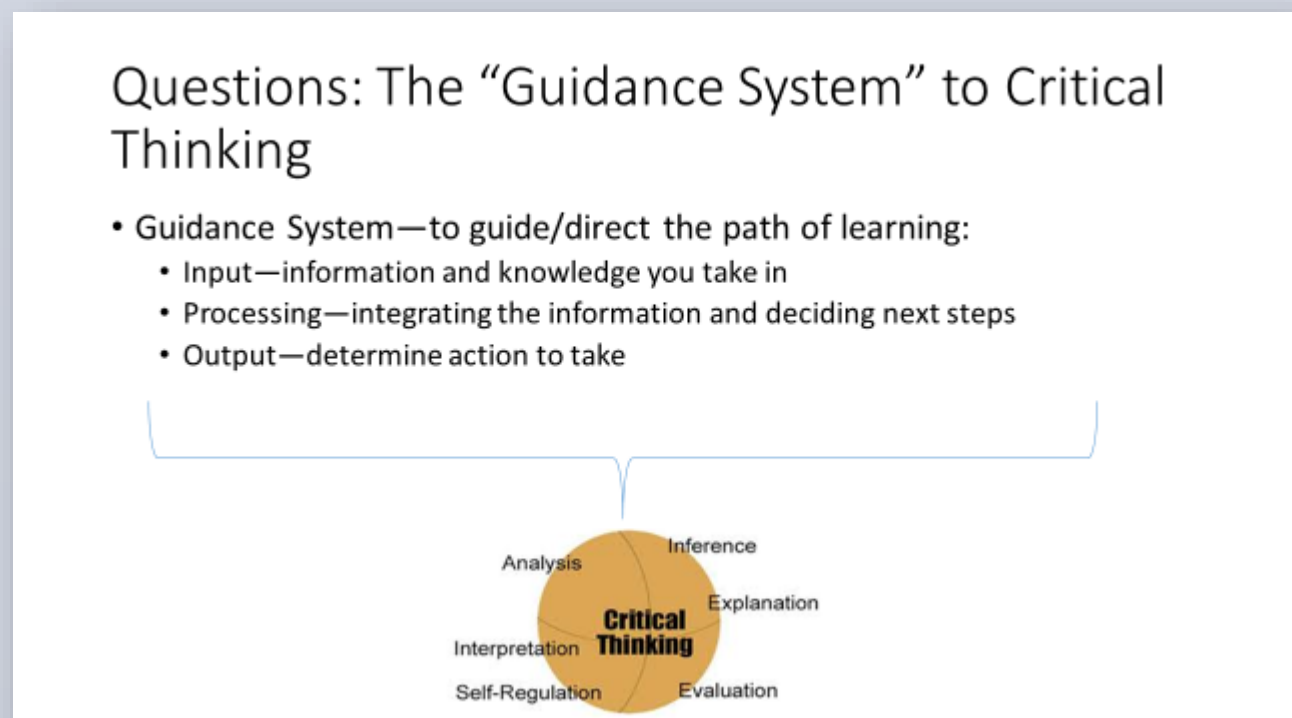
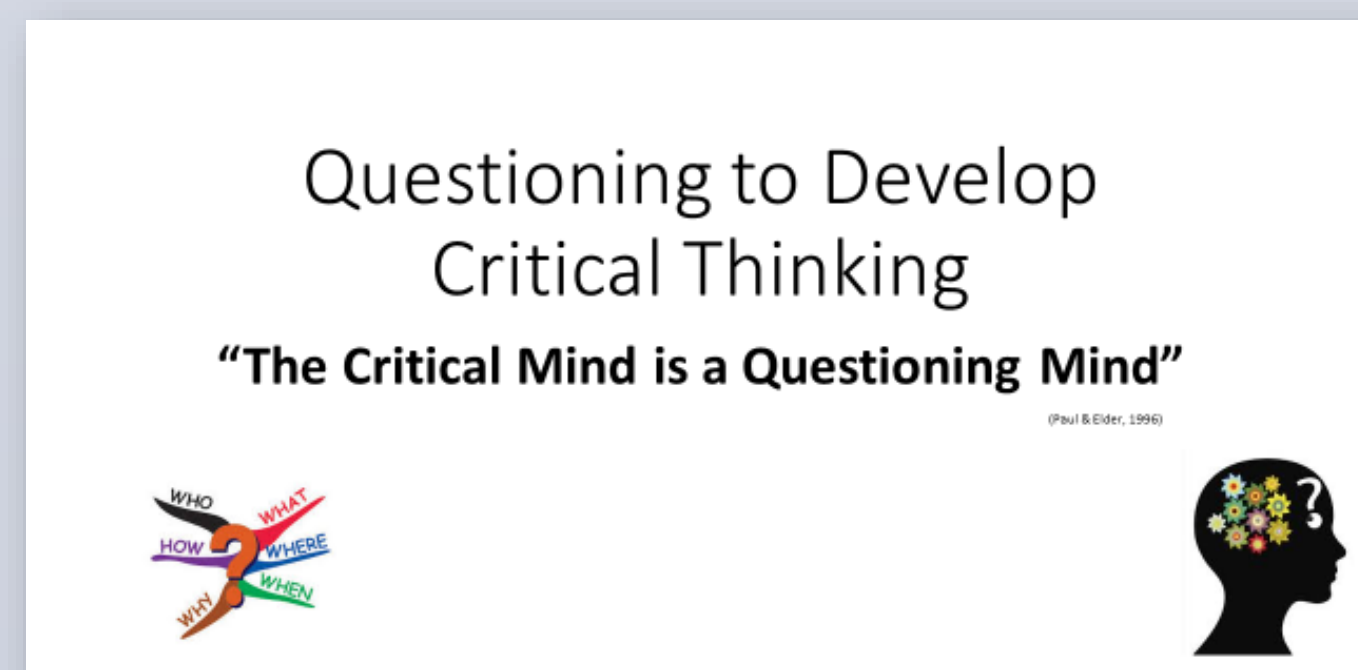
The design and the implementation of the course needs to include:

- 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



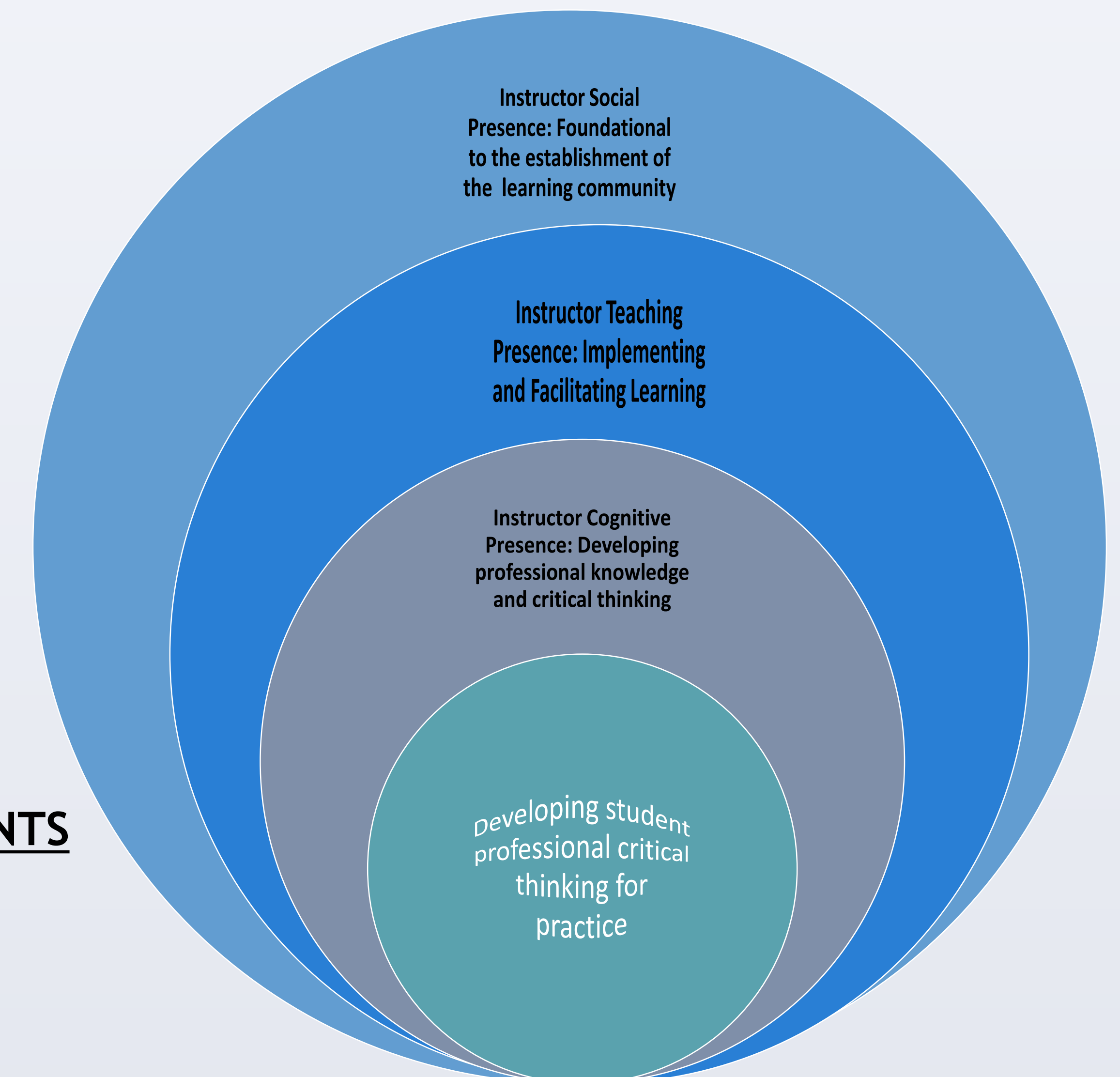
Questions Guided by Bloom's Taxonomy

- 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?



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).

REFERENCES

- Chan, Z. C. Y. (2013). A systematic review of critical thinking in nursing education. *Nurse Education Today*, 33, 236-240.
- Dallaire, D. H. (2011). Effective use of personal response “Clicker” systems in psychology courses. *Technology and Teaching*, 38(3), 199-204.
- Garrison, D. R. (2011). E-learning in the 21st century: A framework for research and practice. New York, NY: Routledge Taylor & Francis Group.
- Kim, C. M., Kim, M. K., Lee, C., Spector, J. M., & DeMeester, K. (2013). Teacher beliefs and technology integration. *Teaching and Teacher Education*, 29, 76-85.
- Krathwohl, D. R. (2002). A revision of Bloom's Taxonomy: An overview. Theory into Practice, 41(4), 212-218. Retrieved from http://www.unco.edu/ceit/sir/statting_outcome/documents/Krathwohl.pdf
- Kupczynski, L., Ice, P., Wiesenmayer, R., & McCluskey, F. (2010). Student perceptions of the relationship between indicators of teaching presence and success in online courses. *Journal of Interactive Online Learning*, 9(1), 23-43. Retrieved from <http://www.ncolr.org/jiol/issues/pdf/9.1.2.pdf>
- Lai, K. (2012). Assessing participation skills: Online discussions with peers. *Assessment & Evaluation in Higher Education*, 37(8), 933-947.
- Lee, H.-J. & Baek, E.-O. (2012). Facilitating deep learning in a learning community. *International Journal of Technology and Human Interaction*, 8(1), 1-13.
- Mincer, A. B. (2013). The 3R method optimizes the use of student response systems in physical therapist education. *Journal of Physical Therapy Education*, 27(1), 94-100.
- Oskoz, A. (2013). Let's enhance learners' cultural discussions: Developing a community of inquiry in a blended course. In Z. Akyol & D. R. Garrison (Eds.), *Educational communities of inquiry: theoretical framework, research, and practice* (pp. 267-294). Hershey, PA: Information Science Reference.
- Pollard, H., Minor, M., & Swanson, A. (2014). Instructor social presence within the community of inquiry framework and its impact on classroom community and the learning environment. *Online Journal of Distance Learning Administration*, 17(2). Retrieved from http://www.westga.edu/~distance/ojdl/summer172/Pollard_Minor_Swanson172.html
- Richardson, J. C., Sadaf, A., & Ertmer, P. A. (2013). Relationship between types of question prompts and critical thinking in online discussions. In Z. Akyol & D. R. Garrison (Eds.), *Educational communities of inquiry: theoretical framework, research, and practice* (pp. 197-222). Hershey, PA: Information Science Reference.
- Roschelle, J., Bakia, M., Toyama, Y., & Patton, C. (2011). Eight issues for learning scientists about education and the economy. *The Journal of the Learning Sciences*, 20, 3-49.
- Trew, J. L. & Nelsen, J. L. (2011). Getting the most out of audience response systems: Predicting student reactions. *Learning, Media and Technology*, 37(4), 379-394.