Building Critical Thinking Skills in General Education and Career Programs

Wayne County Community College District

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College Definition of Critical Thinking
Program Definition of Critical Thinking

The Critical Thinking Co.

“Critical thinking is the identification and evaluation of evidence to guide decision making. A critical thinker uses broad in-depth analysis of evidence to make decisions and communicate his/her beliefs clearly and accurately.”

Critical Thinking as Defined by the National Council for Excellence in Critical Thinking, 1987
A statement by Michael Scriven & Richard Paul for the {presented at the 8th annual international Conference on Critical Thinking and Education Reform, Summer 1987}.

Critical thinking is 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. In its exemplary form, it is based on universal intellectual values that transcend subject matter divisions, clarity, accuracy, precision, consistency, relevance, sound evidence, good reasons, depth, breadth, and fairness.
Accreditation Standards

- American Dental Association Commission on Dental Accreditation
- Proposed Revisions To Dental Hygiene Standards


Critical Thinking

2-23 Graduates must be competent in the application of self-assessment skills to prepare them for life-long learning.

Intent:
Dental hygienists should possess self-assessment skills as a foundation for maintaining competency and quality assurance.

2-24 Graduates must be competent in the evaluation of current scientific literature.

Intent:
Dental hygienists should be able to evaluate scientific literature as a basis for life-long learning, evidence-based practice and as a foundation for adapting to changes in healthcare.

2-25 Graduates must be competent in problem solving strategies related to comprehensive patient care and management of patients.

Intent:
Critical thinking and decision making skills are necessary to provide effective and efficient dental hygiene services. Throughout the curriculum, the educational program should use teaching and learning methods that support the development of critical thinking and problem solving skills.
Core Abilities
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Think: Think clearly, critically and creatively making reasonable judgments

- Analyze systems, process and situations
- Synthesize information from a variety of sources to make an informed decision
- Integrate new ideas into the thinking process
- Evaluate information and ideas according to principles and guidelines
- Identify, define, and think critically about the issues that arise in daily life both personally and professionally
- Apply the principles and methods of science
- Apply mathematical and technical skills (especially computer skills) to meet personal and career goals
- Apply the principles and methods of science
Competencies For The Dental Hygiene Graduate
Wayne County Community College District

- Information Management, Problem Solving and Critical Thinking. The dental hygiene graduate must be able to acquire and synthesize information in a critical, scientific and effective manner in order to provide dental hygiene care to promote patient health and wellness.

- This competency includes that the dental hygiene graduate must:
- 2.1 Accept responsibility for solving problems and making decisions by accepted scientific principles.
- 2.2 Critically analyze published reports of oral health and apply this information to the practice of dental hygiene.
- 2.3 Evaluate the safety and efficacy of oral health products and treatment.
- 2.4 Demonstrate the ability to communicate professional knowledge verbally and in writing with individuals and groups from diverse populations.
- 2.5 Employ the principles of scientific writing.
- 2.6 Assume responsibility for life long learning and self assessment.
Professional Organizations

- American Dental Association
- American Dental Education Association
- American Dental Hygiene Association
American Dental Association
Commission on Dental Accreditation
Critical Thinking:
Critical thinking is foundational to teaching and deep learning in any subject. The components of critical thinking are: the application of logic and accepted intellectual standards to reasoning; the ability to access and evaluate evidence; the application of knowledge in clinical reasoning; and a disposition for inquiry that includes openness, self-assessment, curiosity, skepticism, and dialogue. In professional practice, critical thinking enables the dentist to recognize pertinent information, make appropriate decisions based on a deliberate and open-minded review of the available options, evaluate outcomes of diagnostic and therapeutic decisions, and assess his or her own performance.
Accordingly, the dental educational program must develop students who are able to:

- Identify problems and formulate questions clearly and precisely;
- Gather and assess relevant information, weighing it against extant knowledge and ideas, to interpret information accurately and arrive at well-reasoned conclusions;
- Test emerging hypotheses against evidence, criteria, and standards;
- Show intellectual breadth by thinking with an open mind, recognizing and evaluating assumptions, implications, and consequences;
- Communicate effectively with others while reasoning through problems.
American Dental Education Association

- Core Competencies:
  - Provide dental hygiene care to promote patient/client health and wellness using critical thinking and problem solving in the provision of evidence-based practice.
  - Use evidence-based decision making to evaluate and incorporate emerging treatment modalities.
  - Assume responsibility for dental hygiene actions and care based on accepted scientific theories and research as well as the accepted standard of care.
  - Continuously perform self-assessment for life-long learning and professional growth.
Dental Hygiene Diagnosis

The dental hygiene diagnosis is a component of the overall dental diagnosis. The dental hygiene diagnosis is the identification of an exiting or potential oral health problem that a dental hygienist is educationally qualified and licensed to treat. The dental hygiene diagnosis requires analysis of all available assessment data and the use of critical decision making skills in order to reach conclusions about the patient's dental hygiene treatment needs.

I. Analyze and interpret all assessment data to evaluate clinical findings and formulate the dental hygiene diagnosis.

II. Determine patient needs that can be improved through the delivery of dental hygiene care.

III. Incorporate the dental hygiene diagnosis into the overall dental hygiene treatment plan.
American Dental Hygiene Position paper (Excerpt)
CRITICAL THINKING

The dental hygiene process of care is both a clinical process and a critical thinking process. The dental hygiene process of care refers to higher order thinking, processing, and problem-solving. As licensed healthcare providers, it is imperative to develop skills that allow one to consider, analyze, synthesize, and evaluate data and make knowledge-based assessments and treatment decisions. This knowledge should provide assurances to the patient and other healthcare providers that a dental hygienist carefully assesses, considers, and analyzes data, and that the hygienist is positioned through education and clinical and community experiences, to work competently and effectively with other healthcare providers, particularly the dentist.
Prior To Admission Into Health Care Program

- Pre-test Hesi Sample
- Elsevier Tests for critical thinking.
Blooms Taxonomy

- Domain 1: Evaluation
- Bloom’s Synthesis domain
- Cognitive Analysis
- Application
- Comprehension
- Knowledge
Bloom’s taxonomy as a questioning framework

For **KNOWLEDGE**: Use questions dealing with…
- Remembering,
- memorizing,
- recognizing,
- recalling information,
- recalling identification.
Bloom’s taxonomy as a questioning framework

For **COMPREHENSION**:

Use questions dealing with

- Interpreting,
- describing in one’s own words,
- organization and selection of facts and ideas,
- Retell...
Bloom’s taxonomy as a questioning framework

For **APPLICATION**: Use questions dealing with-
- Problem solving,
- applying information,
- use of rules or principles,
- **How is...?**  **Why is...?**
Bloom’s taxonomy as a questioning framework

For **ANALYSIS**:

Use questions dealing with…

- identifying motives,
- separate the whole into component parts,
- classify parts according to…
- outline/diagram, compare/contrast.
Bloom’s taxonomy as a questioning framework

For **SYNTHESIS**:
Use questions dealing with…
- inferences or predications,
- adding to what was given,
- combining ideas…
- finding solutions
Bloom’s taxonomy as a questioning framework

For **EVALUATION**: Use questions dealing with…
- placing in order of priority.
- deciding on actions to take…
- choosing criteria for assessing
- agree or disagreeing with a premise.
- reflection on one’s own performance
Instruction that supports critical thinking uses questions techniques that require students to analyze, synthesize, and evaluate information to solve problems and make decision (think) rather than merely to repeat information (memorize).

Tips For Teaching Critical Thinking

- Must be clearly defined
- Must be clearly communicated to students
- Must use appropriate Teaching Strategies
- Must be appropriately evaluated
- Faculty and students must know what is being measured
- All aspects must be clearly defined
Teaching Strategies
Active Learning

- Learning is not a passive process
Active Learning: The role of Classroom Assessment Techniques (CATs)

- Help teachers obtain feedback on student learning:
  - What
  - How much
  - How well

- Students will continue to learn –
  - With or without
  - And sometimes in spite of the teaching

- However, there is not such thing as effective teaching in the absence of learning
Well-planned Questions Can Be used to:

- Begin active inquiry
- Start discussions
- Involve all students
- Extend the new knowledge
- Encourage discussion
- Problem-solve
- Encourage interactions
CATs

An approach designed to help teachers find out what students are learning in the classroom and how well they are learning it.
Sample of Classroom Assessment Techniques
One minute paper: One or two minutes before the end of class ask students to describe briefly (1/2 sheet) the most important thing learned or what question still remains
Assessing Skill in Analysis and Critical Thinking

- PBL/Case Studies
- Concept Mapping
- Pro/Con Grid
- 1 sentence summary
For Analysis and Critical Thinking

- Pro and Con Grid: Students list pros and cons to an issue presented by the instructor
- Task: Discuss the benefits and deterrents to
One-sentence Summary:

- Instructor asks students to summarize a large amount of information on a given topic in a single informative, grammatically correct, and long summary sentence.

"Who does what to whom, when, how and why?"
For Analysis, synthesis
Evaluation and Application

Case Scenarios

Your patient presents with:

What should the clinical plan for:
Case-Based Approach
Projects, papers, other assignments

- Article Review
- Literature Critique
- Self Assessment
- Portfolios
- Case Study
- Use of Rubrics
- Use of Textbooks
- Lesson Plans
Outcomes Assessment For Critical Thinking

- Self Assessments
- Service Learning Journal Entries
- Course Grades
- Course Grades on Critical Thinking Assessments
- Course Grades in Clinical Course
- Clinical Board Scores
- National Board Scores Case Studies
- Student/Graduate/Alumni/Employer Surveys
SERVICE LEARNING

Collaborative partnership between college and community.

Applying academic knowledge and critical thinking skills.

Reflection and assessment leading to deeper understanding of course content and civic engagement.