The Role of Critical Thinking in Narrowing the Gulf

Dr. Barry Stein, Chairperson of Counseling & Psychology

PI: Center for Assessment and Improvement of Learning

Eleventh Annual Narrowing the Gulf Conference
St. Petersburg College Epicenter

© 2010
Importance of Critical Thinking

We Have Acquired Tremendous Power to Create and Destroy
Importance of Critical Thinking

Explosion of Information

Internet

E=MC²

MySpace

Facebook

Wikipedia

Phone Apps

Books

Email

Blogs

Radio

Television

Magazines

Journals
Information is Readily Available
Importance of Critical Thinking

National polls indicate over 90% of the faculty in this country think critical thinking is the most important part of undergraduate education.

Derek Bok, 2005
President Emeritus of Harvard University
Information and the Internet

75% of College Students use the Internet as Primary Method of Searching for Information

31% of Population Use the Internet as Primary Source of Healthcare Information
What is Critical Thinking?

- Classic Emphasis
  - Evaluate Arguments and Conclusions
    - Reasoning
What is Critical Thinking?

Classical Emphasis

- Evaluate Arguments and Conclusions
  - Reasoning

Expanded Contemporary Emphasis

- Evaluate Ideas and Plans
  - Problem Solving
- Evaluate One’s Own Understanding
  - Life-Long Learning Skills
- Evaluate One’s Own Understanding
  - Communication
  - Creativity
Bloom’s Taxonomy

- Evaluation
- Synthesis
- Analysis
- Application
- Comprehension

Information (rote retention)

Critical Thinking
Agreement on what is **not** Critical Thinking

*NSSE Question*

(2a) Memorizing facts, ideas, or methods from your courses and readings so you can repeat them in pretty much the same form.

*National Survey of Student Engagement, Indiana University*
NSSE: Coursework emphasizes:
Memorizing facts, ideas, or methods from your courses and readings
Is Critical Thinking Important for the Underrepresented and Disadvantaged?
Routine versus Non-Routine Problem Solving
Routine versus Non-Routine Problem Solving

Routine

Non-routine

Under-represented and Disadvantaged
Examples of Possible Non-Routine Problems for Disadvantaged Technology Access – Digital Divide
Effective Learning Strategies
Transportation & Mobility Issues
Effective Communication
Teamwork Skills
Math Anxiety
Selecting an Assistive Device
Some Factors to Consider in Selecting a Powered Wheelchair

- Armrests
- Back Height
- Type of Battery
- Control System
- Type of Cushion
- Seat Depth
- Seat Width
- Type of Drive Wheel
- Footrests
Why Assess Critical Thinking?

Need to Measure Success for Accountability

Assessment Drives Improvement Efforts
How We Assess Learning Tells Our Students What to Learn
Development of the CAT Instrument
9 Year Process

Evaluate Tests
Begin Test Development
Collaborate Other Institutions
National Dissemination

Over 40 Institutions Now Collaborating
Developing the CAT Instrument

Faculty & Students

Learning Sciences Experts

CAT

External Evaluators

Statistical Findings
Skills Evaluated by CAT Instrument

**Evaluating Information**
- Separate factual information from inferences.
- Interpret numerical relationships in graphs.
- Understand the limitations of correlational data.
- Identify inappropriate conclusions.

**Creative Thinking**
- Identify & evaluate evidence for a theory.
- Identify new information that might support or contradict a hypothesis.
- Explain how new information can change a problem.

**Learning & Problem Solving**
- Separate relevant from irrelevant information.
- Integrate information to solve problems.
- Learn & apply new information.
- Use mathematical skills to solve real-world problems.

**Communication**
- Communicate ideas effectively.
Benefits of Involving Faculty in Scoring

Closing the Loop in Assessment and Quality Improvement

Assess Student Performance

Increase Faculty Awareness of Student Weaknesses (Faculty Participate in Test Scoring)

Increase Faculty Awareness of Effective Practices

Improve Student Learning
Professional Development: Faculty Involvement in CAT Scoring

- Identify Student Weaknesses
- Recognize Faculty Strengths & Weaknesses

Using Effective Practices

Developing a Teaching Community
Research in Learning Sciences
Designing Learning Opportunities that Stimulate Critical Thinking

- Engage Students In Active Learning
- Learning Activity = Real-World Goal
- Create Numerous Opportunities to Practice In Diverse Contexts
- Use as Primary Course Assessment
General Implications

- Learning for Rote Retention ≠ Problem Solving/Transfer
- Prior Knowledge can Impede or Facilitate Learning
- Transfer is Difficult – Requires Active Learning in Varied Contexts with Reflection
- Assessments Measure Certain Types of Learning but also Establish Expectations
Thank You