In her widely read work on the persistence of anti-intellectualism in the United States, Susan Jacoby (2008) observed, “In today’s America, intellectual and non-intellectuals alike, whether on the left or right, tend to tune out any voice that is not an echo. This obduracy is both a manifestation of mental laziness and the essence of anti-intellectualism” (p. xx).

Critical thinking has become an increasingly valued educational goal for all students from elementary school through post-secondary education. (Dwyer, Hogan, & Stewart, 2014; Kong, 2015).

The ability to exert purposeful, and self-regulatory judgment has become an expected foundation for building professional expertise given the demands of ubiquitous information and intellectual work in both global and micro knowledge economies. (Ahuna, Tinnesz, & Kiener, 2014; Nold, 2017)

Work in most professions involves constantly expanding access to data with expectations that those data are to be used to make sound decisions and solve complex problems. (Chan, 2013; Peters, Zikra, & Schmude, 2016; Hwang, 2006)
Why Critical Thinking?

High-stakes decisions and non-heuristic problem solving are standard features of leadership and innovation; therefore, preparing students for those opportunities is a task for all educators.

(Kettler & Brown, in press)

What is critical thinking?

Critical Thinking is...

• Reflective thinking using principles of reason, logic, and evidence to analyze, evaluate, and construct consistent and coherent arguments, understandings, and judgments.

• Purposeful, self-regulatory judgment including interpretation, analysis, and evaluation of the context in which the judgment is based.

Critical Thinking in Gifted Education

The goal of gifted and talented education in Texas

Students will develop skills in thinking, research, communication, and self-directed learning as evidenced by products and performances that reflect individuality and creativity and are advanced in relation to those of other students of similar age, experience, or environment.

Thinking skills include critical thinking, creative thinking, and problem solving.
Curriculum Standards for Critical Thinking (College Readiness)

1. Students will read closely to determine what the text says explicitly and make logical inferences from it.

2. Students will cite specific textual evidence when writing or speaking to support their conclusions.

3. Students will write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence.

4. Students will draw evidence from literary or informational texts to support analysis and reflection.

5. Students will evaluate a speaker’s point of view, reasoning, and use of evidence and rhetoric.

6. Students will present information, findings, and supporting evidence such that listeners can follow their line of reasoning.
Teaching Critical Thinking

Critical Thinking Skills

Interpretation
- Ask students to create categories to organize information
- Ask students to assign information to categories
- Ask students to describe significance of text, ideas, concepts, etc.

Interpretation
- Ask students to clarify meaning (What did the author mean by ___?)
- Ask students to clarify their own meaning (Explain what you mean by ____.)
- Ask students to clarify meaning in peers (What does ___ mean by ___?)

Analysis
- Ask students to examine ideas deeply and carefully (What is heat?).
- Ask students to identify arguments (parts of an argument).
  - What is the claim?
  - What is the reasoning to support the claim?
  - What is the evidence to support the claim?
Critical Thinking Skills

Analysis
• Ask students to analyze argument.
  • Does the reasoning and evidence support the claim?
  • What are possible counter arguments?
• Ask students to describe unstated assumptions in a claim or argument.

Evaluation
• Ask students to evaluate the structure and support of an argument.
• Ask students to judge whether the claim is supported by the argument.
• Ask how the claim could have been improved or strengthened.

Inference
• Ask students to describe evidence that might support an inference.
• Ask students to generate possible alternative claims or explanations.
• Ask students to draw conclusions from evidence or reasoning.
• Ask students to note assumptions that may not be stated.

Explanation
• Ask students to state results in a clearly understandable way.
• Ask students to justify procedures (Why did you do ___ before ___?)
• Ask students to present arguments as a type of explanation.

Self-Regulation
• Ask students to make self-examinations of their own beliefs.
• Ask students to self-examine for strengths and areas of improvement.
• Ask students to correct their thinking without specific prompting.
Teaching to Emphasize Critical Thinking Skills

Applying Critical Thinking Learning Objectives (Infusion)

- Design units and lesson plans that include specific critical thinking student expectations.
- Use teaching strategies (dialogical and authentic tasks) that require students to practice critical thinking.

Economics (6th). The student understands factors of production in a society’s economy. The student is expected to:
- Identify problems and issues that may arise when one or more of the factors of production is in relatively short supply.

Critical Thinking Objective:
- Students use evidence to support inferences and reasonable conclusions, opinions, and interpretations (Inference: Using Evidence)

Student uses evidence to support his/her description of problem/issues that may arise when one or more factors of production is in relatively short supply.

Strategies for Teaching Critical Thinking

Dialogical Instruction Strategies

There are three features of Dialogical Instructions:
(a) Discussing a problem or question together,
(b) Interacting back and forth during the discussion, and
(c) Interacting either orally or in writing or a combination of the two.
**Dialogical Instruction Strategies**

**Effective Questioning**

(a) Pre-plan a set of high-quality open-ended questions.
(b) Open-ended questions require extended, thoughtful responses.
(c) Pre-plan and use probing questions as follow-ups.
   (a) Give me an example of that.
   (b) How is that different from ___?
   (c) What evidence would you cite to back up that claim?
   (d) Why are you confident in that response?

**Formal Debate**

(a) The foundation of the debate is the resolution statement (e.g., Health care is right not a privilege.).
(b) There will always be an affirmative team defending the truth of the resolution, and an opposing or negative team claiming the resolution is not a true statement.

(c) Remaining students in the class can serve as judges or be expected to summarize and analyze the arguments that the two teams present.
(d) Simple debates may begin with one round, but more complex formats include two or three rounds, rebuttals, and even cross-examinations.
(e) Debate teams are expected to research the resolution topic and prepare written arguments in addition to the oral components of the debate.

**Critical thinking Dispositions in Students**

**Value truth and reason**

- Prompt students to explain why they believe X to be true.
- Ask why a person (or character in a story) believes X to be true.
- Point out examples of evidence that might support a truth statement.
- Note the differences between claims, reasons, and evidences.
  - The Patriots are the best team in football is a **claim**.
  - Winning consistently in the playoffs is a **reason** to support the claim.
  - Patriots have won six Super Bowls in last 18 years is **evidence** to support the reason.
Four Key Dispositions to Teach Children

Respect others during discussion

- Teach discussion mannerisms such as (a) complimenting other speakers, (b) disagreeing with claims not with the person, (c) refraining the use of disrespecting comments.
- Participate, but do not over participate in a way that takes other’s time.
- Listen attentively to others.
- Use body language that communicates active listening

Approach learning with an open-mind

- Teach students to focus on what they can learn rather than what they know.
- Use humble self-talk, such as “my current understanding is incomplete in regard to this topic or subject.”
- Ask students to reflect routinely on what they learned new that they did not previously know about the topic or subject.

See things from another’s perspective

- It’s normal human tendency to see from a personal perspective.
- Kids need to be taught to fight that tendency as a way to think more critically.
- In stories, require students to imagine how characters are thinking in various situations.
- Change a key feature of a character and ask the students to imagine and describe how the character’s perspective might change.

Basic Teaching Techniques to support Critical thinking

Take Definitions Seriously

Critical thinkers are good at clearly defining objects, ideas, and concepts.

- The Frayer Model is a great tool, but students need to be taught to provide thoughtful responses.
- Concrete terms are easiest, so we want to intentionally make opportunities to consider more abstract terms such as ideas and concepts.
  - Abstract examples: community, fairness, virtue, wisdom, authority, friendship, character, work, play, responsibility, etc.

Frayer Model

- Definition
- Characteristics
- Examples
- Non-Examples
Asking Clarifying Questions

Critical thinkers are good at asking clarifying questions.

- Routinely ask students to make a list of clarifying questions after reading or working on activities.
- Model the use of clarifying questions to improve your own understanding.
- Why is temperature a measure of heat, when sometimes it is really cold?

Study ideas, concepts, phenomenon

Critical thinkers enjoy analysis of complex ideas, concepts, and phenomenon.

- Content that is too fact and detail focused provides little opportunity for critical thinking.
- Design daily lessons and units around ideas, concepts, and phenomenon to create learning environments that invite critical thinking.
- Examples: narratives (stories), change, power, perspective, growth, scientific process, engineering, truth, wisdom, heat, ecology, etc.

Consider several alternatives before making decisions

Critical thinkers resist impulsive responses and instead consider several alternatives before making decisions.

- First, create learning situations that require students to make decisions where multiple alternatives are possible.
- The biggest obstacle that students can be taught to overcome is to resist making hasty or impulsive decisions before careful consideration of alternatives.

Teaching models that support critical thinking

Socratic Seminars or Shared Inquiry

- Seminars are a great tool for developing critical thinking.
- Students have to be taught how to be good seminar participants, and the length of a seminar should vary based on purpose or student readiness.
- Good seminars begin with deep reading and end with following reflection and writing—formal or informal.
- Provide students with probing tools that allow them to get to the critical thinking.
- Require text evidence for responses.

Argumentative Writing across All Content Domains

- Clearly stated claim/opinion
- Use of reasons to support the claims
- Use of evidence to back up the reasons that support the claims
- Acknowledgement of the strongest counter-arguments followed by refutation.
Thoughts and Questions

Critical thinking is a complex cognitive skills that requires effort and practice to develop.

What are some ways you can begin this year to emphasize critical thinking in your classroom?

Todd Kettler, Ph.D.

Associate Professor in Educational Psychology
Baylor University School of Education
Center for Gifted Education and Talent Development
Todd_Kettler@Baylor.edu