

## QEP Subcommittee for Critical Thinking

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### Literature Review Notes

**Kevin Aho** Moore, B. N. & Parker, R. *Critical Thinking* (McGraw Hill, 2011)

The authors offer a general introduction to critical thinking. The **first part** of the book focuses on the nature of arguments, writing with conceptual clarity and definitional rigor (i.e. defining one's terms), and offers a brief overview on the importance of assessing/evaluating arguments. **Part two focuses** on argumentative fallacies and the problem of relying on rhetorical devices in constructing arguments. Here the authors identify common fallacies such as stereotypes, innuendo, loaded questions, hyperbole, red herring, *ad hominem*, straw man, slippery slope, scapegoating, burden of proof, and begging the question. This part of the of book is especially helpful for students because the authors offer concrete examples of these kinds of fallacies as they show up in journalism, political speeches, and letters to the editor and provide exercises at the end of each section that allow students to practice identifying fallacies. **Part three** focuses on the nature of arguments and applications for testing the validity (or truth value) of both deductive and inductive arguments. Validity testing is distinctive to philosophical approaches to critical thinking and is crucial in determining the strength (inductive) and soundness (deductive) of different arguments. In the first section of part three, the authors offer an introduction to categorical logic using Venn diagrams, translation of ordinary language into categorical form, and Aristotle's square of opposition. In section two, the authors focus on truth-functional logic using truth tables and translation into symbolic notation (e.g. disjunction  $P \vee Q$ ; conjunction  $P \& Q$ , etc.). They also introduce methods for proving the validity of truth-functional logic via the rules of deduction (e.g. Modus Ponens; Modus tollens; Chain argument; Disjunctive argument, etc.). The last sections of the book deal with inductive arguments, causal arguments, and aspects of moral, legal, and aesthetic reasoning, the latter of which might be especially appealing to students.

### Key points given the mission of the QEP

- Highlights the importance of recognizing common misconceptions about arguments and the practical application of critical thinking
- Addresses the problem of relativism/subjectivism and what constitutes a factual claim
- Introduces a number of key strategies for writing with philosophical clarity and conceptual rigor.
- Introduces methods for testing the validity and soundness of arguments
- Differentiates between inductive and deductive logics
- Introduces methods for formalizing ordinary language into symbolic notation
- Discussions of moral and legal reasoning that have the potential to reach into a number of different disciplines across the university

- Addresses issues of critical thinking in a diverse society, focusing specifically on sexist language
- Exercises at the end of each

**Tom Bevins** Moore, B. N. & Parker, R. *Critical Thinking* (McGraw-Hill, 2012)

Critical thinking on a very basic level is thinking about how we think (Moore & Parker, 2012). Thinking about one's own thinking is an introspective process, and is facilitated by at least an elementary understanding of philosophy, educational/learning theory, and cognitive psychology. On a higher level, critical thinking involves consideration of whether one's own thinking (or someone else's thinking) "abides by the criteria of good sense and logic" (Moore & Parker, 2012, p. 2). This involves an evaluation of the quality and effectiveness of the thinking process.

The common objective of thinking is to come to a conclusion. Conclusions involve opinions, beliefs, and judgments. To state our conclusion in a declarative sentence is to make a claim. There are subjective and objective claims. Objective claims are "independent of whether people think it is true or false" (Moore & Parker, 2012, p. 5), whereas the truth of subjective claims do depend on what people think.

With regard to the knowledge of truth, Moore and Parker state that 1) if you believe something to be true, 2) you have an argument to support your claim that is beyond a reasonable doubt, and 3) you have no reason to believe that you are mistaken, then you know your claim is true. In critical thinking it is important to support claims with an argument. Arguments consist of two parts: 1) the claim (or conclusion), and 2) the premise, or the reason for accepting the claim.

Not all arguments are valid. Moore and Parker discuss how cognitive biases interfere with our ability to use logic, and to objectively weigh the evidence in support of a claim. Arguments can be differentiated into deductive and inductive arguments, with the difference being a distinction between proof and support. To determine that an argument is valid one must demonstrate that it is impossible for the premise to be true and the conclusion to be false.

Moore and Parker discuss the process of forming arguments, and the issues of vagueness, ambiguity, and fallacy related to arguments. An argument should have logical structure. The language should be clear, and terms defined. Since critical thinking is most commonly assessed through written communication, it is imperative that students have instruction and practice in writing arguments.

When assessing critical thinking, examine the following: How well does the student...

- determine what information is or is not pertinent;
- distinguish between rational claims and emotional ones;
- separate fact from opinion;
- recognize the ways in which evidence might be limited or compromised;
- spot deception and holes in the arguments of others;
- present his /her own analysis of the data or information;
- recognize logical flaws in arguments;
- draw connections between discrete sources of data and information;
- attend to contradictory, inadequate, or ambiguous information;
- construct cogent arguments rooted in data rather than opinion;
- select the strongest set of supporting data;
- avoid overstated conclusions;

- identify holes in the evidence and suggest additional information to collect;
- recognize that a problem may have no clear answer or single solution;
- propose other options and weigh them in the decision;
- consider all stakeholders or affected parties in suggesting a course of action;
- articulate the argument and the context for that argument;
- correctly and precisely use evidence to defend the argument;
- logically and cohesively organize the argument;
- avoid extraneous elements in an argument's development;
- present evidence in an order that contributes to a persuasive argument?

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[http://highered.mcgraw-hill.com/sites/dl/free/0073386677/610543/Moore9e\\_ch01.pdf](http://highered.mcgraw-hill.com/sites/dl/free/0073386677/610543/Moore9e_ch01.pdf)

**Sarah Davis** Brookfield, Stephen *Teaching for Critical Thinking: tools and techniques to help students question their assumptions*. (Jossey-Bass, 2012)

Stephen Brookfield breaks down the elements of critical thinking and shares personal stories and suggestions for the best way to implement critical thinking across the curriculum. This author clearly steps the reader through the background and theory behind critical thinking and then recommends the process and best practices when implementing the teaching of critical thinking. Brookfield outlines several activities that can be used in the classroom to engage the students in the process of critical thinking. Critical Thinking includes hunting assumptions, checking assumptions, seeing things from different viewpoints and taking informed action (Brookfield 2012). He discusses the “five critical intellectual traditions” which include (Brookfield 2012, ch 2):

1. Analytic Philosophy and Logic Detecting Language Tricks
2. Natural Sciences: The Hypothetico-Deductive Method
3. Pragmatism: The Experimental Pursuit of Beautiful Consequences
4. Psychoanalysis: Living an Integrated, Authentic Life
5. Critical Theory: Speaking Truth to Power

Brookfield emphasizes that critical thinking is a social learning process and students learn these skills best in small groups. He spends time illustrating specific scenarios and examples of using critical thinking in classroom discussions and through reading and writing exercises. He recommends a protocol of moving the students through a series of exercises throughout the semester so toward the end of the semester students are deepening their skills and using the advanced scenarios. The ultimate goal is to have the student directly analyzing his or her own thinking and experiences (Brookfield 2012). The book shares numerous examples and activities on how to implement critical thinking processes with students.

The text is an honest approach to how to implement the teaching and learning of critical thinking in higher education and while not perfect in his reasoning, the layout of the process is a good model. He

does not devote much time to discussing informed action and focuses the majority of the book on the process with examples of activities. This text will be useful to the QEP committee in defining what we mean by critical thinking and moving toward development of a university definition of critical thinking. He does discuss misunderstandings and challenges when implementing the processes that he suggests and this will also help the committee when we start implementing the QEP. It may also be useful in designing activities for students to learn the critical thinking process that we can then assess as part of the QEP.

**Sarah Davis** Maki, Peggy L. *Assessing for Learning: building a sustainable commitment across the curriculum*(2<sup>nd</sup> ed.). (Stylus Publishing, 2004)

Maki focuses on Teaching and Learning and the importance of creating buy-in across the institution among administrative and academic units to successfully implement program assessment that ties directly to the organizational mission and culture. She outlines the culture of inquiry and how students learn and different models of how to implement successful program assessment. She has compiled an extensive literature and resource review on the topic. Maki outlines the process and shares a review of resources, strategies, literature, worksheets, forms and examples from institutions and organizations involved in the process of assessing teaching and learning. “How well do undergraduate and graduate students transfer and apply concepts, principles, process, ways of knowing and problem solving across their major program of study” (Maki 2004, p 3.)? She poses a lot of questions and outlines various types of processes in order to explore how to assess effective learning and teaching across the disciplines. Maki also shares specific examples, models and rubrics from other Universities and their process of reaching across disciplines to successfully implement assessment. She outlines the following topics ( Maki 2004):

1. Developing a collective institutional commitment.
2. Beginning with dialogue about teaching and learning.
3. Making claims about student learning within contexts for learning.
4. Raising and pursuing open-ended research or study questions to deepen inquiry into and improve student learning.
5. Identifying or designing tasks to assess the dimensions of learning.
6. Reaching consensus about criteria and standards of judgment.
7. Designing a cycle of inquiry
8. Building a core institutional process of inquiry over time.

This does not relate directly to the theme of critical thinking however there are some commonalities in the process of inquiry and development of our assessment questions. This text may be useful in aiding the QEP committee with gathering some examples of how other institutions implemented a university-wide program assessment. This text does not incorporate the FGCU definition of sustainability or relate to our environmental mission as the title might lead us to believe. When we decide how we will

implement the project and what steps we will take to assess student learning and progress, this text will be helpful to draw upon some examples to develop our approach.

**Tanya Kunberger** Allan M. J. *Assessing Academic Programs in Higher Education* (Anker Publishing, 2004)

### General Overview

Chapter 1 introduces the concept that higher education is evolving to include the need to assess student learning outcomes on a systematic level. Specific programmatic governing bodies, as well as regional accrediting bodies are introduced. Overarching steps in a general assessment program and key terminology are summarized. Chapter 2 discusses the concept of learning objectives and program goals that fall into the categories of knowledge, skills, and values. Bloom's taxonomy and the importance of providing detailed and specific objectives are presented. Chapter 3 stresses the need to provide opportunities for students to be introduced early to concepts, given ample time to practice, and then allowed opportunities to demonstrate mastery in order to create a cohesive curriculum for relevant objectives. Additionally, it is critical to link teaching methodology, student support services, assignment grading, and course objectives to these broader objectives for maximum effectiveness. The focus of Chapter 4 is assessment plan development. This addresses the who, how, and where, as well as confirming the reliability and validity of results. Ethical implications are also touched upon as well as the importance of avoiding "survey fatigue" – the realization that there can be such a thing as too much assessment. Assessment techniques are addressed in Chapters 5 & 6. Chapter 5 deals with direct measures such as nationally standardized tests (e.g. GRE, SAT, CAAP, etc), locally developed tests, embedded assignments or course activities, competence interviews, and portfolios and presents both strengths and limitations associated with each respective method. Indirect techniques (e.g. surveys, interviews, focus groups, and reflective essays) are included in Chapter 6 with a similar summary of strengths and limitations. Methods of summarizing data are discussed in Chapter 7. Coding practices for content analysis, rubric development and implementation, and the importance of recognizing and accounting for inter-rater reliability are the primary discussion points. Chapter 8 emphasizes that assessment must be meaningful, manageable, and sustainable, and target improvement over accountability.

**Brandon Hollingshead** Bean, John C. *Engaging Ideas: The Professor's Guide to Critical Thinking and Active Learning in the Classroom* (2<sup>nd</sup> ed.). (Jossey-Bass, 2011)

Bean's text is an overview of ways for faculty to include critical thinking in instruction, course design, assessments, and assignments. In particular, the author contends that writing is key to critical thinking:

“good writing assignments evoke a high level of critical thinking, help students wrestle productively with a course's big questions, and teach disciplinary ways of seeing, knowing and doing” (Bean, 2011, pp. 1-2). To be most effective, “good writing assignments” must be part of a carefully planned course. The book is grounded in pedagogy of writing, of critical thinking, and of course design. The book is divided into four sections; each covers techniques to integrate critical thinking in courses.

Part One describes the relationship between critical thinking and writing: how writing is related to critical thinking; helping writers think rhetorically; and issues of grammar and correctness. This section is grounded in writing-across-the-curriculum, writing-in-the-disciplines, and writing as a means to teach the thinking processes that underlies academic inquiry (p. 22).

Part Two addresses the purpose and design of formal writing assignments and informal writing activities. In Bean’s parlance, formal writing refers to “finished prose” that “range in length from microthemes of one or two paragraphs to substantial research projects” (p. 89). The design of critical writing tasks begins with identification of learning goals for students. This includes questioning main units and modules of a course; learning objectives for modules; critical thinking skills developed within each module and the course; difficult aspects for students; changing study habits; and the importance of course material in students lives, sense of self, values, and ways of thinking (p. 95). This section provides several templates for assignment development, including alternative formal assignments.

Part Three covers a variety of assignments, activities, and strategies to coach learning, thinking, and writing; tasks to promote active thinking and learning; reading difficult texts; bringing critical thinking into lectures and discussions; critical thinking in assignments; and designing and sequencing assignments. The chapters in this section focus on ten strategies for designing critical thinking tasks (pp. 149-160):

1. Tasks linking course concepts to students’ personal experience or previously existing knowledge.
2. Explanation of course concepts to new learners
3. Thesis support assignments
4. Problem-posing arguments
5. Data-provided assignments
6. Template assignments
7. Assignments requiring role-playing of unfamiliar perspectives or “what if” situations
8. Summaries or abstracts of articles or course lectures
9. Dialogues or argumentative scripts
10. Cases and simulations

Part Four addresses evaluation of student evaluation; using rubrics to develop and apply grading criteria, handling the paper load, and writing comments on students' papers. The aim is to “help instructors articulate expectations for papers early on and to determine grading standards in advance of an assignment” (p. 288) and for students to write more efficiently.

[\*]Bean's thesis aligns closely with the FGCU QEP topic of writing, critical thinking, and literacy.

[\*]Bean presents strategies for critical thinking in writing in general, and in discipline-specific writing in particular. In other words, the text can be useful across the university, not just in writing or composition courses.

[\*]The book is a practical guide for faculty to design, sequence, and assess critical thinking assignments in courses. It would make for a useful text for faculty reading and discussion groups.

**Brandon Hollingshead** Brookfield, Stephen D. *Teaching for Critical Thinking: Tools and Techniques to Help Students Question Their Assumptions*. (John Wiley & Sons, 2012.)

Brookfield writes that critical thinking happens in a four-step process when students: (1) discover assumptions that influence the way they think and act, (2) appraise whether those assumptions are accurate and/or valid, (3) check assumptions and actions from multiple and different points of view, and (4) take informed actions (pp. 11-14). The beginning of the book provides a framework for instructors to think about critical thinking, beginning with a discourse on five intellectual traditions that have informed how critical thinking is understood within and across the disciplines. The middle describes how students experience, learn, and apply critical thinking; the majority of chapters addresses specific techniques, instruments, activities, and assignments to foster critical thinking in courses. These include reading and writing critically, integrating critical thinking across the curriculum, and critical class discussions, and modeling critical thinking. The Critical Incident Questionnaire (CIQ) is a five-item classroom evaluation instrument used by students and faculty. Themes that repeatedly emerge from use of the CIQ show students learn critical thinking: (1) in small groups as a social learning process where peers question each others' assumptions; (2) when faculty model the critical thinking process; (3) when content is grounded in case studies, simulations, and scenarios; (4) when faced with a disorienting dilemma that shakes assumptions; and (5) when critical thinking is taught developmentally (Brookfield, 2011, pp. 54-55). Brookfield provides useful instruments, exercises, and activities based on the CIQ that can be adapted to a variety of learning environments. These include:

Assumption Inventory—Faculty and students audit underlying assumptions informing the material and content presented in the classroom by presenting reasoning, explaining design, describing meaning, summarizing claims, reviewing skills learned, and justifying content choices (p. 64).

Scenario Analysis—Teachers present course content in the form of an imagined event in which a fictional character is making a choice. Students evaluate the scenario by identifying assumptions made by the character, checking assumptions made by the character against research and inquiry, and offering an alternative interpretation of the scenario.

Critical Analysis of Text—Students identify assumptions under which the author operates, appraise the author's conclusions, assess the clarity of writing, and evaluate the relative merits of the text (pp. 130-131).

Critical Discussion—Conditions for critical discussion in the classroom must include, at minimum: a prime focus members identifying assumptions; validity of assumptions; context; uncovering generalizations; record inferences that lead to a conclusion; generation of different perspectives; watch for groupthink and be suspicious of early consensus. Structures for Critical Discussion include: access for all to speak and contribute; time limits to prevent dominating voices; reflective silence; a record of similarities and differences between contributions and connections; provide examples to illustrate ideas and concepts (pp.181-182).

**Karen Landy** Coplin, B. *10 Things Employers Want You to Learn in College, Revised: The Skills You Need to Succeed* (2012)

The core ideas/concepts/topics covered in *10 Things Employers Want You to Learn in College* are:

- Establish a work ethic
- Developing physical skills
- Communicating verbally
- Communicating in writing
- Working directly with people
- Influencing people
- Gathering information
- Using Quantitative tools
- Asking and answering the right questions
- Solving problems

The author describes this list as skills necessary to succeed in today's workplace.

Each topic list recommendations for academic and non-academic activities that can help students build skills sets to meet the minimum skill level before they graduate.

He describes critical thinking skill sets as:

- Detect ‘blowing smoke’
- Pay attention to detail
- Apply knowledge
- Evaluate actions and policies
- Problem solving

The overall philosophy of the book is to develop the kind of skills employers want by completing class work and assignments. He urges readers who are not in college to ‘skip over’ material directly pertaining to college. He further states that the book will help students prepare for the workforce.

Impressions:

- Knowledge and ideas are means to accomplish a goal (minimum skill levels of the 10 topics stated above).
- 10 topics stated above become so focused that critical thinking is minimized.
- Offers strategies and career advice in a career counseling format

Overall, I am unimpressed with the content of the book in relation to critical thinking and the book’s contribution to this QEP-Critical Thinking committee. The 10 skills identified are essential for a successful professional career. The book does have extreme merit for high school students, freshmen and students who are not continuing their college level experience to prepare them for workforce skills that employers want and help them be ‘work ready’.

**Karen Landy** Bok, D. *Our Underachieving Colleges: A candid look at how much students learn and why they should be learning more* (Princeton UP, 2006).

Bok stresses

- A student’s chosen major is so focused that critical thinking is often neglected.
- “Faculty members [agree] almost unanimously that teaching students to think critically is the principal aim of undergraduate instruction’ but general fails to help them do so.
- There is room for improvement in teaching/learning critical thinking.
- The importance of faculty and how they can include critical thinking skills into curriculum.
- Lectures are a poor way to teach critical thinking skills. Professors have to change teaching methods/styles and master new skills and teaching methods to promote the development of critical thinking skills.
- Seminar courses expand the way students think and help students to think critically.
- Provide opportunities to students to engage and think critically about issues using discussions

Critical Thinking (what Bok calls "disciplined common sense") is the ability "to recognize and define problems clearly, to identify the arguments and interests on all sides of an issue, to gather relevant facts and appreciate their relevance, to perceive as many plausible solutions as possible and to exercise good judgment in choosing the best of these alternatives after considering the evidence and using influence, analogy, and other forms of ordinary reasoning."

Bok states most of the progress in critical thinking-seems to take place during the first two years of college, therefore, based upon the works of this author, we can fully incorporate critical thinking into our general education curriculum.

Bok additionally advocates for professors to *teach* with more effective methods, moving away from large lecture courses and for us to think and teach differently and improve the quality of our teaching. He advocates for professors to experiment with new methods to improve student understanding. It is important to distinguish between class content and instructional methods. In Bok's words: "Since faculty members normally keep abreast of published work in their fields, the content of their courses tends to be reasonably up to date. The same cannot be said of their teaching methods."

The main ideas this book have value for the QEP Critical Thinking and General Education committee. The concepts and ideas can be applied to our critical thinking work to ensure its quality and to establish standards to infuse critical thinking in our students.

**Mohamad Al-Hakim** Dewey, John, *How We Think: A Restatement of the Relation of Reflective Thinking to the Educational Process* (Houghton Mifflin Company, 1933).

Philosophical pragmatists often walk a fine line between highly abstract ideas and the usefulness of such ideas. As a result, it is typical to find written works that begin with the analysis of abstract notions and end with their practical expression.

John Dewey's book, *How We Think*, is no stranger to such an approach. The book is divided into three major parts. Part I (The Problem of Training Thought) aims to derive a general definition of 'reflective' thought and labours at analytically breaking down the term into its related features of beliefs, values, opinions and the role of observation in reinforcing reflective thought. Part II (Logical Considerations) outlines modes of logical thought and their relation to critical reflection. Part II also aims to explore systematic (e.g. scientific) means of empirically verifying claims. Although such an approach has become standard in 21<sup>st</sup> century empirical science, it is worth bearing in mind that Dewey's work was published in 1933 and many of the ideas presented were met with even greater skepticism. Part III (The Training of Thought) begins the shift from abstract, theoretical thought to pragmatic educational concerns. This last part is partially dated as it aims to address pragmatic issues faced by the American educational system during the early part of the 20<sup>th</sup> century. This is not to say

that some of the issues do not carry over into today's context but merely to suggest that one needs to be careful when considering whether, for example, the function and role of teachers (a subsection of this chapter) remain the same today. Advancements in psychology, changes in class room technology, and social-economic growth have altered the academic landscape and such changes need to be factored when drawing conclusions from Dewey's work.

The first part of the book, with its focus on defining 'reflective thinking', may be of sufficient use for the FGCU committee. Dewey defines reflective thinking as "the kind of thinking that consists in turning a subject over in the mind and giving it serious and consecutive consideration." (p. 3). Drawing on such an abstract definition allows Dewey to further tease out the sub-features of such reflection. Dewey argues that being reflective requires that one begin by differentiating between *mere* opinions or beliefs about any given subject and proceed to draw upon observations so as to ensure that we may hold our beliefs, opinions, and values with greater certainty. All knowledge takes this form where, according to Dewey, one begins with any stated belief or supposed form of knowledge and critically engages with it in light of collected observations and evidence. This is what it means to turn a "subject over in the mind" and give it "consecutive considerations" whereby the conclusions reached after such considerations form serve as the starting premises of new thoughts and ideas thereby generating a seamless 'chain of reflective thought'.

Thus, for Dewey, the "active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends constitutes reflective thought." (p. 189)

I believe the aim is to use such a definition to construct the subcomponents of each of the aforementioned features as they capture the spirit of critical thinking. But the development of each of the subcomponents remains as a task that we need to make consistent with the here and now.

The other features of the book, while pragmatic for their own time and place, should serve very little interest to this committee. They draw upon outdated scientific methods and recommend educational reform that is primarily out of sync with today's educational landscape.