SOLUTIONS MANUAL

ASKING THE RIGHT QUESTIONS

A GUIDE TO CRITICAL THINKING

TENTH EDITION

M. NEIL BROWNE
STUART M. KEELEY

INSTRUCTOR'S MANUAL

to accompany

ASKING THE RIGHT QUESTIONS
A Guide to Critical Thinking
Tenth Edition

Neil Browne
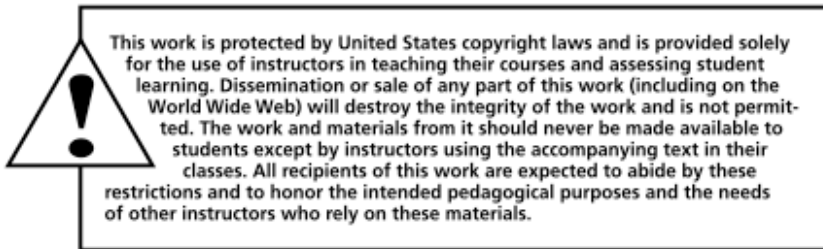*Bowling Green State University*

Stuart Keeley
Bowling Green State University

Instructor's Manual to accompany Browne/Keeley*, Asking the Right Questions: A Guide to Critical Thinking,* Tenth Edition

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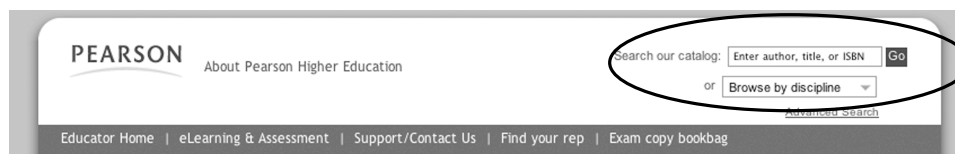
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Asking the Right Questions: A Guide to Critical Thinking, 10/e
Browne & Keeley
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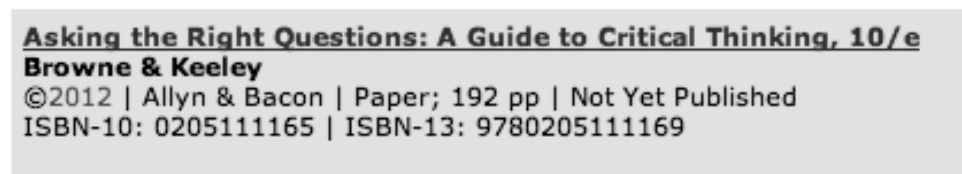
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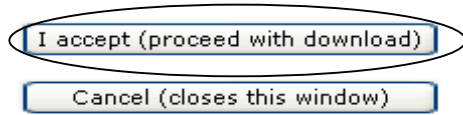
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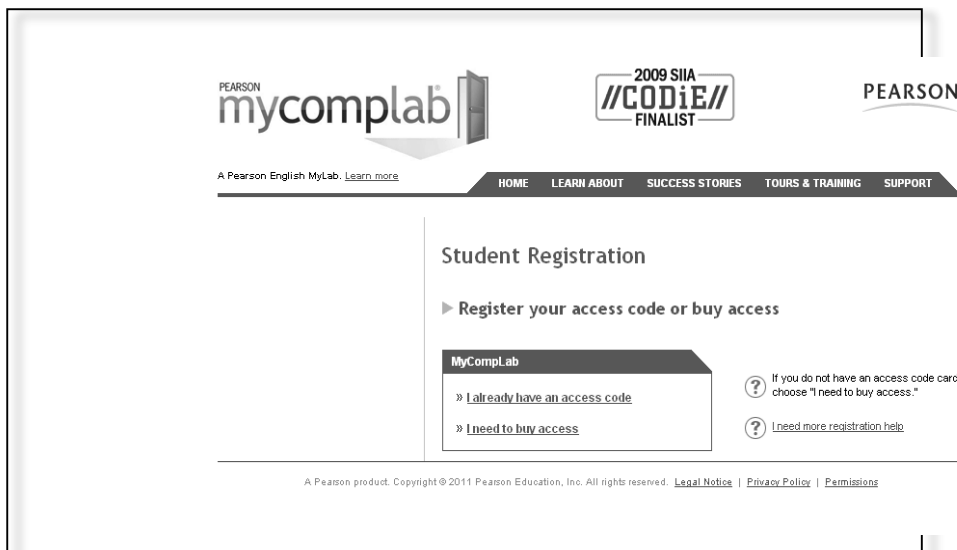
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MyCompLab™ provides Resources topics in writing, grammar, and research. These Resources are available to all users of MyCompLab™, whether you are working on your own or in an instructor's course.

Each topic includes instructional, multimedia, and/or exercise resources.

- **Instructional resources** define concepts and provide examples of the concept. For some instructional resources, a QuickCheck appears at the end of an instruction. A QuickCheck is one or two questions or examples, and you select the correct answer or example. MyCompLab™ then displays a pop-up identifying whether your answer is correct or incorrect and why.

   For eBook courses, the instructional resource list also has a link to the relevant section in the eBook.

- **Multimedia resources**, when available, are typically audio clips or videos that reinforce a concept. The multimedia resources include animated and narrated tutorials that range from grammar topics, strategies for developing a draft, guidelines on peer reviews, and tutorials on avoiding plagiarism to deciding on the topic for a paper. Interactive annotated Model Documents are also included.

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TIP: A topic's exercises can be recommended by MyCompLab™ based on the results of a diagnostic assignment or by your instructor when commenting on your writing submissions.

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Section I

Note to the Instructor and Beginning Hints for Teaching with *Asking the Right Questions*, Tenth Edition

Note to the Instructor

This Instructors Teaching Manual reflects ideas about teaching strategies for facilitating the extremely important learning skill of critical thinking, which have evolved as a function of many years of teaching critical thinking in our classrooms (a combined 60-plus years between the two of us), conversations with our students, interactions with leaders in the critical thinking movement, and core readings in the field of teaching and critical thinking. We are continually looking for effective ways for teachers to help students incorporate lifelong effective questioning skills and learning attitudes. Our hope is that the teaching tips suggested in this manual will provide teachers with helpful insights for achieving such goals.

Research on educational outcomes for college students continues to suggest that too few college students exit college with high levels of critical thinking skills. For example, the recent book Academically Adrift: Limited Learning on College Campuses *authored by Richard Arum and Jospia Roksa has concluded from a very ambitious study that many college students are not learning to think critically. Although the conclusions from this book have been quite controversial, most critics agree that the book highlights a problem that needs to be addressed, and our own experiences in the educational field over the years convince us that, in general, insufficient attention has been devoted to explicit teaching of critical thinking skills in the classroom. The enthusiastic response over the years of so many teachers to their use of* Asking the Right Questions *has convinced us that increasing numbers of teachers are highly motivated to make critical thinking an important aspect of their teaching. This Instructors Manual is meant to help such teachers in their quest for that goal.*

A central premise in our teaching philosophy is that students need to become aware of the most productive critical thinking questions, and the best way for them to internalize the habit of asking such questions is to PRACTICE, PRACTICE, AND PRACTICE SOME MORE by applying such questions in deciding what to believe in their lives. The teacher's manual stresses the role of practice in suggesting teaching strategies and providing teaching resources for using Asking the Right Questions *as one option for educating their students in critical thinking skills.*

The Teaching Manual consists of six sections. The first section of the manual provides beginning general hints for teaching with Asking the Right Questions. *Section II focuses on practical teaching tips based on some basic assumptions about some of the best ways to succeed as a teacher of critical thinking. In that section we highlight Teaching Maxims for success. Section III focuses on teaching strategies and resources for each specific chapter of the book, emphasizing discussion questions and assignments.*

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Each chapter includes EXTRA SHORT ARGUMENTS FOR ANALYSIS with sample feedback from the authors, as well as sample model responses for the Passage 3 short argument presented at the end of chapters in Asking the Right Questions.

Section IV provides sample critical analyses of lengthy articles completed by some of our most capable students, which serve as a model for applying many or all of the questions to such articles. These analyses give you, the teacher, an opportunity to have students show what they can do with their critical thinking skills after working through sections of the Asking the Right Questions*, essentially a response to "see what I can do with my critical thinking skills."*

Sections V and VI provide sample essay arguments addressing controversial issues. These articles are made available in Asking the Right Questions *for teachers who may be looking for articles to supplement the practice exercises in. Section V stresses briefer articles, and Section VI emphasizes lengthier articles.*

The authors of Asking the Right Questions *encourage you to share thoughts with us with in regard to what you think of the Instructors Teacher Manual. We invite comments and questions, and these should be sent to Stuart Keeley at skeeley@bgsu.edu.*

Beginning Hints for Teaching with *Asking the Right Questions*, Tenth Edition

We intentionally wrote *Asking the Right Questions* (*ARQ*) so that it could be used in many different learning situations. Many teachers have used it as the basic text for courses that strive to teach core critical thinking skills that can be applied across many content domains. Others have used it as a supplemental text to integrate critical thinking skills with the goals of their discipline-specific courses. For example, *ARQ* has been used by teachers in English, psychology, sociology, anthropology, history, legal studies, criminal justice, business law, economics, and other discipline-oriented classes.

Many strategies can be used to infuse the critical thinking questions into discipline specific courses. One possibility is to incorporate into your syllabus a new chapter of *ARQ* each week, or perhaps insert several joint chapters at various times, and then to gradually require more application of critical thinking skills to assignments as the semester progresses. Another strategy is to get the reading of relevant *ARQ* chapters accomplished in the first few weeks of the course by assigning blocks of chapters during the first few weeks. The advantage of this approach is that it helps you encourage students to supply a coherent, holistic set of questioning skills through a greater segment of your course. There are a number of other uses of *ARQ* that you might want to implement, depending on how you wish to emphasize critical thinking in your class.

We restricted the scope of the book to those critical skills that are necessary for personal decision making, regardless of the topic being analyzed. Following are some general suggestions that should prove useful in whatever use you make of the book.

The most fundamental teaching suggestion we can offer is to make essential the role of ACTIVE PRACTICE. We have found that the most efficient use of instructional time consists of brief lectures on and instructor modeling of a thinking skill, active questioning

and lengthy discussions, written practice assignments, and immediate instructor feedback. We have found that giving frequent written assignments can accelerate the acquisition of the skills found in *ARQ*.

"Think aloud" demonstrations in which the instructor talks through her thinking at a very basic beginning level and ties such thinking to hints in ARQ are especially helpful. Videotaping such demonstrations of the active thinking process and making the videos available to the students also has potential teaching value.

Practice assignments are effective only to the extent that teachers explicitly indicate which skills they wish students to demonstrate, when the skills were displayed accurately, and when errors were made. One helpful type of feedback is to provide students with copies of exercise assignments that were completed competently. An exemplary model prepared by their instructor or one of their peers frequently facilitates learning. Having the students verbalize how their answer and the model differ is also useful.

Another general suggestion is to constantly remind students as they progress through the skills in *ARQ* that all the critical thinking skills have a common purpose—to facilitate evaluation and personal decision making. In our experience, students frequently see skills as unrelated. For instance, the discovery of ambiguity and identification of statistical flaws often strike students as independent activities unified primarily by their difficulty. Yet, if the skills are to be optimally useful to readers, they must see the unity inherent in the set of skills. Each skill is a technique for attaining the same objective—a reasoned personal opinion.

If the critical thinking skills can be seen by students as a mode of thinking, with each skill doing its part in achieving the overall objective of rational decision making, there is a greater chance that the skills will become part of the students' habits of thinking rather than a game to be played to please a particular teacher.

What type of materials work best for practice? Short essays work particularly well, especially in the early stages of the course, before students are starting to put all their questions together more holistically. Such essays minimize the time spent reading and maximize the time spent analyzing and writing. Furthermore, the briefer the essay, the more likely it will be that the student will not mistake the purpose of the exercise by focusing on the informational content of the essay rather than on the quality of its formulation.

Naturally enough, those essays that discuss topics of intrinsic interest to students and topics about which students are somewhat knowledgeable are desirable. When faced with unfamiliar topics, they are particularly unable to discover ambiguities, assumptions, and omitted information.

We tend to alternate between the use of single essays taking a particular point of view and multiple essays taking different positions on the same question (such as might be provided by the *Congressional Digest* and the McGraw-Hill Press *Taking Sides: clashing*

views series). Each has its advantages. Single essays take less time to digest and best simulate the context in which critical reading skills will most often be used. Rarely will readers encounter multiple perspectives on a topic in a single setting.

Multiple essays are especially useful when the student is unfamiliar with the topic. If students have several perspectives on an issue, they become familiar with its substance and complexity. In addition, multiple articles stimulate the development of alternative inferences from the strong reasons, because those who read the alternative arguments acquire a greater appreciation for the fact that there are always more than "both sides" to an issue. An important goal of critical thinking is to discourage dichotomous, either-or thinking and to encourage the tolerance of grays in the face of the human tendency to see issues through a black versus white filter.

What Are Good Sources for Practice Passages?

If a necessary requirement for students to become competent critical thinkers is to practice the skills, then they need something on which to practice them. Thus, teachers must give much thought to their choices of practice materials. If you're using *ARQ* in a discipline-specific class, then one obvious source of practice material is the textbooks that you have selected. Many teachers find, however, that it is desirable for students to respond to materials other than their textbooks. If you're using *ARQ* as the main text in a general critical thinking class, such as a first year course in critical thinking, you will probably want to carefully consider a wide variety of materials for possible practice exercises, in addition to the opportunities provided by the *ARQ* text.

Whether you are using *ARQ* as a primary text for a critical thinking class or as a supplementary text for another course, we recommend that you use the chapter practice exercises as a starting point for student practice, and then use a variety of other materials to help the students develop and generalize their skills.

Many teachers who use *ARQ* tell us that they would like suggestions about auxiliary materials they might use for providing thinking practice for their students. The purpose of this section therefore is to provide some ideas about possible practice material sources for you to consider other than your textbooks.

One easily accessed practice source is the student Website, located at http://prenhall.com/browne. We have designed the newly revised Prentice-Hall *ARQ* student Website so that it provides many opportunities for students to practice on their own, in addition to the practice exercises at the end of the *ARQ* chapters. We have included both brief and lengthy passages, including passages that we have constructed and passages written by our students. For each chapter, students can apply to the passages the critical thinking skills emphasized in that chapter; and once they have responded, they can then compare their response with model responses that demonstrate the requisite skills. This format has the major learning benefit of providing immediate performance feedback.

A second, rich source of materials for teachers to use in conjunction with teaching the *ARQ* skills is the Internet. We list some of our favorite sites below. Many additional useful essays on controversial topics can be easily accessed from the Web by scanning search engines such as Google or Yahoo, which are two of our favorites for locating practice source material.

Useful Websites for Practice Exercises

There are many places to which teachers can turn for material to use in class that can provide students with an opportunity to practice their critical thinking skills. We have listed sites below that provide teachers with abundant material for student learning exercises. We recommend that you check out some of these and select materials that fit your own teaching needs.

1. **http://www.realclearpolitics.com/**
This is a great site for keeping up with diverse contemporary conversations and debates. The site can link you to many possible resources, such as columnists, editorial pages, front pages, political sites, talk radio and recent polls and surveys. The homepage should strike you as a smorgasbord of options for possible use in class.

2. **http://youdebate.com/**
While providing good access to materials related to a wide range of issues, this site's thoroughness varies greatly. You will primarily be able to link to a mix of statements of pro and con arguments on an issue, often accompanied by recent relevant facts related to the issue. Debates are organized in categories, within which are subcategories. If you need short argument examples, this is an excellent source.

3. **http://thisIbelieve.org**
Hundreds of short arguments broadcast on National Public Radio by people from all over the world and from all walks of life. Includes both text and Podcasts. Includes expression of ideas and values that your students will find very engaging, whether or not they agree with the positions taken.

4. **http://www.google.com/talks/authors/index.html**
Authors discuss recently published books on YouTube. Can have students identify and analyze arguments within the videos. Excellent opportunity for students to get acquainted with influential writers and their ideas and at same time apply their critical thinking skills to the ideas.

5. **http://nytimes.com**
 Daily access to opinion essays on controversial topics. Especially good source for essays on Health, Scientific Research (see Tuesday issues), and Politics.

6. http://www.opinionsource.com
Efficient way to scan op-eds and diverse topics without having to go to the original resources. Focus is on *New York Times*, *Wall Street Journal*, and *Washington Post*.

7. http://speakout.com/activism/issues/
This is a highly informative Website that presents information in a variety of forms and lengths and encourages its audience to actively react to issues of interest. It's an excellent source for students to evaluate surveys and also to directly express their own opinions. The site organizes information into topics and sub-topics and covers many relevant controversial social issues.

8. **http://www.skepdic.com/refuge/**
If you want to stimulate critical discussion about the paranormal, the supernatural, the occult, suburban myths, or the pseudoscientific, you will find a lot of useful material at this site.

9. http://www.ontheissues.org/Issues.htm
Gives one quick access to the views and arguments of political leaders on variety of controversies. Click on topic links to political leaders' views on that topic.

10. http://www.huffingtonpost.com and **http://www.drudgereport.com**
Two of the most popular blogs on the Web.

11. http://www.procon.org
Excellent source for accessing both sides of controversies. Site states goal as: *"Promoting critical thinking, education, and informed citizenship by presenting controversial issues in a straightforward, nonpartisan primarily pro-con format."*

12. http://dir.yahoo.com/Society_and_Culture/Issues_and_Causes
Links to Internet on social controversies.

Other Resource Material

For those who prefer print material, several sources are particularly fruitful for the kinds of exercise materials advocated above. Newspaper editorial and op-ed pages are especially fertile stimuli. The essays are concise, tendentious, and typically understandable to students. Also, they are now easily accessible on the Internet. Readers' letters to the editor also expose students to strongly held diverse viewpoints. The *New York Times* and The *Wall Street Journal* remain excellent sources for materials useful for critical thinking practice. Magazines are also a good practice resource. For example, *Time Magazine, Newsweek,* and *Psychology Today* provide secondary source articles on contemporary issues and trends, often including much statistical data, which can provide helpful student practice activity.

Journals of opinion, such as *The Progressive, the New Republic, Nation, National Review,* and *American Spectator* are rich sources for political essays. *Congressional Digest* is a good place to look for arguments from multiple perspectives on a given topic. Each issue is devoted to a single topic and contains quotations from the testimony of assorted politicians and experts on that topic. *The Chronicle of Higher Education* is an excellent source of thought-provoking essays that students can relate to. McGraw-Hill Press has a series of *Taking Sides* books on issues across many disciplines, including Business Ethics, U.S. History, Political Issues, Science, Technology and Society, Social Issues, and others. This series provides you with the opportunity to expose your students to the arguments of leading figures in relevant disciplines, as each book presents pro and con articles related to current controversies. In addition, Greenhaven Press has books and pamphlets with opposing viewpoints on dozens of subjects (see http://www.gale.cengage.com/greenhaven/).

Each discipline has journals that are accessible to students and can be used as a source for both essays to evaluate and examples of well-reasoned analysis. An exercise we have found useful in critical thinking classes and highly recommend is to have students spend several hours in the recent periodicals section of the college library scanning the kinds of arguments used in various journals. Such a search greatly broadens their perspectives concerning the nature of arguments made by professionals in the disciplines and how argument presentations differ across disciplines. The activity also reminds students that there are other valuable places other than the Internet to find useful information.

In contrast to journal articles by "the experts," student position papers from earlier assignments or prior classes offer practice material written in the student's own vernacular and may provide for some students a spark of relevance they fail to find in materials from sources they do not recognize.

An excellent resource text for lengthy arguments is John Arthur's *Morality and Moral Controversies.* Also, if you are looking for short compendiums of pro and con arguments on numerous controversial topics, Daniel Starer's book *Hot Topics* is a good source. This book lists four or five of the most common arguments used on each side of an issue, rather than presenting full essays. This format makes it especially useful for providing students with practice in identifying value conflicts. They can quickly examine the reasons on each side of an issue and then try to decipher what values underlie them.

Those teachers who would like their students to focus on critical evaluation of oral presentations, as well as written essays, also have a number of appropriate sources available. Talk show programs are frequently productive sources for exposing students to alternative arguments and value preferences. For example, the Public Broadcasting System, as well as news networks, regularly carry programs in which spokespersons for various points of view try to convince listeners of the propriety of the arguments. Television shows like *Frontline, The News Hour with Jim Lehrer, Dateline, 20-20,* and *60 Minutes* can all provide students with good practice in applying their developing critical thinking skills. Observing viewpoints by political commentators on television

networks, such as Fox and MSNBC, which tend to differ on their perspectives on controversial issues, provides useful stimulus for practicing critical thinking skills.

Much of what is "in print" can now also be accessed in video form. Podcasts have become increasingly popular, and they provide an excellent opportunity for students to analyze arguments presented in visual form.

Coping with Student Resistance to Critical Thinking

When teachers emphasize critical thinking in their teaching, or teach a critical thinking course, they often run into a gap between their goals and the students' goals. The "gift" they think they are giving may not be immediately perceived as a gift by those receiving it.

Critical thinking requires an emphasis on active learning and questioning, as well as openness to criticism, multiple points of view, and uncertainty. Many students want teachers to give them THE answers—not questions. A critical thinking orientation places more responsibility on students for their learning than many may be used to.

Most of us most of the time, teachers and students alike, prefer comfort to discomfort. Yet hearing multiple sides of arguments, having someone question our beliefs or point out flaws in our arguments, and generally learning different ways of thinking can be uncomfortable experiences that raise levels of frustration and anxiety.

For the above and other reasons, your use of *ARQ* in the classroom may lead to resistance (student behavior that hinders their critical thinking development) from your students, which can be discouraging. Because of the commonality of such resistance, we recommend that you read the following article, which provides a number of potentially helpful suggestions:

Keeley, S.M., Shemberg, K.M., Cowell, B.S., and Zinnbauer, B.J. (1995). Coping with Student Resistance to Critical Thinking. *College Teaching*, *43*, #4, pp. 140–145.

 # Connection of Interest. Value of discomfort. "In Life of the Closed Mind," Anna Quindlen in *Newsweek*, May 30, 2005, provides a good reminder of the value of discomfort in learning, as well as the value of exploring the views of those with whom we disagree. Article can be found at: https://www.msu.edu/~jdowell/pdf/Quindlen-ClosedMind.pdf

Answers to Commonly Asked Student Questions

At the Student ARQ Website, we have included a section for each chapter in which we have supplied answers to questions that students often ask about material in the *ARQ* text. Many of your students may have these or similar questions, and thus you may find it

helpful in relating to your students concerns about learning critical thinking skills to check out these student/instructor "dialogues" on the Website.

You will find the questions and answers on the student Website under "**Authors Answer Student Questions."**

Section II

Practical Tips for Teaching Critical Thinking Behavior

Introduction

Critical thinking is hard work! It is a very different mental activity than reproducing what one has read or heard. It is something that few students (or members of the public at large) have had much training in doing. Most of us know how to memorize or how to try to understand what others have written or said. But thinking critically does not seem to be a process in which most of us are naturally "wired" to engage. Thus, we need an extra shove to overcome what is for many a natural resistance. It is much easier to be a "sponge" learner than a habitual questioner, a learning style necessary for successful critical thinking. And for teachers, it is usually much easier and less of a hassle to be a lecturer or information dispenser than to use active learning, inquiry oriented pedagogy.

The authors of *ARQ* have spent most of their teaching years influenced greatly by an underlying belief that perhaps the most beneficial gift that we can give our students is the desire to be curious and to question, and along with that desire, the acquisition of questioning skills. In putting these values into practice over the years, we have learned many lessons about infusing such values into our teaching practice. In this section, we share with you what we believe to be some of the most important practical steps teachers can take to help their students become engaged as critical thinkers in the classroom and to leave our classrooms with the disposition to be lifelong critical thinkers. We do this by first listing some teaching of critical thinking maxims that we've culled from our experiences and then elaborating further on the meaning of these maxims and some practical strategies that naturally emerge from them.

Quotes that Reflect ARQ Authors' Teaching Values

"The central task of education is to implant a will and facility for learning; it should produce not learned but learning people."

<div align="right">

—Eric Hoffer

</div>

"Once you have learned how to ask questions, relevant and appropriate and substantial questions, you have learned how to learn and no one can keep you from learning whatever you want or need to know."

<div align="right">

—Neil Postman, *Teaching as Subversive Activity*

</div>

Isidor I. Rabi was a nuclear physicist who won the Nobel Prize in 1944 for his work on atomic nuclei. When someone asked him how he grew up to be a physicist, he told this story:

"When all his friends growing up in Brooklyn came home from school their mothers asked them, 'So, what did you learn today?' But not his mother. When he came home, his mother asked, 'Izy, did you ask a good question today?'" (from John Barrell's *Teaching for Thoughtfulness*).

"The pupil who is never required to do what he cannot do never does what he can do."
—John Stuart Mill

Teaching Maxims for Incorporating Critical Thinking into the Classroom

Below is a series of "lessons learned" from our experiences in teaching critical thinking in our classrooms over many years, as well as from exposure to critical thinking conferences and much literature in the areas of critical thinking and active learning. They are most relevant to those who are teaching critical thinking courses, but the ideas should also be applicable to discipline specific courses that stress active learning and critical thinking as important classroom goals. We first present them in brief "maxim" form. The maxims then serve as stimuli for further discussion of specific teaching behaviors and attitudes.

- **Learning is not a spectator sport**

  o Active rather than passive learning
  o No impression without expression
  o Extensive practice opportunities
  o Frequent questioning
  o Frequent writing assignments
  o Many collaborative activities
  o Active listening and note taking

- **Less is more**

  > - Less coverage, more depth
  > - Less lecturing, more questioning and exploring
  > - Long periods of thinking and wait time
  > - More frequent feedback of ongoing student learning
  > - More emphasis on relations among ideas

- **All that glitters is not gold**

  > - High and clear standards and expectancies
  > - Reinforcement of positive behaviors
  > - Teaching small group skills

- **It's not what students ARE, but what they can BECOME**

  > - Shift emphasis from providing instruction to **producing learning**
  > - Think long-term impact
  > - Promote student self-responsibility
  > - Avoid counterproductive enabling; you're not running for prom queen or king
  > - Challenge students
  > - Emphasize transfer of learning

Learning is not a spectator sport

Critical thinking is a skill. Learning skills requires active engagement, not passive observation. Tennis players, football players, musicians, and other performers need to practice their skills in order to truly learn them. Students want us as teachers to do most of the work and to entertain and amuse them in the process. Studies of student engagement show that large numbers of students show up for class without any pre-class preparation and still manage to get good grades. What can we do to move students from spectators to participants?

First, we can change from a "sage on the stage" to a "guide on the side" orientation. We need to design our classes so that the students get out of the bleachers and on to the playing field. Students need to move from a passive to an active, engaged orientation in the classroom. One way to facilitate this move is to design the seating in the room so that students are facing one another—not solely facing the teacher. Circular or semi-circular seating is a desirable starting point for engaged learning. In addition, classes need to be designed such that *students need to come to class prepared*. Making the completion of homework essential to any class discussion greatly facilitates this goal.

Second, as athletes and musicians learn best when they have to practice their skills, students learn best when they have to **EXPRESS** their own ideas; and we really don't know how well our students are learning until we see evidence of their own thinking, either through writing or speaking exercises. This means asking them many questions and also having them ask both teacher and fellow students many questions. For example, the teacher needs to frequently ask students, "What was your understanding of what I just explained to you?" or "What is your understanding of what your classmate just said?" or "Can you think of a question to ask your classmate that would help him gain a better understanding of that point?"

We cannot assume that because we have shared a wonderfully insightful idea that our students have "gotten it." Asking students, "Does everyone understand?" is much less productive than asking students, "Tell me what you understood me to say?" Until students have EXPRESSED their ideas, they have not yet owned the ideas.

AVOID GIVING ANSWERS PREMATURELY! When a student asks a question that makes you think, let the student share in the thinking process by asking, "What questions do we need to answer to help answer your question? Or, "What do we need to know before we can answer that question?

Teaching practices that encourage student expression of ideas include requiring many writing assignments, encouraging collaborative learning opportunities both within and outside the classroom, reinforcing student questioning behavior and making active listening and note-taking highly valued class activities. For example, we have found that MAKING TIME for note-king, asking questions, and sharing understandings greatly enhances the depth of student understanding. Exposure to the ARQ text should greatly facilitate student question asking behavior and encourage an active listening attitude.

Less is more

Critical thinking **takes time** and is not very exciting to watch. That's one reason we see so little of it on television. Thus, patience is a major virtue when valuing critical thinking in your classroom. Sufficient WAIT TIME is especially important in promoting a critical thinking atmosphere, and seeking *depth of thought* should usually take priority over the goal of extensive coverage of material. We thus recommend that you value **DEPTH** over **BREADTH**. We have found that long-term retention of skills and knowledge is greatly enhanced by focusing on a few really important ideas in our classes rather than "getting through" lots of material. It is often desirable to keep your list of goals for the day to a small number, and encourage an in depth mastering of these goals. Try to avoid moving to new topics until you have some clear evidence that students have reached a desired level of understanding on the topic at hand, keeping in mind the maxim of *no impression without expression*.

In general teaching practices highly consistent with the maxim of Less is More include: increased emphasis on class discussion and decreased emphasis on teacher lecturing; extensive teacher and student questioning; emphasis on active learning by both teacher and students; and frequent feedback about what's happening in the minds of your students, such as "**one-minute writes**," and student summarizing of points.

Also consistent with the "less is more" maxim is a teaching emphasis on making connections and integrations among ideas. Thus, for example, frequently asking students how an idea on which you are presently focusing relates to previously discussed ideas

reinforces the notion that ideas come in important and insightful patterns. A strong point of the ARQ text for teaching critical thinking is that the chapters are ordered with a logical coherence, and requiring students to draw links among the chapters helps create an overall "whole" or gestalt to the critical thinking process, such that the whole becomes much greater than the sum of the parts. We often remind the students that as they learn more critical thinking skills, the more comfortable they will become with the holistic process of critical thinking.

All that glitters is not gold

We should learn from our mistakes, but we can best do so if we KNOW when we make such mistakes. Learning is best when students feel free to express themselves and take risks and at the same time welcome challenges to the quality of their expressions. Many students are not used to having their comments challenged; they may see them all as "good points." Thus, they often are not prepared for teachers who "push" their intellectual limits. Thus, in addition to praising them for effort, teachers need to provide students with clear standards for quality and need to inform them when they have not met those standards. Not all that students express is "a great point," or "wonderful," or "a great try." Sometimes students give low-quality responses because they are not prepared, are not listening, are totally confused, or anxious. Their comments do not move the conversation forward.

Because criticism is so important to the development of disciplined thought, you need to find ways to be helpfully critical. One potentially helpful approach is to work with your students on framing criticism as a form of respect, of caring, and of trust. You respect and trust them enough that you know they can cope with criticism and use it to their advantage. They are not like spun glass, easily shattered. Our experience has been that with increased exposure to criticism over time, students experience less and less discomfort when challenged.

One of the best ways to help students discriminate between comments that move conversations forward and those that don't is to make the criteria for a "good" response as clear as possible. Thus, for example, if you frequently use discussion groups, it's helpful to train the students in the kinds of comments, questions and roles that are most helpful to group effectiveness. **Training in active listening skills** is especially helpful.

It's not what students ARE but what they can BECOME

Ask not what you can do for your students but what your students can do for themselves! As teachers, we often become cynical about what our students are capable of doing. We often sense a gap between the kind of learner that we, with OUR values, would like them to be and the kind of learner that they, with THEIR values, would prefer to be. This gap seems to get greatly expanded when we strive to make critical thinking an important component of their learning. We sense that they are most comfortable with being sponges, yet we want them to be active inquirers. Under such conditions, it's tempting to teach to who we think the students *are*—we lecture to them. But if you teach to what they *can become*, such as critical and creative thinkers, you can strikingly change your teaching approach and breach the gap described above.

How might you help students to become "all they can be" as critical thinkers?

First, you might focus less on your class presentations and more on the kind of learning you want the students to produce between and during class. What is it that the students need to **DO** to internalize their critical thinking skills and to prepare for class? Generate questions? Complete practice exercises? Prepare a class presentation? A major goal is to give students increased responsibility for classroom activity.

Secondly, always be thinking of the *long-term impact* of your teaching practices. Avoid doing things for students what they could do for themselves if encouraged to tolerate some discomfort and frustration. Encourage them to practice "fishing" on their own; don't bring them the fish. Fight the dire need to be loved in the here and now and instead seek to be respected by your students in the long run. Much reward can come from sending one's students out into the non-classroom world as lifelong learners.

Sample Student Engagement Strategies

In this section, we list a sample of strategies that teachers have found helpful in getting students actively engaged in learning.

PRIOR TO CLASS

1. Give students *thought-provoking questions* to ponder in advance of classes to guide their reading/studying.
   Enhances a focus on questions, rather than answers.
2. Encourage active interaction with texts by teaching students about different levels of questions they and text authors can ask.
   A discussion of Bloom's taxonomy can be helpful for this purpose.
3. Have students convert text answers/main points into questions to encourage them to "join the conversation."
4. Encourage students to ask "Who cares?" and "Why this?" questions as they study.
5. Assign exercises that require students to consider multiple perspectives.
6. Have students prepare written questions triggered by their readings to bring to class.

DURING CLASS

1. Questions, questions, and more questions; emphasize higher order thinking skills (HOTS)
2. Sign-up sheets for class participation
   For example, give extra credit for class participation by having students sign up on those days in which they wish to participate in class and basing extra credit points on frequency of sign ups. Teacher calls on those who sign up.
3. One-minute writes. (Beginning, Middle, End of class)
   Give students brief writing assignments on a frequent basis, such as asking them to summarize an important point just made by the teacher.
4. Think-Pair-Share (T-P-S)
   Post question to students, have them consider an answer, have them pair up to discuss their answers, then have selected pairs share their answers with rest of class.

5. Use quotes, cartoons, music, newspaper headlines or film clips to induce engagement.
   For example, post a quote on overhead at beginning of class, or play a song with a message that you want students to consider, and then have them try to integrate such presentations with some class ideas.

Teaching Behavior and Attitudes to Avoid

There are many things that we can do as teachers that tend to work against the optimal implementation of critical thinking in our classrooms. In this section we briefly describe behaviors and attitudes that frequently work against the successful incorporation of critical thinking activity in the classroom and encourage you to consider strategies to combat such attitudes and behaviors.

- *Teaching from a single perspective or paradigm.*
  Students need to be exposed to multiple perspectives and paradigms.
- *Neglecting to provide assignments that focus explicitly on critical thinking.*
- *Selection of texts that discourage critical thinking.*
- *Failing to admit gaps in our own knowledge.*
- *Focusing on coverage, rather than on depth.*
  Sometimes less is more! It is often desirable to give up some breadth of coverage in order to allow more **in-depth** coverage of fewer issues.
- *Relying too heavily on lecturing.*
- *Failure to ask frequent thought-provoking questions during each class.*
- *Failure to encourage students to pay close attention to what other students say and to **ask each other** thought-provoking questions during each class.* Too often students believe that the only relevant audience for their learning is the teacher.
- *Giving multiple-choice exams that require only memory skills.*
  Test manuals tend to emphasize lower order thinking skills such as memory and comprehension, and provide limited numbers of items requiring higher order skills, such as evaluation. Your use of test items that emphasize critical thinking clearly communicates your high valuing of such skills.
- *Avoiding lengthy "thinking time" silences.* Good thinking takes time! It's okay to encourage students to say, "Let me think about it for a minute."
- *Treating all student comments as "gold nuggets," and trying too hard to protect students from experiencing any discomfort.*
  Student intellectual growth is fostered by having to struggle with ideas and the recognition that some ideas are superior to others.
- *Always calling on the first persons who raise their hands; minimizing "wait time."*
  For many reasons, some students will raise their hands much more slowly than others, even if they are actively involved in the critical thinking process. Lengthy wait times allow such students to take a much more active part in class discussion.
- *Answering our own questions almost immediately after asking them.*