Using Writing to Promote Thinking

A Busy Professor's Guide to the Whole Book

In his now classic study of pedagogical strategies that make a difference, Richard Light (2001) examined the connection between writing and student engagement. "The results are stunning," he claims:

> *The relationship between the amount of writing for a course and students'*
> *level of engagement—whether engagement is measured by time spent on*
> *the course, or the intellectual challenge it presents, or students' level of*
> *interest in it—is stronger than the relationship between students' engage-*
> *ment and any other course characteristic. . . . [p. 55]*

More recent research, conducted jointly by the National Survey of Student Engagement (NSSE) and the Council of Writing Program Administrators (WPA), has shown that for promoting engagement and deep learning the number of writing assignments in a course may not be as important as the design of the writing assignments themselves (Anderson, Anson, Gonyea, and Paine, 2009). Good assignments, this research has shown, give students opportunities to receive early feedback on their work, encourage meaning-making, and clearly explain the instructor's expectations and purpose. (I discuss this research in depth in Chapter Six.)

The aim of this book is to give professors a wide range of options for bringing the benefits of engaged learning to students. My premise, supported by an increasing body of research, is that good writing assignments

(as well as other active learning tasks) 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. They can also be designed to promote self-reflection, leading to more integrated, personally meaningful learning. Moreover, the benefits do not accrue only to students. Professors who successfully integrate writing and other critical thinking activities into their courses often report a satisfying increase in their teaching pleasure: students are better prepared for class, discussions are richer, and student performance improves.

But the use of writing and critical thinking activities to promote learning does not happen through serendipity. Teachers must plan for it and foster it throughout the course. This chapter suggests a sequence of steps that teachers can take to integrate writing and critical thinking into their courses. It then addresses four negative beliefs that often discourage teachers from taking these steps—the beliefs that integrating writing into a course will take time away from content, that writing assignments are not appropriate for some disciplines or courses, that assigning writing will bury a teacher in paper grading, and that assigning writing requires specialized expertise. Because these beliefs raise important concerns, I seek to supply reassuring responses at the outset.

This chapter provides, in effect, a brief overview of the whole book; subsequent chapters treat in depth each of the suggestions or issues introduced briefly here.

Steps for Integrating Writing and Critical Thinking Activities into a Course

This section surveys eight steps teachers can take to integrate writing and critical thinking activities into a course.

Step 1: Become Familiar with Some of the General Principles Linking Writing to Learning and Critical Thinking

To appreciate how writing is linked to learning and critical thinking, we can begin with a brief discussion of how we might define critical thinking.

Critical Thinking Rooted in Problems

Although definitions in the pedagogical literature vary in detail, in their broad outlines they are largely elaborations, extensions, and refinements of the progressive views of John Dewey (1916), who rooted critical thinking in the students' engagement with a problem. Problems, for Dewey,

evoke students' natural curiosity and stimulate both learning and critical thought. "Only by wrestling with the conditions of the problem at first hand, seeking and finding his own way out, does [the student] think" (p. 188).

Part of the difficulty of teaching critical thinking, therefore, is awakening students to the existence of problems all around them. Meyers (1986), who agrees with Dewey that problems are naturally motivating, argues that teachers ought to begin every class with "something that is a problem or a cause for wonder" (p. 44). Meyers quotes philosopher and chemist Michael Polanyi, who claims that "as far down the scale of life as worms and even perhaps amoebas, we meet a general alertness of animals, not directed towards any specific satisfaction, but merely exploring what is there: an urge to achieve intellectual control over the situations confronting [them]" (p. 41).

Presenting students with problems, then, taps into something natural and self-fulfilling in our beings. In his fifteen-year study of what the best college professors do, Ken Bain (2004) shows that highly effective teachers confront students with "intriguing, beautiful, or important problems, authentic tasks that will challenge them to grapple with ideas, rethink their assumptions, and examine their mental models of reality" (p. 18). Set at the appropriate level of difficulty, such "beautiful problems" create a "natural critical learning environment" that engages students as active and deep learners. Similarly, Brookfield (1987) claims that critical thinking is "a productive and positive" activity. "Critical thinkers are actively engaged with life" (p. 5). This belief in the natural, healthy, and motivating pleasure of problems—and in the power of well-designed problems to awaken and stimulate the passive and unmotivated student—is one of the underlying premises of this book.

Disciplinary Versus Generic Domains for Critical Thinking

Not all problems, however, are *academic* problems of the kind that we typically present to students in our classrooms or that we pose for ourselves in doing scholarly research. Academic problems are typically rooted within a disciplinary conversation: to a large extent, these problems are discipline-specific, as each discipline poses its own kinds of questions and conducts inquiries, uses data, and makes arguments in its own characteristic fashion. As Anne Beaufort (2007) has shown, to think and write like a disciplinary professional, students must draw not only on subject matter knowledge, but also on knowledge about the discipline's genre conventions, its methods of argument, its typical kinds of evidence, its ways of referencing other researchers, and its typical rhetorical contexts and audiences. Chapter

Thirteen on teaching undergraduate research addresses Beaufort's novice-to-expert schema in more detail.

But certain underlying features of critical thinking are generic across all domains. According to Brookfield (1987), two "central activities" define critical thinking: "identifying and challenging assumptions and exploring alternative ways of thinking and acting" (p. 71). Joanne Kurfiss (1988) likewise believes that critical thinkers pose problems by questioning assumptions and aggressively seeking alternative views. For her, the prototypical academic problem is "ill-structured"; that is, it is an open-ended question that does not have a clear right answer and therefore must be responded to with a proposition justified by reasons and evidence. "In critical thinking," says Kurfiss, "all assumptions are open to question, divergent views are aggressively sought, and the inquiry is not biased in favor of a particular outcome" (p. 2).

The Link Between Writing and Critical Thinking

Given this view of critical thinking, what is its connection with writing? Quite simply, writing is both a process of doing critical thinking and a product that communicates the results of critical thinking. As I show in Chapter Two, writing instruction goes sour whenever writing is conceived primarily as a "communication skill" rather than as a process and product of critical thought. If writing is merely a communication skill, then we primarily ask of it, "Is the writing clear?" But if writing is critical thinking, we ask, "Is the writing interesting? Does it show a mind actively engaged with a problem? Does it bring something new to readers? Does it make an argument?" As Chapters Two and Three explain, experienced writers begin by posing two kinds of problems—what we might call subject matter problems and rhetorical problems. Subject matter problems drive the writer's inquiry. The writer's thesis statement is a tentative response to a subject matter problem; it poses a contestable "answer" or "solution" that must be supported with the kinds of reasons and evidence that are valued in the discipline. But writers also think critically about rhetorical problems: Who is my audience? What genre should I employ and what are its features and conventions? How much do my readers already know about and care about my subject matter problem? How do I want to change my audience's views? What alternative views must I consider? Writers produce multiple drafts because the act of writing is itself an act of problem solving. Behind the scenes of a finished product is a messy process of exploratory writing, conversation, and discarded drafts. Chapters Two and Three deal with these issues in depth.

Step 2: Design Your Course with Critical Thinking Objectives in Mind

Once teachers are convinced of the value of critical thinking, the next step is to design a course that nurtures it. What is such a course like? In her comprehensive review of the literature on critical thinking, Kurfiss (1988) examined a wide range of successful disciplinary courses devoted to the teaching of both subject matter and critical thinking. In each case, she explains, "the professor establishes an agenda that includes learning to think about subject matter. Students are active, involved, consulting and arguing with each other, and responsible for their own learning" (p. 88). From this review, she derives eight principles for designing a disciplinary course that supports critical thinking:

1. Critical thinking is a learnable skill; the instructor and peers are resources in developing critical thinking skills.

2. Problems, questions, or issues are the point of entry into the subject and a source of motivation for sustained inquiry.

3. Successful courses balance challenges to think critically with support tailored to students' developmental needs.

4. Courses are assignment centered rather than text and lecture centered. Goals, methods, and evaluation emphasize using content rather than simply acquiring it.

5. Students are required to formulate and justify their ideas in writing or other appropriate modes.

6. Students collaborate to learn and to stretch their thinking, for example, in pair problem solving and small group work.

7. Several courses, particularly those that teach problem-solving skills, nurture students' metacognitive abilities.

8. The developmental needs of students are acknowledged and used as information in the design of the course. Teachers in these courses make standards explicit and then help students learn how to achieve them [pp. 88–89].

This book aims to help teachers develop courses that follow these guidelines. Of key importance are Kurfiss's principles 2, 4, and 5: a good critical thinking course presents students with "problems, questions, [or] issues" that make a course "assignment centered rather than text [or] lecture centered" and holds students responsible for formulating and justifying their solutions orally or in writing. This book particularly

emphasizes writing assignments because they are perhaps the most flexible and most intensive way to integrate critical thinking tasks into a course and because the writing process itself entails complex critical thinking. But much attention is also given to class discussions, small group activities, and other teaching strategies that encourage students to work collaboratively to expand, develop, and deepen their thinking. Attention is also given throughout to the design of problems at appropriate levels of difficulty, to the developmental needs of students, and to the importance of making expectations and criteria clear (principles 1, 3, and 8).

Step 3: Design Critical Thinking Tasks for Students to Address

A crucial step in teaching critical thinking is to develop good problems for students to think about. Tasks can range from enduring disciplinary problems to narrowly specific questions about the significance of a graph or the interpretation of a key passage in a course reading. The kinds of questions you develop for students will depend on their level of expertise, their current degree of engagement with the subject matter, and the nature of question asking in your own discipline.

When I conduct workshops in writing across the curriculum, I like to emphasize a disciplinary, content-driven view of critical thinking by asking faculty to write out one or two final examination essay questions for one of their courses—questions that they think require both subject matter knowledge and critical thinking. We then discuss the kinds of critical thinking needed and the relative difficulty of each question, sometimes offering suggestions on ways to improve questions to elicit the kinds and levels of critical thinking the teacher seeks. When we have appreciated the value of these questions for promoting critical thinking, I suggest that it is a shame to waste them on a timed exam, where students spend only an hour or so on task. Such questions and dozens more like them can be integrated into the fabric of a course, where they can stimulate curiosity, drive inquiry, and promote learning. Chapters Six, Seven, and Nine focus specifically on the design of critical thinking tasks to serve as formal or informal writing assignments or as starting points for other critical thinking activities.

Step 4: Develop a Repertoire of Ways to Give Critical Thinking Tasks to Students

Once you have developed a stockpile of critical thinking problems based on your course's subject matter, you can choose from dozens of ways to integrate them into your course. This book presents numerous options

for giving critical thinking problems to students. These include the following:

1. *Problems as formal writing assignments.* Formal writing assignments, which require revision and multiple drafts, keep students on task for extended periods and are among our most powerful tools for teaching critical thinking. They can range in length from one-paragraph "microthemes" (see Chapter Six) to major research projects within a disciplinary genre (see Chapter Thirteen). As these chapters show, effective academic assignments usually require that the student formulate and support a thesis (or test a hypothesis) in response to a problem. Such problem-centered assignments, which are primarily argumentative or analytical, are more effective for developing critical thinking than topic-centered assignments, which students often interpret as asking for information ("Write a research paper on one of the following topics").

2. *Problems as thought-provokers for exploratory writing.* Although students normally write only a few formal papers for a course, they can do behind-the-scenes exploratory writing on a daily basis. Chapters Two and Seven provide a rationale for this kind of low-stakes writing, which is a seedbed for generating and growing ideas. Exploratory writing records the actual process of critical thinking while simultaneously driving it forward. Perhaps more than any other instructional tool, exploratory writing transforms the way students study for a course because it can make active critical thinking about course subject matter part of each day's homework. Chapters Seven and Eight give numerous suggestions for integrating exploratory writing into a course, ranging from various kinds of journals or "thinking pieces" to postings on an electronic discussion board.

3. *Problems as small group tasks.* Disciplinary problems make powerful collaborative learning tasks. Small groups can be given a set time to brainstorm possible solutions to a problem or to seek a best solution by arriving at a consensus or a reasoned "agreement to disagree." In a plenary session, groups report their solutions and present their justifying arguments using appropriate reasons and evidence. The instructor usually critiques the groups' solutions and often explains how experts in the discipline (for whom the teacher is spokesperson) might tackle the same problem. During plenary sessions, the instructor both models and coaches disciplinary ways of making arguments, also attending to the generic critical thinking skills of looking at the available evidence and considering alternative views. Chapter Ten focuses on the uses of small groups to promote critical thinking.

4. *Problems as starters for class discussions.* Discussion classes can begin with one or two critical thinking problems written on the chalkboard or posted in advance on an electronic discussion board as "questions of the day." The teacher guides the discussion, encouraging students to appreciate and manage complexity. (If students have addressed these questions the night before in an exploratory thinking piece, they will be both eager and prepared for class discussion.) Other ways to get students actively addressing critical thinking problems include classroom debates, panel discussions, and fishbowls. See Chapter Eleven for suggestions on bringing more critical thinking into lectures and class discussions.

5. *Problems as practice exam questions.* Chapter Twelve suggests ways to coax more student learning and critical thinking out of essay exams. One of the best approaches is to give practice exams that students write for homework on a self-timed basis. Feedback is provided through in-class discussion of representative essays.

The point of all these strategies is to model for students a view of knowledge in which inquirers must develop and support provisional answers to disciplinary problems. By actively using new concepts and information, students engage course material on a deeper level.

Step 5: Develop Strategies to Include Exploratory Writing, Talking, and Reflection in Your Courses

Good writing, I like to tell my students, grows out of good talking—either talking with classmates or talking dialogically with oneself through exploratory writing. A key observation among teachers of critical thinking is that students, when given a critical thinking problem, tend to reach closure too quickly. They do not suspend judgment, question assumptions, evaluate evidence, imagine alternative answers, play with data, enter into the spirit of opposing views, and just plain linger over questions. As a result, they often write truncated and underdeveloped papers. To deepen students' thinking, teachers need to build into their courses time, space, tools, and motivation for exploratory thinking. Closely connected to exploratory tasks are reflective tasks aimed at encouraging students to think metacognitively about their own thinking processes, to connect learning in one course to other courses or to their own lives, to transfer skills from one setting to another, and to integrate their learning. Chapters Seven through Twelve suggest numerous ways to make exploratory writing, talking, and reflection a habit of students in your courses.

Step 6: Develop Strategies for Teaching How Your Discipline Uses Evidence to Support Claims

To grow as critical thinkers, students need to learn how different disciplines use evidence to support arguments. According to Richard Light (2001), "A surprising number of undergraduates describe learning how to use evidence to resolve controversies in their field, whatever their field, as a breakthrough idea" (p. 122). Light describes the bafflement of first-year students as they shift from discipline to discipline, encountering different ways that disciplines gather and use evidence to address problems. Some disciplines derive their evidence from observations of natural or cultural phenomena, sometimes converted to numbers, subjected to statistical analysis, and displayed in graphs and tables. Other disciplines use qualitative data from ethnographic observations, focus group transcripts, or interviews. Still others analyze aural, visual, or verbal texts housed in libraries, historical archives, art galleries, museums, popular media archives, or websites.

What new students don't see is how these different kinds of data function as evidence in support of a claim. Teachers can accelerate students' understanding of a field by designing assignments that teach disciplinary use of evidence or that help students analyze the thinking moves within an evidence-based argument. Closely related to disciplinary use of evidence is use of disciplinary genres such as experimental reports, ethnographies, design proposals, or disciplinary papers suitable for presentation at an undergraduate research conference. Part Two of this book (particularly Chapter Thirteen on teaching undergraduate research) treats the use of disciplinary evidence and genres in more detail.

Step 7: Develop Effective Strategies for Coaching Students in Critical Thinking

Besides giving students good problems to think about, teachers need to critique students' performances and to model the kinds of critical thinking they want students to develop. According to Meyers (1986), teachers of critical thinking will often spend much of their class time as "referees, coaches, and mentors rather than as lecturers and purveyors of the truth . . . For most of us," he continues, "this is a worthwhile but difficult shift" (p. 39). This book suggests numerous ways that teachers can coach critical thinking, including guiding discussions, critiquing solutions developed by small groups, writing comments on student drafts, holding conferences, sharing autobiographical accounts of their own thinking and writing processes, discussing strengths and weaknesses of sample papers, breaking long assignments into stages, and stressing revision and multiple

drafts. An equally important aspect of coaching is providing a supportive, open classroom that values the worth and dignity of students. Suggestions for coaching writing and critical thinking are integrated throughout the book but occur especially in Chapters Ten and Fifteen. Chapter Nine focuses specifically on coaching students as critical readers of academic texts, and Chapter Sixteen focuses entirely on ways to comment on student papers to promote critical thinking.

Step 8: When Assigning Formal Writing, Treat Writing as a Process

In most kinds of courses, the student "product" that most clearly exhibits the results of critical thinking is a piece of formal writing addressing an open-ended problem. Too often, however, what the student submits as a finished product is in an unrevised draft, the result of an undeveloped and often truncated thinking process that doesn't adequately confront all the available evidence, consider alternative views, examine assumptions, or imagine the needs of a new reader. Much of the thinking promoted by writing occurs during the messy process of revision when the writer's ideas gradually become focused and clarified. No matter how much we exhort students to write several drafts and to collaborate with peers, most of our students will continue to write their papers on the night before they are due unless we structure our courses to promote writing as a process.

Teachers can get better final products, therefore, if they design their courses from the outset to combat last-minute writing, to promote exploratory writing and talking, and to encourage substantive revision. Promoting such exploration is one of the functions of progressive writing centers, where experienced tutors or consultants can help students understand the demands of an assignment, brainstorm ideas, and revise their papers through multiple drafts. On many campuses the director of the writing center is one of an instructor's most important resources for developing ways to incorporate writing into a course. Chapters Fifteen and Sixteen offer many suggestions for encouraging students to deepen and extend their writing processes.

Four Discouraging Beliefs and Some Encouraging Responses

The steps just described can help teachers integrate writing and critical thinking activities into their courses. However, many teachers who are tempted to do so may be held back by negative beliefs or misconceptions

about what happens when a teacher begins developing a pedagogy using writing and critical thinking. It will be helpful, therefore, to address these beliefs at the outset. Based on discussions with faculty from across the disciplines, I find the following four misconceptions the most pervasive and potentially discouraging.

Misconception 1: Emphasizing Writing and Critical Thinking in My Courses Will Take Time Away from Content

Many faculty, understandably concerned about coverage of material, do not want to shift class time away from content. In addressing this conundrum, one must first distinguish between how much a teacher "covers" in a given course and how much students actually learn in a meaningful and usable way. Much of the literature on best pedagogical practices suggests that less is more. For example, Robert Zemsky (2009), founding director of the University of Pennsylvania's Institute for Research on Higher Education, argues that "no one has sufficient time or gray matter to master a knowledge base that is growing exponentially every decade or so." Rather than focus exhaustively on content coverage, Zemsky urges educators to prioritize content, focusing on high-priority material while simultaneously teaching the critical thinking and problem-solving skills needed to acquire and apply new knowledge:

> *Discussions of the changing nature of knowledge often morph into what a successful learning outcome would be if detailed content were actually becoming less important than a well-executed learning process. The former is static; the latter is dynamic in the sense that learning processes change as the learner seeks new knowledge and tackles new problems.*

In my experience, integrating writing and critical thinking components into a course can increase the amount of subject matter that students actually learn. My assertion may seem counterintuitive until one realizes that these assignments can restructure the way students study outside of class. Critical thinking tasks—which require students to *use* their expanding knowledge of subject matter to address disciplinary problems—motivate better study habits by helping students see their learning as purposeful and interesting. If tasks are designed to improve academic reading (see Chapter Nine), students often learn to read textbooks more powerfully and to interact more critically with primary source readings. With more confidence that students can learn from assigned readings, teachers can, if they choose, redirect some class time away from lecturing over the readings

toward critical discussions, small group problem solving, or other critical thinking activities. The emphasis throughout this book is on helping students learn the subject matter of a course at a deeper and more intellectually mature level.

Misconception 2: Writing Assignments Are Unsuitable in My Course

Most teachers believe that writing applies naturally to English courses, to liberal arts courses, and to certain specialized courses in their fields. They may not, however, believe that writing is equally appropriate in their own courses. These doubts are frequently expressed by teachers of quantitative or technical courses or ones that focus on basic facts, concepts, or algorithmic procedures that, according to the teacher, must be "committed to memory" before the student can move on to problem solving and analysis. If we apply some conceptual blockbusting, however, we see that writing assignments can be used profitably in any course. (My point is exemplified by the wide range of disciplines represented in this book—accounting, physics, chemistry, all levels of mathematics, nursing, business, education, and engineering, as well as the humanities and social sciences.) By conceptual blockbusting, I mean primarily rethinking what constitutes a *writing assignment.* Many of the assignments in this book are nongraded or are very short formal tasks designed to help students understand an important course concept. Others have a metacognitive aim—helping students reflect on their own thinking processes or productively altering their methods of studying or reading. Still others have a procedural aim— helping students learn disciplinary methods of inquiry and analysis. Whatever a teacher's goals for a course, writing assignments can be designed to help students meet them.

Misconception 3: Adding More Writing to My Course Will Bury Me in Paper Grading

Many teachers would gladly require more writing in their courses if it were not for the need to mark and grade all those papers. If teachers do not currently assign any writing in their courses, adding a writing component will admittedly require extra work, although not necessarily more total time devoted to teaching if some of the teacher's current preparation or conference time is shifted toward responding to writing. If teachers already require writing in their courses (say, a couple of essay exams and a term paper), following the suggestions in this book might *reduce* the total time they spend on student writing while simultaneously making that time more rewarding for themselves and more productive for students.

The NSSE/WPA research cited at the beginning of this chapter (Anderson, Anson, Gonyea, and Paine, 2009) has shown that what matters in using writing to promote deep learning is not the amount of writing in a course but the quality of the writing assignments themselves.

There are many ways to work writing into a course while keeping the paper load manageable. Some methods require no teacher time (for example, in-class freewriting); some, minimal time (perusing a random selection of entries from a guided journal or class discussion board); and some, very modest time (assigning write-to-learn microthemes using models feedback). Even when you require several formal essays or a major research paper, you may employ any number of timesaving strategies to reduce the paper load (see Chapter Fifteen). The key is to decide how much time you are willing to spend on student writing and then to plan your courses to include only what you can handle—always remembering that you do not have to read everything a student writes.

Misconception 4: I Am Not Knowledgeable Enough About Writing and Grammar to Help Students with Their Own Writing

Many teachers across the curriculum will admit that English was not their favorite subject. Although they produce competent professional writing in their own fields, they believe that because they struggle with their own writing and because they do not know grammatical terminology or composition theory, they lack the skills to help students. This book aims to allay these fears. Because the best teacher commentary focuses primarily on ideas and development, no special terminology is needed. Teachers simply need to be honest readers, making comments like these:

"I got lost in this part."

"You need more evidence here."

"You seem to be overlooking Baker's research on this problem. Can you summarize and respond to Baker's views?"

"Excellent point!"

A main key to teaching writing, as Chapter Two argues, is teaching students how to revise. The more teachers struggle to revise their own writing, the more they can serve as role models for students. In short, your own experience as an academic writer and reader, combined with your expertise in how scholars in your field inquire and argue, should be all the background you need to help your students with their writing.

Conclusion: Engaging Your Students with the Ideas of Your Course

The steps suggested here for integrating writing and critical thinking assignments into a course can increase students' engagement with subject matter and improve the quality of their work. Moreover, these suggestions do not call for rapid, complete makeovers of a course. It is possible to make changes in a course gradually—trying a few new activities at a time, looking for strategies and approaches that fit your discipline and subject matter, that work for your students, and that accord with your own personality and teaching philosophy.

Some teachers make only minimal changes in their courses. I know of one teacher, a brilliant lecturer, who has changed nothing in his courses except for adding a series of nongraded "practice essay exams." He collects the exams (written out of class, self-timed by students), keeps a record of who submits them, reads randomly selected ones in search of representative problems as well as models of excellent exams, and then holds class discussions of what constitutes a good answer. He is very happy with this minimalist approach and offers persuasive anecdotal evidence that this practice has improved students' study habits as well as the quality of their actual essay exams.

But I know of other teachers who have radically transformed their classrooms, moving from a teaching-centered to a learning-centered pedagogy, from lecture-based courses to inquiry-based courses using exploratory writing, collaborative learning, lively discussions, and other strategies for engaging students in inquiry and debate.

In the pages that follow, I invite readers to find what works for them and for their students.