

Teaching with Writing

Kerry Walk

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TEACHING WITH WRITING

A Guide for Faculty and Graduate Students

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Teaching with Writing will benefit from your feedback. If you have comments on how to make this guide more useful to you in your teaching, please drop me a line at kwalk@princeton.edu.

—Kerry Walk

Teaching with Writing: A Guide for Faculty and Graduate Students

by Kerry Walk

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Writing can be said to define a Princeton undergraduate education. By the time our students walk through FitzRandolph Gate on Commencement Day, they have produced numerous papers and reports, typically one or two Junior Papers (JPs), and a Senior Thesis, for an average output of around a hundred pages a year.¹

The emphasis on writing at Princeton stems from the University's recognition that writing is a central component of all academic work, and that the ability to write cogently and coherently is the hallmark of educated men and women.

To prepare students for the rigorous demands of writing at Princeton, every undergraduate, without exception, takes a topic-based Writing Seminar freshman year. In the Writing Seminars, students learn to develop original arguments through the critical use of sources, and express and organize ideas in a clear, coherent way. But the Writing Seminar is just a beginning: it can provide a solid foundation for writing at Princeton, but students need ongoing guidance if they're to develop as proficient writers in the disciplines.

To understand why guidance in writing in the disciplines is essential, simply imagine a great writer like Virginia Woolf reporting in the journal *Science* on a new statistical method for analyzing the human genome. Could she do it? No doubt. But success would take more than knowing the science and understanding how to write a sentence; it would also require Woolf to have a deep familiarity with the complex conventions and expectations of scientific writing. Although her peerless ability in English sentence construction would certainly come in handy, it's likely that even this great writer could become proficient as a scientific writer only with expert instruction, repeated practice, and meaningful feedback.

As this scenario suggests, writing isn't a simple matter of expressing ideas in grammatically correct sentences. Rather, writing is a form of critical thinking that must be adapted to different disciplines and genres. As such, writing is an essential component of disciplinary knowledge, a practice that must be cultivated in every course as actively as any other discipline-based practice, whether an analytical approach, a research method, or a laboratory or computational technique.

¹ The statistics on freshman writing come from the Freshman Survey of Writing (Class of 2005), conducted in Spring 2002. The statistics on junior writing come from the Junior Survey of Writing (Class of 2007), conducted in Spring 2006. Both surveys were designed by the Princeton Writing Program.

The purpose of this guide is to offer Princeton faculty and graduate student instructors ideas for teaching with writing. Many of the ideas presented here will be familiar; others, new. But all are designed to help you make greater use of writing as a powerful critical thinking tool and to assist you in providing the guidance that students need to write as novice practitioners in your course or discipline. Each semester, if you implement only one of the ideas presented here, you'll be taking an important step toward bringing your students into the exclusive circle of your discipline. You'll also be creating on a small scale the kind of vibrant academic community to which you, as a professional scholar or scientist, already belong.

Whether you're teaching a lecture course, seminar, precept, or lab, you can profitably integrate writing into the classroom experience. In fact, if you spend only three to five minutes per session on any of the following activities, you would be making a significant difference in students' understanding of what it means to write—and therefore think—in your course or discipline:

- Use in-class writing to deepen students' thinking.
- “Meta-teach” during lecture or discussion.
- Discuss secondary sources in terms of writing.
- Discuss strategies for approaching writing assignments.
- Workshop current students' writing.
- Discuss exemplary writing from former students.
- Organize and promote writing groups.

Each of these activities is discussed in detail below.

USE IN-CLASS WRITING TO DEEPEN STUDENTS' THINKING

Ask students to write for two or three minutes on the spot—at the beginning of class to stimulate discussion or gather students' attention; in the middle of class to make a transition in topic, work through a difficult issue or problem, or keep students engaged; or at the end of class to give students a chance to reflect on what they've learned, sealing it in their memories. There's no need to collect this “low-stakes” writing, but you can use it as the basis of a class discussion or a two- or three-minute conversation among small groups of students. Not only does it deepen students' thinking and give them practice writing; it also provides quiet students with a space to articulate their ideas. Once these students have written something, you can call on them with the assurance that they'll have something to say.

Depending on what you're after, the writing prompt you give students can be highly specific or as open-ended as “Take a few minutes to reflect on the reading you did for today.” You may even wish to design some prompts to help students make progress on a particular formal writing assignment. Here are a few sample prompts to get you thinking:

- Identify and define one of an author's key words.
- Locate a "hotspot" in the text (a passage that seems important, striking, puzzling) and write a brief comment on what makes it interesting or suggestive.
- Given a particular position or theory (for example, in a secondary source), find a passage in the text under discussion that supports or challenges it, and say briefly how.
- Write a brief note to an author challenging a key idea or finding.
- Agree or disagree with an author's perspective or claim.
- Reflect on the most important thing you learned in lecture/precept today.

"META-TEACH" DURING LECTURE OR DISCUSSION

The premise of a liberal arts education is that students can take skills, strategies, and information and apply them to other situations. Thus does the Anthropology concentrator become a physician, the Music concentrator a delegate to the United Nations, and the Chemistry concentrator an entrepreneur. But only the most gifted students are capable of making these crucial "knowledge transfers" unaided. You can help students generalize their learning and transfer it to other situations through "meta-teaching"—that is, taking a step back and naming the intellectual operation being performed. Meta-teaching takes only seconds to do, but it can help students see methodology where before they saw only "content," and it can help them connect their classroom experience to their writing.

For example, if you're discussing a graph, painting, case history, or other course "text," point out to students when the analysis being performed, either by you or by them, is characteristic of the discipline, and explain that they should perform this kind of analysis in their papers. Or if a student's or your understanding of the data or text challenges prevailing ideas, you can explain that most academic papers begin in just that way—by identifying the status quo, then challenging it. Or if a student comes up with an interesting idea that would make for a good paper, say so, and explain why, to help every student see what good inquiry in the course or discipline looks like.

DISCUSS SECONDARY SOURCES IN TERMS OF WRITING

You can “meta-teach” secondary sources, too, including journal articles, book chapters, and textbook introductions. In fact, it’s worth assigning good secondary material if only to give students some models for discipline-based writing. Otherwise, they’ll write according to their perhaps mistaken notions of what “scientific,” or “sociological,” or “historical” writing looks like—or, worse, they’ll imitate the writing of the primary source authors. Even advanced students typically have less experience reading secondary sources than you might expect, and few are likely to have considered what these sources can tell them about the discipline’s methods of written inquiry and analysis.

You can simply point out how a secondary source models a particular approach to the material or makes a particular rhetorical move. For example, you might note that a source’s approach is to apply a theory, test a hypothesis, critique an argument, make a recommendation, or provide an explanation. Specific moves you could point out might include how the author frames the research question or problem, provides background information, performs analysis, handles counter-arguments, or integrates and cites sources. A focus on professional scholars’ use of sources—how they announce them, incorporate them (through quotation? paraphrase? summary?), cite them, and connect them to their own argument—can cultivate an ethos of academic integrity in your classroom and help students steer clear of plagiarism.

A more time-consuming but also more effective way to heighten students’ awareness of how course readings function as writing is to take a workshop approach. In a workshop, students themselves examine a source for what it can tell them about disciplinary discourse. Below are some questions you might ask students to answer in pairs or small groups. Even if you ask them to answer only one of these questions per reading, by the end of the term, they’ll know a great deal about writing in the discipline.

- What are the main parts of this piece of writing, and what are the primary functions of each?
- What are the elements of the introduction? the body? the conclusion?
- Who is the author’s imputed reader, and how do you know?
- What are the form and function of each source citation?
- What style does the author use for documenting sources, and why do you think this style is preferred?
- Consider the kind of academic writing that’s furthest from the kind represented by this source. What are the differences between the two?

DISCUSS STRATEGIES FOR APPROACHING WRITING ASSIGNMENTS

As long as the assignment allows for a wide variety of responses, it's not cheating to discuss how students might approach it. In fact, discussing approaches to an assignment can form an important part of students' learning about what's valued in the course or discipline, and can help them formulate ideas that are both complex and distinctively their own. While it's tempting to append a few words of advice to the assignment sheet and leave it at that, a discussion that takes place in class will be more meaningful and engaging for students, provide them with an opportunity to ask for clarification and guidance, and, perhaps most important of all, give them a jump on the assignment, which they might otherwise sit on until the night before it's due.

You can discuss the assignment directly by asking students for their ideas about how to approach it. This discussion will give you a chance to offer some ideas of your own, convey your expectations (if you want an argument rather than a report, or vice versa, you need to say so), and warn students away from pitfalls. Alternatively (or in addition), you can discuss the assignment indirectly by leading a workshop that will actually get students started on the work of writing the paper. One method is to give students an assignment that asks them to approach a text or texts in a particular way rather than giving them topics per se (see Section 4, "Sequencing Assignments," for further discussion). In class, have students brainstorm topics that will work for the assignment, put these on the board, then ask students to choose one and freewrite on it for one or two minutes. With little time investment, students will have learned how to come up with their own topic and even begun engaging it.

One final idea: you can model a response to the assignment in class discussion. Just be sure to make explicit that you're modeling a response; otherwise, many students won't make the connection. It's also a good idea to make the text(s) you use in the modeling exercise off-limits when it comes to the assignment itself. So, for example, if the assignment asks students to place a text in a particular context, you can model the assignment using an off-limits text. In this way, students can learn the complex analytical operations necessary to write the paper—operations such as applying a theory, critiquing a text, or comparing texts in a given framework—and then practice these operations in their own papers.

WORKSHOP CURRENT STUDENTS' WRITING

All sophomores, juniors, and seniors have taken Writing Seminars, and all freshmen are in the process of doing so. This means that nearly the entire student body has experience providing constructive criticism in response to student writing. You can capitalize on students' experience by workshopping some of their writing—a partial or whole draft, or a short exercise, such as a paper proposal or even an annotated bibliography. Next to giving students detailed comments on their writing, workshopping is the best method for showing students, in practical and concrete terms, the kind of inquiry and analysis valued in your course or discipline. And, of course, workshopping is more efficient than writing individual comments on drafts. For detailed information on how to workshop student writing, see Section 3, “The Writing Workshop.”

DISCUSS EXEMPLARY WRITING FROM FORMER STUDENTS

A variation on the writing workshop is to lead a discussion of a model student paper from a previous course or precept. The purpose is for students to see how another student intelligently frames an inquiry, provides context, structures ideas, performs analysis, and integrates sources—all of which are specific to the course or discipline. While it usually makes sense to workshop current students' writing onymously—that is, with their names attached—you should strip all identifying information from writing by students who aren't part of the classroom experience.

Two pieces of advice. First, ask students to submit their writing electronically (instead of, or in addition to, submitting it in hard-copy form) so that you can stockpile it for future use. Second, do your best to get students' permission to use their writing in future courses. A quick e-mail to a student asking for permission to share his or her exemplary piece of writing will do the trick. Or ask students to sign a confidential statement like the following, to be collected at the end of the semester:

I give/do not give my professor/preceptor permission to use the writing I have produced in this course for teaching, training, and studying. I understand that my name and other identifying information will not appear on my writing.

ORGANIZE AND PROMOTE WRITING GROUPS

You can capitalize on students' experience of workshopping writing in the Writing Seminar by organizing them into writing groups of two or three students each. Writing group members typically give each other feedback on drafts outside of class, though you might set aside a few minutes of class time to get the groups going. Participating in a writing group will mean, at the very least, that students will have started working on their papers well in advance of the deadline and, at the very most, that they'll give and get helpful feedback while enjoying a free exchange of ideas. Either way, the result will be better final papers with little time expenditure on your part.²

While some students will form writing groups voluntarily, most won't, because writing groups require work (which is the whole point, from your perspective!). So to implement this idea successfully, you need to require a draft, which means that you have to put a draft deadline in your syllabus, along with a deadline for writing groups to meet and a deadline for the final version of the paper. You should also ask students to attach a cover letter to the final version of their papers in which they discuss their writing process, the advice they received, and how they incorporated it. The cover letter will not only let you know who participated in the groups (and who didn't); it will also give you a starting point for your comments on the paper. Finally, you might ask students to follow common scholarly practice by including a note in the final version in which they acknowledge the feedback and support they received in writing the paper. See Section 8, "Cultivating Academic Integrity," for wording you might use in asking for "Acknowledgments."

The easiest way to form groups is by residence hall, but, in any case, don't worry too much about group composition; even weak writers can give excellent advice. And don't worry too much about students giving each other bad advice, either; what's true for professional scholars and scientists is true for students: the responsibility to decide which advice to take and which to reject is theirs and theirs alone. By the deadline, students exchange drafts by e-mail or hard copy in class, or by posting to a Discussion Board forum on Blackboard. If you want to monitor the exchange, simply have students submit a copy of their drafts, or look on the Discussion Board forum to see who has posted. Or just let the process unfold; the cover letter on the final version or the "Acknowledgments" will let you know who participated.

² One caveat: The assignment has to allow for a wide variety of responses (not a few set "answers") so that students aren't nudged toward plagiarism. See the discussion in Section 8 of this guide for more information on helping students draw the line between permissible and impermissible collaboration, and the discussion in Section 4 about designing writing assignments that give students room to create their own ideas.

You can enhance the writing group experience by giving students guidelines for providing feedback. For example, you might tell them that you specifically want them to discuss the effectiveness of the graphs and written analysis, or the summary and application of a theory in interpreting a case. If the class is very small (under 15) and the writing groups are meeting to discuss drafts of research papers, you might even meet with the groups yourself. Obviously, this is a time-consuming option, but it may save you ink in the long run and is almost guaranteed to be a highlight of the semester—the kind of intense intellectual exchange that students came to Princeton for in the first place.

If you've ever presented a paper at a conference or works-in-progress colloquium, or simply asked a colleague or two to give you feedback on a draft, you've participated in the kind of collegial exchange that's at the heart of academic life. The writing workshop, briefly discussed in the previous section, gives students an early opportunity to belong to an authentic academic community. It's also a highly effective method for helping students learn to perform the kind of inquiry and analysis valued in your course or discipline.

In a writing workshop, the class as a whole offers constructive feedback on the writing of a few class members. The time involved is anywhere from five minutes to an hour and a half—in other words, the writing workshop is an extraordinarily flexible teaching method. It's extraordinarily useful, too, and not just for the student writers on the “hot seat,” who learn first-hand how real readers respond to their work. Students whose role is to give feedback benefit in two major ways. First, they learn about the qualities of writing most valued in the discipline. Second, by becoming better critics of others' writing, they become better critics of their own. This is an important step, because self-critique is essential for effective revision.

Writing workshops benefit you, the instructor, as well: instead of meeting with students one-on-one to discuss their writing—an impossible undertaking in most courses—the writing workshop gives you a time- and labor-saving way to help students write papers that are appropriate to the discipline.

Now for the really good news: Princeton undergraduates participate in several writing workshops freshman year in the Writing Seminar. Not only are they familiar with the experience, but they're familiar with a language for describing writing, discussed in the final section of this guide. It's useful to keep in mind that you can rely on your students for help in this teaching situation.

PAPER FLOW

The writing to be workshopped can be (1) a full draft of a paper or a stand-alone piece, such as a proposal, an outline, or a literature review, or (2) parts of drafts, such as titles; introductions; background sections, in which various kinds of context—theoretical, historical, critical—are provided; analytical sections, in which data, whether lines from a poem or statistics from the U.S. Census Bureau, are interpreted; and conclusions.

If the total number of pages to be workshopped is under five—for example, two students’ proposals—the class can read these on the spot. All you have to do is either choose the two proposals from the batch sitting on your desktop (real or virtual) or, if your classroom has a photocopier nearby, simply go to class, ask for two students to volunteer their proposals, and spend two minutes photocopying the proposals while students do a little bit of in-class writing on a topic related to their writing project.

If the total number of pages to be workshopped is over five (keeping in mind that 20 pages is a reasonable upper limit), the workshop materials must be pre-circulated, either by you or by the students themselves, at least 24 hours in advance. This can be done via e-mail or over your course Blackboard site (simply create a Discussion Board for the purpose). Again, you can either choose the material to be workshopped or ask for volunteers. If you do the choosing, try to select writing that’s on topics and texts that no one else is writing about, that’s middle-of-the-road—neither the top of the class nor the bottom—and that has strengths and weaknesses that everyone in the class can relate to. You would be wise to let the writers know by e-mail that they are the Chosen Ones, news you might accompany with a few encouraging words.

Note that there’s really no need to strip identifying information from the workshop materials. The workshop will, in fact, probably go better if everyone knows who’s sitting on the “hot seat,” if only because the situation is likely to be less socially awkward than having an anonymous writer lurking somewhere in the classroom. But circumstances may dictate that anonymity is the way to go. Use your judgment.

In the case of pre-circulated workshop materials, it’s helpful if each writer includes a cover letter to supply context for his or her paper and to express specific questions and concerns. Everyone else will read the workshop materials before the workshop and either write letters to the writer(s) or prepare detailed notes that are formal enough to be handed over. These “draft responses” address each writer’s questions and concerns, and otherwise focus on global issues, such as structure, and avoid the picayune, such as comma usage. Warning: If you don’t ask students to prepare some kind of written response to the workshop materials, students are likely to come to class unprepared. For more information, see “Cover Letters” and “Draft Responses” at the end of this section.

WORKSHOP STRUCTURE

A workshop on a piece of writing between 5 and 20 pages in length is likely to run between 30 and 45 minutes. A workshop on a shorter piece will be accordingly shorter—in fact, as little as five minutes. Here’s a typical structure for a workshop on a 7- to 10-page draft:

- **5 minutes:** *State the purpose of the workshop and establish ground rules.* *Purpose:* To give the writer some feedback but also to give others the chance to practice critiquing writing. Critiquing others' writing is the first step toward becoming a good reviser; self-critique is the second step. *Ground Rules:* These may be that the writer should remain silent for the first 10 minutes to hear how readers have read his or her draft, and that commentators should remember that the writer is a real, live person with real, live feelings. Also: Remind the person on the "hot seat" to take notes.
- **30 minutes:** *Discuss first the strengths and then the weaknesses of the draft, and how the writer might revise.* This is the heart of the workshop and will take the most time. Especially in the weaknesses discussion, ask students to look closely at the text—at particular sections, paragraphs, or elements. If you suspect that everyone is having trouble structuring the introduction, discussing a figure or table, or using secondary sources effectively, you can draw students' attention to a useful spot in the text so as to work through the general problem. Eventually, be sure to turn from critique to concrete advice: How should the writer revise? For a useful terminology, see Section 10, "A Language for Describing Writing."
- **5-10 minutes:** *Sum up, then ask students to relate their own current writing experience to the discussion.* These are the two crucial moves! Without this summary/ discussion, students may think the workshop was a waste of time for everyone but the writer. At this point, you could also have writing groups of two or three students exchange and discuss their drafts, based on what they learned in the large group about what to look for. If you'd like the writing groups to meet outside of class, simply give them a few minutes in class to get organized.
- **1 minute:** *Once the workshop is over, students should give their draft responses to the writer(s), with a copy to you.* This process can also take place via e-mail or on the course Blackboard site. You don't have to read students' draft responses carefully, but a quick glance through will show you who's taken the assignment seriously and who needs to do a better job next time. One quick way to encourage students to write better draft responses is to photocopy a good draft response, annotate its strengths, and distribute it to students in the next class session.

You can adapt this structure to fit the situation. For example, if you're workshopping one student's "Results" section, you might spend a minute on ground rules, eight minutes on reading the "Results" and discussing strengths, weaknesses, and revision ideas, and a minute on summing up.

THE COVER LETTER

The cover letter, which students include with their papers, gives them an opportunity to set the terms of the workshop experience. Especially early in the semester, it's a good idea to give students written instructions for the cover letter—for example:

Please include a cover letter with your draft in which you answer the questions below and present any other concerns that you have. Think of the cover letter as an opportunity to ask for the kind of feedback you need. All cover letters should be about a single page double-spaced.

- What do you see as your main idea or point?
- What idea or point do you feel you've made most successfully? least successfully?
- What's the number one question about your paper that you'd like your reader to answer for you?
- If you were going to start revising today, what would you focus on?

Sample Cover Letter

Dear Reader:

The main idea of this paper is to show why the character of Horatio was needed in the play and how Hamlet made use of him. The speech I've chosen to examine implies a special relationship between the two characters, one that I've also tried to explore. It seems to me that Hamlet uses Horatio to fill in the gaps that were created by his madness and political intrigues at court, though I'm not sure this idea comes across clearly enough.

The point I think that I've made most successfully has to do with Horatio's overall quality, a point that I reinforce throughout the paper. But I would really like to more fully explore Hamlet's personal doubts and complaints as reflected in his speech, especially concerning his potential insanity. It just seems to me that my thesis could be stronger. I also think I need to work on my structure. I think the overall organization works—intro, background on Horatio, discussion of the speech, discussion of Horatio's importance to Hamlet, conclusion—but within each section, I'm having trouble linking my ideas to my thesis. Each paragraph needs to have a purpose that's unique, yet not so different that it doesn't fit into the essay. That's the trouble I'm having.

Aside from the questions I have about thesis and structure, I'd like to know, How can I make the "speech" portion of my paper stronger? It needs to be more carefully planned and to end with a bang, not a whimper. Any help you can give me about how to expand this part of the paper and make it strongly would be greatly appreciated.

Thank you for your help and for taking the time to read this draft!

Sincerely,
[Student's Name]

THE DRAFT RESPONSE

The draft response, which readers write in the form of a letter to the draft writer, gives students an opportunity to formulate their ideas before arriving at the workshop. As such, it all but ensures a high-level discussion. As with the cover letter, it's a good idea, especially early in the term, to give students written instructions for the draft response—for example:

You can expect to spend at least 30 minutes reading and responding to the draft. As you carefully read each draft, write marginal notes to the writer on anything that puzzles you, then write a letter to the writer in which you address these questions:

- In your own words, what's this paper about? (What's its idea?) Don't assume that the writer knows what his or her own paper is about! Mistrust the stated thesis (if there is one).
- What do you see as the strength(s) of the draft?
- Identify two elements of academic writing (thesis, structure, etc.) that you think the writer should focus on in revising, and discuss these in relation to the draft. Try to point to specific sentences and paragraphs whenever possible.
- In the cover letter, the writer has asked one or more questions. What answers do you have to offer?

Sample Draft Response

Dear [Fellow Student],

To me, your paper is about the fact that Hamlet chooses Horatio as an ally because he recognizes in Horatio the strength and clarity of mind that he lacks in himself. This is a good idea. I like how you consistently tie this idea into your paragraphs throughout the paper. Your stitching is also very good, and I felt that the transitions between paragraphs were pretty smooth. Good job with that.

I think you're right when you say in your cover letter that the thesis could be stronger. I think the thesis needs a little work. It doesn't really address a problem that you have with Hamlet's speech; it's more of a statement about the value of his friend. I think part of the general problem you're having is that you don't tie the actual speech into the paper enough. The introductory paragraph doesn't mention the speech at all, and the paper is supposed to be about the speech. If you focus more on the text and adjust your thesis so that it addresses a specific aspect of the speech, you might have an easier time making the point of your paper more clear.

The other element that I would focus on when you revise the paper is style. Sometimes your word choice and use of idiomatic phrases detracts from the quality of the paper.

Some of the things you state would be fine in casual conversation, but are not appropriate in an academic essay. For example, on p. 2, you say that Hamlet is not “on top form,” and on p. 4, you say that Hamlet decided to “get serious.” You could put these ideas another way.

In terms of other stuff, I like the comparison to other Shakespearean works in your intro. I was a little taken by surprise when you mentioned the possibility of a romantic relationship between Hamlet and Horatio later in the paper because I definitely didn’t see that coming, but I kind of like the idea. It’s definitely an interesting perspective that deserves to be mentioned, and you do a fairly good job of providing evidence for it. Maybe you should just prepare your reader somehow beforehand so the theory doesn’t seem like it’s coming out of nowhere.

In general, I would say focus on your thesis and on incorporating the speech more into your essay, and be careful not to let your “street voice” creep into the essay. If you can solidify the thesis so that it focuses more on a problem or on a unique interpretation, then I think the paper will be much more effective overall. Good luck, and try to get a couple hours of sleep :)

Sincerely,
[Fellow Student]

4 | SEQUENCING ASSIGNMENTS

A well-designed writing assignment can give students the chance to engage course material in a deep, sustained, and individual way, and to learn essential aspects of writing in a particular discipline. A well-designed assignment can also prepare students for the ultimate challenge—writing on a topic of their own choosing with sources they’ve collected themselves—by exemplifying how to formulate an appropriate question and think fruitfully about course texts and ideas.

This section contains ideas about how to choose readings strategically in order to create the conditions for good writing experiences, and how to sequence assignments that ramp up the intellectual work required of students. In the next section, you’ll find approaches for crafting individual assignments with precision and foresight.

USING READINGS TO “STAGE” WRITING ASSIGNMENTS

In many courses, even those with a significant writing requirement, the writing can seem added on—extra and inessential. In these courses, the writing assignments may even be designed in *medias res* rather than during the course conception stage; they’re like road signs along the journey (the reading experience) and as such function simply to ensure that students are on the right path (have read and understood the material). Good writing assignments, by contrast, are integral to course design: they’re conceived simultaneous with the course itself as essential to its shape and its goals. Such assignments do more than test students’ grasp of the material; they give students practice doing the intellectual work of the discipline, whether that’s interpreting data, situating an empirical study in the secondary literature, or making informed policy recommendations. They’re integral to the journey, and as such they typically allow for a variety of responses.

If you design your writing assignments in concert with your reading assignments, not after the fact, you’ll be in a position to create the best conditions for particular kinds of intellectual work to take place. You might think of this as “staging” writing assignments, a strategy for course design involving the strategic selection of readings to create a particular writing experience. In practical terms, staging a writing experience might mean assigning some readings that you hadn’t considered before in order to give students practice doing certain kinds of intellectual work, or it might mean not assigning some readings, because they “scoop” students—do too much of the work for them.

Let's say, for example, that you think it's important for students to learn to read the scientific literature critically. So you go beyond the textbook and include a few relevant journal articles in your syllabus for students to critique as a writing assignment, but you suppress a review article that already does the critique magnificently. (In fact, a clever way to design writing assignments is to find articles you think are interesting, then to give students the sources cited in the article while withholding the article itself.) Or let's say that early in your course you want students to learn how to apply a theory to a case—a typical analytical operation in the social sciences. So you move up a theoretical reading and also include a few extra cases, just to give students greater freedom of choice. In these examples, the reading and writing assignments are married; they work together to give students practice performing essential discipline-based work.

WRITING ASSIGNMENTS AS SEQUENCED INTELLECTUAL WORK

Of course, different writing assignments require different intellectual work. In designing assignments, it's therefore important to think about the different kinds of intellectual work you want your students to do and how you plan to sequence this work throughout the term.

While different disciplines require different kinds of intellectual work, we might usefully identify some of the most common types, as follows:

- *Critique a text*³

Anthropology: Critique either the majority or dissenting opinion in *U.S. v. Guzman* in terms of the concept of “cultural heritage.”

Sociology: Use a work of reportage about war to critique or refine one of the sociological theories of war that we've studied this semester.

- *Assess or evaluate a text*

Biology: Evaluate a claim about a conservation issue made in an article intended for a popular audience.

Psychology: Assess one of the models of attention we've encountered in the course.

³ “Text” is used broadly, to refer to any object of analysis or interpretation, such as an artifact, data set, person, event, communication product (film, speech, website), and so on.

- *Analyze or interpret a text*

Literary Studies: Choose a speech from *Hamlet* of at least twenty-five lines and offer an interpretation that challenges or complicates the standard reading.

Sociology: Analyze an inconsistency, tension, or problem with Kunstler's depiction of suburban community life in *The Geography of Nowhere*.

- *Define a concept*

Biology: Make an argument about how a response to a problem in current medicine extends or redefines prevailing concepts of health and illness, medical ethics, or the role of medicine in society.

- *Explain an event or phenomenon*

Politics: Select a country that has chosen to develop nuclear weapons or that initially had a weapons program that it chose to end, and explain that country's decisions with respect to nuclear weapons.

- *Take a stand on an issue (or recommend a course of action)*

Biology: Argue for or against the claim that speciation by sexual selection is responsible for the observed sterility patterns encompassed by Haldane's rule.

Sociology: Using course readings to help justify your argument, make a recommendation to the College Board that the category "African American" be retained, eliminated, or altered.

Writing assignments typically ask students to perform one (or more) of the above operations either (1) *without* the aid of other texts (without context) or (2) *with* the aid of other texts (with context). This may seem like a simple distinction, but in fact these two assignment types are realms apart when it comes to complexity. Each can be made more complex still when the focus of analysis is multiplied, as the examples below suggest.

SEQUENCING ASSIGNMENTS

The assignments in your sequence will depend on the level of the course you're teaching and the methodologies of your discipline. Sequences generally move from shorter, simpler, more circumscribed assignments that give students a chance to build skills and strategies, to longer, more complex, more open assign-

ments that more closely resemble normative writing in the discipline. Sequences also generally include a strategic mix of low-stakes and high-stakes writing, to be discussed below.

In literary studies, for example, students are likely to begin the semester practicing “close reading.” This assignment has a single focus (a text) and is performed without the aid of other texts; it’s the simplest of all assignments involving the interpretation of a text. Depending on the level of the course, students may build up to a more complex project by the end of the semester, such as interpreting several related texts in a larger context established with the aid of other sources. This is the most challenging of all assignments involving textual interpretation and, not surprisingly, is a good description of many Senior Theses in literary studies, to say nothing of articles and books by professional scholars. The leap between the first and last assignments is wide, so intermediate assignments would be necessary to bridge the gap. A sequence might look like this:

- Interpret a literary text (no context).
- Use a theory to re-interpret a literary text. Alternatively, interpret a literary text in the context of literary criticism—by disagreeing with or extending a critic’s interpretation.
- Interpret a set of related literary texts within a theoretical and/or critical context.

Or take another example: the Junior Paper in Economics. This JP, like most scientific and technical papers, asks students to explain a phenomenon with reference to other explanations. This is a more complicated assignment than may at first appear: students need to perform a sequence of tasks in order to accomplish it:

- Define a feasible research question or problem.
- Situate the question in the secondary literature.
- Propose a methodology for addressing the question or problem.
- Characterize and analyze the data.

So complex is this assignment that the sequence of assignments leading up to it corresponds to the main parts of the paper itself: Introduction, Literature Review, Methods, and Results. Add an “Abstract,” “Conclusions,” and “References,” and the paper is finished.

THE ROLE OF “LOW-STAKES” WRITING IN ASSIGNMENT SEQUENCES

As discussed in Section 2, “Writing and the College Classroom,” you can use in-class writing to help students make progress on a particular writing assignment. But such “low-stakes” writing need not be confined to class time; it can be assigned as short take-home writing exercises, sometimes called “response papers,” or brief postings on a Discussion Board forum on Blackboard. Low-stakes writing isn’t graded; that’s what makes it “low stakes” (though some instructors evaluate it on an informal scale of check marks: $\sqrt{+}$ [more than adequate], $\sqrt{}$ [adequate], or $\sqrt{-}$ [inadequate]). Whether you should make written comments on low-stakes writing depends on how important the writing is to students’ development in the course: you would probably not collect a two-minute free-write in class meant to stimulate thought, whereas you would be likely to collect and comment on a proposal for a research paper.

Low-stakes writing intended to help students make progress on an assignment usually represents an actual step in the writing process and also gives students practice performing essential skills. As a lead-up to an assignment in Sociology asking students to choose a theory and then apply it to a particular case, students might do an exercise in which they choose their theory and summarize it. The summaries would give students a foundation for writing the paper as well as for class discussion.

Coming up with low-stakes writing assignments is relatively easy: all you have to do is think about the steps a writer would take, or the skills a writer would need, to do the “high-stakes” assignment, then turn one of those steps or skills into a low-stakes assignment. An obvious way to do this is to break the writing process into stages. For example, you could ask students to write a paper proposal, which might include a statement of the problem or question to be addressed, a description of the primary sources or data to be analyzed, an overview of other sources to be used (if any), and even a preliminary structure for the paper.

But your low-stakes assignments need not be a prescribed stage in the writing process. Here are some other possibilities:

- Free-write in response to a text or topic.
- Describe a personal experience that bears on the topic.
- Locate and analyze a textual “hotspot”—a passage that seems important, striking, puzzling.

- Locate and define a tension, gap, or incongruity in a text.
- Critically summarize a text.
- Identify and define a key term or concept.
- Support and then challenge a key concept.
- Locate and define a conflict of opinion in a set of secondary sources.

THE DRAFT AS A LOW-STAKES ASSIGNMENT

Perhaps the most important low-stakes writing of all is the draft. Because so many demands are placed on students' time, many of them will wait until the last possible moment to produce a draft, and as a result may not have time to get feedback and revise. You can ensure that students begin the writing process well before the deadline by requiring a draft. In a perfect world, you would give students individual feedback on their drafts, but class size and time constraints often make doing so impossible. In these cases, you can simply leave it up to students to get feedback and revise, or you can actively organize students into writing groups for the purpose of exchanging papers and providing feedback (see Section 2, "Writing and the College Classroom," for more information). Alternatively, you can choose one or two drafts (or parts of drafts) for the entire class to read, and then run a writing workshop (see Section 3, "The Writing Workshop," for more information). Note that for either of these activities to work, the assignment must allow for multiple responses; if students are writing essentially the same papers, they'll find it difficult to maintain the integrity of their own work.

If you have time to comment on drafts, or if students come to your office hours with a draft and you can read it on the spot, remember that different writers use drafts in different ways, and none of these ways is bad or wrong. Some writers use drafts to dump information in a tidy but uninteresting pile, others to discover their ideas through an exciting but messy process, still others to try out ideas they would never hazard in a high-stakes setting. It's important to read drafts for their promise and possibility, no matter how confusing, simplistic, boring, or zany they are, and not to get bogged down in the problems, which are likely to be numerous. Because drafts serve the writer's purpose (to create one's own ideas) rather than the reader's (to understand and engage another's ideas), it's not advisable to grade drafts, only to note whether a student has written one.

THE RESEARCH PAPER

Almost every paper students write at Princeton will draw on written sources—usually primary, sometimes also secondary. Who supplies the sources? In most cases, the professor, who orders textbooks and/or assembles a course packet. In less frequent but important cases, students either supplement the readings assigned by the professor or do all of the research themselves; the JP and Senior Thesis most obviously fit this category, but students write research papers in many courses, including the Writing Seminar freshman year.

There are many ways to prepare undergraduates for this most challenging of assignments, but one of them is *not* to give students plenty of advance notice and leaving the rest up to them. Even seniors rarely have enough experience (or discipline) to take a research project from beginning to end without assistance. Following are ideas for helping students produce research papers that are worth writing—and worth reading.

- *Define the project.* Many students think a research paper is a report on a topic rather than a unique contribution to or viewpoint on a field of knowledge. Let students know which kind of “research paper” you want: a report or an argument. (You might even distribute model papers either by students or by scholars.) And instead of telling students, “Write on anything you’d like that has to do with this course,” consider carving out a broad yet delimited area for the research paper. Doing so will provide structure (and thus discourage plagiarism) as well as stimulate students’ interest in each other’s projects. In a course on foreign policy, for example, you might limit the area to U.S. foreign policy in Iraq; in a course on developmental psychology, to disorders affecting children and adolescents.
- *Sequence the research paper.* Whether it’s 10 pages long or 80, a research paper is a major undertaking. You can assist students by breaking down the process into a sequence of assignments—for example, proposal, literature review (or annotated bibliography), draft—and provide students with feedback on each. If you’re working with students on independent research projects, you can ask them to submit a research plan that includes assignments and deadlines of their own.
- *Involve students in each other’s research and writing process.* By breaking down the process into stages, you create opportunities for students to give each other feedback on their research and writing. Students can workshop each others’ proposals in class, give research presentations, and exchange drafts in small groups. See Section 2, “Writing and the College Classroom,” and Section 3, “The Writing Workshop.”

- *Formally introduce students to source-based research methods in your field or discipline.* By definition, undergraduates are generalists; even seniors are unlikely to be familiar with the major journals, indexes, and special tools (such as Stata) in your field. The simplest way to introduce students to source-based research is to ask a Subject Specialist from the University library to teach part of a class or an extra session on discipline-based research. The librarian can even make this session a hands-on workshop in an electronic classroom followed by one-on-one research conferences.

SAMPLE ASSIGNMENT SEQUENCES

Below are sample assignment sequences in courses across the disciplines and at various levels.

Introductory Literature Course

Phase I:

- One-page paper (ungraded): Analyze a short passage in a text
- One-page paper (ungraded): Analyze another short passage in a text
- Paper #1 (5-7pp.; graded): Analyze a primary text

Phase II:

- One-page paper (ungraded): Summarize several socio-historical sources
- One-page paper (ungraded): Critique two secondary sources
- Paper #2 (6-8pp.; graded): Interpret a primary text in a critical or socio-historical context

Science Course with a Research Paper

Phase I:

- One-page paper (ungraded): Critique a scientific article
- Two one-page papers (ungraded): Critique 2 scientific articles on a chosen topic (e.g. climate change)
- Paper (4-5pp.; graded): Analyze the scientific debate on the topic based on a critical reading of 4 to 5 scientific articles in the source book

Phase II:

- One-page paper (ungraded): Analyze the public policy debate on the topic based on a critical reading of sources found through library research
- Research paper (8-10pp.; graded): Recommend policy changes based on the state of scientific knowledge.

Advanced Course in Engineering

- Short paper (2-3pp.; graded): Identify a design problem and review current solutions
- Paper (10pp.; graded): Propose a new design
- Short paper (2pp.; graded): Recommend to a manager lacking a technical background whether another student's design should be accepted

Two-Semester "Methods" Course in History

Fall Semester:

- Paper #1 (graded): Analyze a primary document
- Paper #2 (graded): Analyze a primary document
- Paper #3 (graded): Analyze a primary document in the context of secondary sources
- Paper #4 (graded): Take a position in a historiographic debate

Spring Semester:

- Short proposal for a research paper based on primary documents (ungraded)
- Annotated bibliography (ungraded)
- Outline (ungraded)
- Draft of the research paper (ungraded)
- Revision of the research paper (graded)

Once you've established your assignment sequences, as discussed in Section 4, you can work on crafting each assignment to position students to perform particular kinds of intellectual work. The way an assignment is formulated will have an enormous impact on student performance. If the assignment is unfocused or inexact, you're likely to see unfocused, inexact papers. If it calls for students to "discuss," you're likely to see descriptive answers rather than papers with an articulated viewpoint. So it's important to craft assignments with precision and foresight—the way an experienced writer crafts any important piece of writing.

Surprisingly, more than a few writing assignments lack the crucial ingredient: the assignment itself. These ineffective assignments, consisting of paragraphs full of background information, multiple directives, questions to ponder, and/or a list of topics, may never actually give a unified instruction as to the intellectual work required. Four useful strategies for crafting clear assignments are these:

- (1) Encapsulate the assignment in a single sentence, beginning with "Your assignment is to ..." and a strong verb, such as "analyze," "assess," or "explain," that signals the intellectual work required;
- (2) Minimize the amount of background information you provide so that instead of framing students' papers for them (and possibly stealing their thunder), you're requiring students to frame their papers for themselves;
- (3) Put any advice for approaching the assignment in an "Advice" section, separate from the assignment itself; and
- (4) Include logistical information about when and where the paper is due, how long will it probably be, what the formatting specifications are (margin width, font size, etc.), and which citation style should be used.

The first two strategies are the hardest to implement, but doing so will ensure that your assignment is clear and unified. Here are a few examples to inspire you:

Your assignment is to . . .

... **Critique** Aristotle's *Nicomachean Ethics* using DeMott's work on contemporary "friendship orthodoxy."

... **Assess** emotivism or prescriptivism as an account of moral disagreement.

- ... **Analyze** the relationship between Ishi and the anthropologist Kroeber as portrayed in the film *The Last of His Tribe*.
- ... **Test** Richard Rorty's hypothesis that novels foster solidarity, using J. M. Coetzee's novel *Disgrace* as your test case.
- ... **Argue** why one Impressionist painter more accurately captures some aspect of nineteenth-century Parisian society than another painter from the same period.
- ... **Re-evaluate** a contemporary public policy issue through the lens of social class.
- ... **Agree** or disagree with realist theories that treat states as a unitary rational actor, supporting your argument with specific historical examples.

The exercise of encapsulating your assignment into a single, sharp-edged sentence will help you and your students alike identify with precision the intellectual work you're asking students to perform.

THE READER TEST

Having drafted the assignment, you should try reading it from your readers' point of view—in other words, you should submit it to the Reader Test. Will students read the assignment and know what's being asked of them? Will they think they're supposed to answer several questions instead of just one? Will they know to limit their topic and write a coherent paper? What are the likely responses you can imagine to the assignment, and are these in any way problematic?

A professor in a literature course drafted an assignment that asked students to do the following:

Select a story by either Eudora Welty or Flannery O'Connor and make an argument for its being typified as Southern, concentrating on aspects such as characterization and setting, and dominant themes such as family relations and community.

In reviewing her assignment, the professor saw two main problems—first, that students were likely to provide flat or banal definitions of “Southern,” thereby dooming their papers from the start, and, second, that they were likely to string together paragraphs on the topics mentioned in the assignment instead of

narrowing their analysis. She also saw that the assignment would probably produce responses with no tension or interest in them; she could all too easily imagine a stack of papers “arguing” that Welty’s or O’Connor’s stories should, indeed, be “typified as Southern.” A better assignment, she realized, would nudge students toward a more interesting or complex take on Welty’s or O’Connor’s “Southernness.”

Once the professor read her assignment as a student might, and once she thought, too, about what the strongest papers in response would look like, she was able to produce a revision that addressed all the problems she saw:

Louis D. Rubin identifies six characteristics of Southern literature, all of which could be defended as general characteristics of what it means to be Southern: [six characteristics listed here]. Using a short story by either O’Connor or Welty, make an argument about how the author comments on, complicates, or critiques one of these characteristics of Southernness.

Note that the revised assignment is not only more straightforward but also more challenging than the original, asking students to regard the relationship between a Southern author and her depiction of Southernness as complicated—and therefore worthy of analysis.

A SAMPLE WRITING ASSIGNMENT

The draft of the assignment discussed above was clear enough, but a little reflection suggested that it would prompt students to write uninspired papers. Many assignments suffer far greater ills. A student responding to the following assignment felt totally at sea, with good reason:

Write an essay describing the various conceptions of property found in your readings and the different arguments for and against the distribution of property and the various justifications of, and attacks on, ownership. Which of these arguments has any merits? What is the role of property in the various political systems discussed? The essay should concentrate on Hobbes, Locke, and Marx.

“How am I supposed to structure the essay?” the student asked. “Address the first question, comparing the three guys? Address the second question, doing the same, etc.? ... Do I talk about each author separately in terms of their conceptions of the nation, and then have a section that compares their arguments, or do I have a 4 part essay which is really 4 essays (two pages each) answering

each question? What am I going to put in the intro, and the conclusion?” Given the tangle of ideas presented in the assignment, the student’s panic and confusion are understandable.

A better formulated assignment poses significant challenges, but one of them is not wondering what the instructor secretly wants. Here’s a possible revision, which follows the guidelines suggested above:

Logistics → [Course Name and Title]
[Instructor’s Name]

Paper #2

Due date: Thurs., February 21, 11:00am in precept

Length: 5-6pp. double-spaced

Assignment → Limiting your reading to the source packet, choose two of the three theorists we’ve read—Hobbes, Locke, and Marx—and make an argument for the persuasiveness of one theorist’s conception of property over the other’s.

Advice → The best papers will focus on a single shared aspect of the theorists’ respective political ideologies, such as how property is distributed, whether it should be owned, or what role it serves politically. The best papers will also state and argue for a thesis, and describe the theorists’ viewpoints clearly and concisely.

Rather than asking students to do little more than demonstrate their reading comprehension, the assignment asks them to use their understanding of the reading in the service of their own argument—a higher-order skill than mere demonstration, certainly, and an entirely appropriate (and more engaging) one for college students to develop.

Your comments on student writing arguably constitute the most personal, serious, and lasting intervention you can make in a student's academic career. In addition to providing the student with an evaluation of a particular paper, comments perform several important functions. At their most basic level, comments illustrate to students that their papers are written to be read. This idea—that someone is actually going to take what they write seriously—is big news to many students and can transform them from dull, confusing, or oblivious scribblers into self-critical writers for whom the reader's interest and understanding are paramount. By communicating your expectations and explaining discipline-based methodologies and conventions, comments also shape the way students will formulate ideas and arguments in the future.

Writing good comments is challenging work, not least because it's time-consuming, hand-hurting, and at times (2:00 a.m., for instance) soul-defeating. The first paper in the stack is usually the hardest to get through; the last is equal parts exhilaration and exhaustion. But the pay-off for students is inestimable: a good comment can help them write with the knowledge that a real, live person, interested yet skeptical, is at the other end of the process.

Commenting typically involves reading each paper carefully while making marginal comments, then writing a final comment that sums up the paper's main strengths and weaknesses. You'll find suggestions for accomplishing each of these tasks below, along with strategies for establishing evaluation criteria and speeding up the process. Grading, which is much less agonizing when it takes place after commenting, is discussed in the next section of this guide.

BEFORE READING THE PAPERS

Perhaps the most crucial step you can take toward responding to student writing fairly, effectively, and efficiently is to decide on your evaluation criteria. As students so often put it: What are you looking for? Here are three ways to work out a useful answer to this all-important question:

- *Identify the qualities of the best writing in your field.* Luckily, this is easier to do than it sounds. Just take a look at Section 10, “A Language for Describing Writing”: each term listed there corresponds to a quality that most faculty and graduate student instructors value in both professional and student writing. At the top of the list is “motive”: the most exciting papers tend to be those that are compelled by a genuine issue, whether an anomaly in the text or data, or a hole or disagreement in the secondary

literature. See Section 10 for other typical qualities of good writing in both humanistic and scientific disciplines.

- *Take your cue from the assignment.* What do you expect will be the characteristics of the best responses? You should add these characteristics to your list of evaluation criteria. For example, if the assignment asks students to take a side on an issue, you'll be looking for an explicitly stated position. If the assignment asks students to interpret a text in light of a theory, you'll be looking for an explanation of the theory and a statement of how the theory provides a new understanding of the text.
- *Let the stack instruct you.* While it's entirely possible to receive only mediocre papers, not an exciting or fabulous one among them, some papers will nevertheless be better than others. You can learn from the better ones what relatively successful responses to the assignment look like, and add the qualities of these better papers to your list of evaluation criteria. In the process, you might also get a sense of how to revise the assignment for future courses.

In establishing your evaluation criteria, you're well advised to resist the simplistic distinction between "writing" and "content." As discussed in Section 10, "writing" in this context usually means "mechanics," whereas "content"—a large, undifferentiated category if there ever was one—presumably means everything else. A more careful articulation of the elements of academic writing will enable your students to improve particular aspects of their writing—for example, their ability to pose a compelling problem or question, or their analysis of texts or data.

MAKING COMMENTS IN THE MARGINS

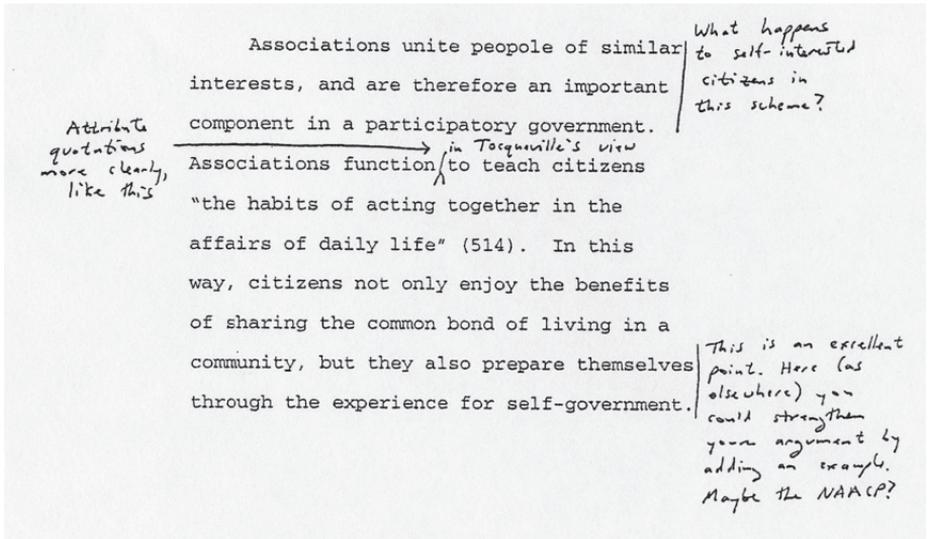
One of the most significant conversations you can have with a student takes place not in office hours but in the margins of the student's paper. Marginal comments are by nature dialogic and multi-purpose: in them, you may give advice, pose questions, offer praise, express puzzlement, suggest new lines of inquiry, and provoke thought. Marginal comments not only show a student that you attentively read his or her paper, but also provide examples of the general observations you'll go on to make in your final comments. If you tell a student in the final comments that more analysis is needed, for example, the student should be able to locate one or more specific places in the text where you've indicated that analysis is lacking.

To students, it can sometimes seem as if marginal comments come in only two sizes: too few and too many. Comments that consist of scattered marks—?, !, $\sqrt{\quad}$ —

with the odd “good” or “vague” tossed in, are not only unhelpful; they leave student writers feeling cheated and angry, and wondering if their instructor read their paper closely or at all. On the other end of the scale are comments so numerous or lengthy that they literally obscure the student’s words on the page. Finding the middle ground between “not enough” and “too much” is one of the main challenges of marginal commenting. Below are suggestions for addressing this challenge, and for writing marginalia that respectfully guide and motivate student writers rather than “correct” them.

- *Comment primarily on patterns—representative strengths and weaknesses.* Noting patterns (and marking these only once or twice) will help you strike a balance between making students wonder whether anyone actually read their essay and overwhelming them with ink. The “pattern” principle applies to grammar and other sentence-level problems, too. Resist the temptation to copy-edit! To detect patterns more easily, read through the entire paper quickly before writing any comments.
- *Make some positive comments.* “Good point” and “great move here” mean a lot to students, as do fuller indications of your engagement with their writing. Students need to know what works in their writing if they’re to repeat successful strategies and make them a permanent part of their repertoire as writers. They’re also more likely to work hard to improve when given some positive feedback.
- *Write in complete sentences whenever possible.* Cryptic comments—e.g. “weak thesis,” “more analysis needed,” and “evidence?”—will be incompletely understood by most students, who will wonder, What makes the thesis weak? What does my professor or preceptor mean by “analysis”? What *about* my evidence? Symbols and abbreviations such as “awk” and “?” are likewise confusing. The more specific and concrete your comments, the more helpful they’ll be to student writers.
- *Ask questions.* Asking questions in the margins promotes a useful analytical technique while helping students anticipate future readers’ queries.
- *Write legibly (in any ink but red).* If students have to struggle to decipher a comment, they probably won’t bother. Red ink will make them feel as if their paper is being corrected rather than responded to.
- *Use a respectful tone.* Even in the face of fatigue and frustration, it’s important to address students respectfully, as the junior colleagues they are.

Here's an example of marginal comments that make use of this advice:



WRITING FINAL COMMENTS

Your response to most student papers is likely to be complicated, because most student papers are complicated, possessing a sometimes bewildering combination of qualities—some desirable, some less so. Final comments give you an important teaching opportunity: the chance to synthesize the many strands of your response into a coherent, constructive statement of the paper’s main strengths and weaknesses. Ideally, this statement will not only help the student regard his or her paper more critically but also positively influence the student’s future writing experiences.

It shouldn’t come as a surprise that the key to writing good final comments is the same as the key to writing good *anything*: a strong sense of the reader. And yet many comments seem intended merely to evaluate the paper rather than to teach the person who wrote it. An easy antidote is to write final comments that take the form of a letter to the student. Here’s a possible structure for such a letter:

- *Open with a salutation.* By addressing the student directly (“Dear Pat”), you make a personal connection with the student and indicate that you have a stake in his or her intellectual welfare. You also signal that you’re writing to the person, not to the paper.

- *Reflect back the paper's main point.* By stating your understanding of the paper's argument or main idea, you show students that you listened to what they were saying, that you took them seriously—perhaps the most important thing teachers can do for their students. A restatement in your own words will also help you ground your comment in the paper, providing a solid foundation for the rest of your discussion.
- *Discuss the paper's strengths.* Praise in the final comment, as in the margins, not only encourages writers but also helps them identify and develop their strengths. Even very good writers need to know what they're doing well so that they can do it again in the future. Specific examples make the praise believable.
- *Discuss the paper's weaknesses, focusing on large problems first.* You don't have to comment on every little thing that went wrong in a paper. Instead, choose three or four of the most important areas in which the student needs to improve, and present these in order of descending importance. You may find it useful to key these weaknesses to your grading criteria. Give specific examples to show the student what you're seeing. If possible, suggest practical solutions so that the student writer can address the problems in the next paper.
- *Type your final comments if possible.* If you handwrite them, write in a straight line (not on an angle or up the side of a page), and avoid writing on the reverse side; instead, append extra sheets as needed. The more readable your comments are, the more likely it is that students will read them and take them seriously.

This section closes with sample final comments:

Salutation →	Dear Pat,
Restatement of Main Point →	You argue with conviction that Murray's argument is wrong for a variety of reasons, including his reactionary misogyny, the primary burden of child rearing falling to women, and the underfunding of the AFDC.
Strengths →	The paper's impassioned tone is what I like best about it. I also think you have moments of analytical insight—for example, when you uncover Murray's assumptions about welfare on p. 2.

3 or 4 Main Weaknesses →

But the paper has some problems that detract from its persuasiveness. I've outlined these below:

(1) The paper is full of arguments against Murray, but instead of just listing complaints, you need to come up with a focused argument. The focus you suggest in your title—Murray's misogyny—would work well if you gave a coherent summary of Murray's article early on and then attacked what you see as his misogyny. Don't get sidetracked.

(2) The paragraph on orphanages (p. 3) gives the best analysis in the paper. Elsewhere—for example, the shotgun marriages paragraph on the same page—your evidence is way under-analyzed. You need to analyze Murray's arguments more using some of the tools and concepts we've discussed in class.

(3) You obviously have the ability to write clear prose, but mechanical errors obscure your meaning and reduce your credibility. Proofread more carefully next time.

Conclusion →

Let's talk about your next paper before you write it. Once you learn how to sustain a single focus and make sound economic arguments, you'll be able to write much stronger papers.

Signature →

—Professor Witherspoon

Grade →

Grade: C

Grades are seen by many students as random and subjective, a belief that rampant grade inflation at the college level has helped to reinforce. Yet grades have the potential to be among the most powerful of teaching tools. When standards are announced and consistently applied, grades provide a reasonably objective measure of achievement, signaling to students the extent to which they need to challenge familiar ways of thinking and writing. Grades also give written comments an edge they might not otherwise have.

As useful as grades are, assigning them can be a perplexing business for new and veteran teachers alike. This is especially so when the stack is high and the papers aren't easily categorizable: a smart, lively paper may lack a coherent argument; a misshapen wreck may yield up some breathtaking insights. Given the inherent difficulties of grading, how can it be accomplished in a fair, consistent, and efficient way?

For students to be motivated by grades, they need to believe the grades they get are fair, not arbitrary or idiosyncratic. Students must, in other words, trust their teacher's judgment. One way to encourage this trust is to provide students with grading criteria early on and to use the criteria when discussing or evaluating writing. When students are made aware of the widely shared qualities of good writing, and when their writing is measured against these criteria, they're better able to trace a disappointing grade back to the source—the paper, not the teacher—and to see how they can improve next time.

Most experienced readers agree that the primary hallmarks of excellent writing are an interesting, arguable thesis; the development of the thesis in a logical yet supple way; the substantiation of it and any sub-claims with incisively analyzed evidence; the engaging use of properly attributed sources when appropriate; and a clear, compelling style that conforms to standard usage. Many faculty create and distribute “grading rubrics” in which these qualities are used to describe A, B, C, D, and F papers.⁴

Grading with clear criteria in mind helps to ensure fairness and objectivity. So does another principle of grading: *Grade the paper and nothing but the paper*—not the person who wrote it, the effort that went into it, or the improvement it shows. This principle dramatically simplifies the task of evaluation by eliminating second guessing; it also guarantees that students are judged on an equal basis. “Grade the paper and nothing but the paper” means grading the *entire* paper, not just a part of it. Papers bend and swoop and turn, and grades need to be responsive to their sometimes erratic flight patterns. It means grading the *actual* paper as

⁴ The Princeton Writing Program's grading rubric is downloadable at <http://www.princeton.edu/writing/rubric.doc>.

well. Rather than assigning a grade based on what a paper seems at first glance to be, or what in hindsight it might have been, it's more fair—and more objective—to grade the paper as it actually is.

CONCRETE STRATEGIES FOR GRADING

If you wait to decide on the grade until after you've written your final comment, the grade you assign is likely to be more accurate and fair than would otherwise be true, and the decision-making process will be less agonizing. To determine the grade, try these three steps:

- *Re-read your final comment.* As you do this, think about the extent to which the paper has met your grading criteria. You might even compose, in your notes or in your mind, a brief description of the paper in terms of these criteria—for example, “Good research question, obvious enthusiasm for the topic, and clear writing, but driven by an observation, not a thesis; use of a listing structure; lack of evidence to ground generalizations; over-reliance on the opinions of secondary sources.”
- *Determine whether a paper falls above or below “the line.”* It's useful to think of papers as falling above or below an imaginary line in the grading scale—for example, B-/C+. A line set higher on the grading scale (say, at A-/B+) will result in higher grades. Whether a paper falls above or below the line most often depends on how effective the paper's thesis and structure are: a readable paper with a clear argument will usually receive an above-the-line grade; a paper that's difficult to read and doesn't have a clear argument will usually receive a below-the-line grade. The paper described above would most certainly fall below the line, no matter where the line is set.
- *Make fine distinctions.* Having determined whether a paper is above or below the line, consider why it should receive a particular grade, not something slightly higher or slightly lower. If the line is set at B-/C+, then the paper described above would probably earn a C, because its weaknesses make a C+ too generous, and its strengths make a C- or lower too harsh. If the line is set at A-/B+, the paper would probably get a B. As you can infer, disagreements over grades are often actually disagreements over where the line is set.

Although grading a piece of writing will never be an exact science, implementing the simple techniques discussed above can make the process less subjective and even less agonizing. Grading without a staircase may turn out to be not so difficult after all.

SPEEDING UP THE PROCESS

There's no doubt about it: responding to student writing is a time-consuming process. The strategies described in this section and the previous one—knowing what to look for, resisting the temptation to copy-edit, identifying in the final comment no more than three or four areas for improvement, deciding on the grade after writing the comment—can make the process more efficient and effective. Taking certain steps *before* the papers come in can also make a significant difference in the responding process. Four strategies in particular are worth trying out:

- *Design good writing assignments.* The motto of assignment design is: “You get what you ask for.” An unfocused, inexact writing assignment is likely to yield unfocused, inexact papers. By contrast, an assignment that creates an occasion for sustained argument has a good chance of actually producing it. See Sections 4 and 5, on assignment design.
- *Respond to proposals, outlines, and drafts.* Although responding to students' efforts at various stages in the writing process is itself time-consuming, the investment may be worth making: the five minutes it takes to read and critique a tentative thesis or outline via e-mail, or the 20 minutes spent with a student in office hours discussing a draft, can save significant time down the line; it can also mean the difference between getting an uninteresting, descriptive, or confusing paper and one that's refreshingly original and persuasively argued.
- *Organize students into writing groups.* By participating in a writing group of two or three people who are assigned to read and respond to each others' papers, students derive two main benefits: they start working on their papers earlier than they might otherwise have done, and they begin to realize that, for their writing to be effective, it must engage and persuade real readers. And although students can't necessarily provide one another with scholarly guidance (for example, the context for a debate or a list of relevant sources), they can learn to identify weaknesses in an argument and make concrete suggestions for revision, skills that they in turn can apply to their own writing. See Section 2, “Writing and the College Classroom.”
- *Ask for a cover letter.* Self-awareness in writing—knowing what works in a paper and what doesn't—is one of the keys to improvement. Students who are required to submit their papers with a cover letter attached become more self-conscious writers through the experience of reflecting on a paper's strengths and weaknesses. Cover letters also facilitate the commenting process by creating a dialogue between reader and writer: given

the chance to respond to a writer's specific concerns and questions, the instructor (or any reader) is better positioned to make comments that are more individualized and thus more useful. See Section 3, "The Writing Workshop," for sample cover letters and instructions.

Good writing is a pleasure to read. By implementing teaching techniques that encourage good writing, the sometimes onerous process of responding to student writing can be made not only more expedient but more enjoyable as well.

Although the act of writing can be a lonely one, scholars and scientists are in fact doubly connected to other people—through the sources they draw on (documents, data, interviews, visual artifacts, and so on) and through the writing support they receive (research assistance, feedback on drafts, and so on). The resulting webs of connection are visible in two conventional apparatuses of scholarly writing: *source citations*, notes and lists in which the writer acknowledges other people’s language, facts, findings, and ideas, and *Acknowledgments*, a section or note in which the writer expresses indebtedness and gratitude to anyone who provided feedback or other kinds of assistance and support—intellectual, bibliographical, clerical, financial, emotional.

These scholarly apparatuses reflect the University ethos of academic integrity, in which each member of the academic community is required to ensure the originality of his or her own work. Students often interpret “originality” as meaning “groundbreaking” or “new” when in this context it has a more humble meaning: “one’s own, and not someone else’s.” Proper source citations let the reader know what belongs to the writer—is original to him or her—and what belongs, or is original, to other people. “Acknowledgments” similarly indicate that although a writer has relied on others in the process of creating scholarship, that reliance has been appropriate, and the integrity of the writer’s own work has been maintained. The extent to which a writer may receive assistance is officially known as “permissible collaboration”—“collaboration” in this case being understood as “give-and-take” rather than “the joining of forces” (though a co-authored paper is collaborative in both senses of the word).

The risky but necessary proposition of scholarship is to maintain the integrity of one’s own work while producing it in the context of other people’s ideas and input. In teaching novice scholars, some faculty choose to remove the danger altogether: they simply forbid students from reading secondary sources, or browsing the Web, or getting feedback on drafts. The unfortunate result is that students fail to acquire essential scholarly skills and fail, too, to understand scholarship as an essentially social activity. But others recognize that the best way to cultivate academic integrity is to give students plenty of practice and guidance in drawing the line between their own work and that of others, and between appropriate writing assistance and assistance that’s excessive.

ACADEMIC INTEGRITY GUIDELINES AND CAMPUS RESOURCES

Elsewhere in this guide, you'll find teaching ideas for how you can cultivate your students' sense of academic integrity. For example, you can use assigned readings to show students how professional scholars introduce and cite their sources (see Section 2, "Writing and the College Classroom"). You can design writing assignments that will prompt not just one answer but many different kinds of responses, thereby making it feasible for students to exchange drafts with one another without the fear of being overly influenced (see Section 4, "Sequencing Assignments"). And you can organize students into writing groups that workshop, rather than copy-edit, drafts—even without your needing to be present (see Section 2, "Writing and the College Classroom").

One other easy way to cultivate academic integrity is to give students clear written guidelines for source citation and collaboration in your course.⁵ This is especially important, because styles of citation differ from discipline to discipline, and the limits of collaboration differ from professor to professor. Which citation style should students use, and where can they find a style guide? Are they allowed to receive assistance and feedback on their papers? If so, where should they draw the line between "just right" and "too much"? And should the assistance they receive be explicitly acknowledged?

SAMPLE ACADEMIC INTEGRITY POLICIES

Below are some sample policies for you to adapt to your course and include in your syllabus. You might also consider including in your syllabus the list of Resources for Writers provided inside the back cover of this guide.

- *Acknowledgment of Original Work.* This course is governed by Princeton University's academic rules and regulations, stated in *Rights, Rules, Responsibilities* and discussed at greater length in *Academic Integrity at Princeton*. According to these rules and regulations, you must properly cite your sources to distinguish your ideas from others'. You must also write the following pledge at the end of all drafts and revisions and then sign your name: "This paper represents my own work in accordance with University regulations." Suspicions of plagiarism will be reported to the Committee on Discipline and may have serious consequences.

⁵ For a discussion of permissible collaboration at Princeton, see *Rights, Rules, Responsibilities*, at <http://www.princeton.edu/rrr>, and *Academic Integrity at Princeton*, at <http://www.princeton.edu/pr/pub/integrity>. Princeton's Honor Code governs only in-class exams (no help allowed). Papers written outside of class fall under the University's "Academic Regulations," as specified in *Rights, Rules*.

- *Acknowledgment of Feedback and Support.* In this course, you are encouraged to give and get feedback on drafts of the assigned papers. Note, however, that any feedback you give or get must be within appropriate limits and acknowledged in writing. See <http://www.princeton.edu/writing/feedback.doc> for guidelines.
- *Citation Style.* For this course, please use the [MLA, CMS, APA, CSE, etc.] citation style. An online guide is available via the University Library website at <http://library.princeton.edu/help/citing.php>. If you can't find an example of a specific citation type, browse through recent issues of [*PMLA, American Historical Review, American Psychologist, Nature*, etc.] for models. This journal is available via the Library website at <http://library.princeton.edu/catalogs/articles.php>. Ask a Reference Librarian if you need assistance.

9 | TEACHING WITH WRITING IN SCIENCE AND ENGINEERING

*By Judith A. Swan*⁶

Writing is as central to science and engineering as it is to other disciplines. Most scientific and technical documents are arguments: they make claims grounded in evidence that has been analyzed and interpreted. While arguments in the humanities are usually qualitative and based on textual evidence, in science and engineering, the arguments are often quantitative, and the evidence is more often represented not in prose but in visual form, as graphs, tables, photographs, and so on. Because obtaining evidence can be extremely difficult, training in science and engineering focuses heavily on developing the necessary technical expertise.

Yet technical mastery alone is not enough; when students' technical expertise outweighs their experience in arguing and interpreting the data, they risk becoming not good scientists and engineers but merely good technicians. Students need practice in the techniques of both laboratory work and scientific and technical writing—techniques that must be taught explicitly. No one is born knowing the difference between an independent and dependent variable, and no one learns to write the independent variable before the dependent variable without instruction. Moreover, there is no single form for a scientific or technical research article; each discipline has evolved its own format to address the discipline's particular needs.

By learning the discipline's practices, students become participants in the construction of disciplinary knowledge. The most effective way is for students to engage these practices alongside more experienced mentors. Students need to read, design, graph, interpret, critique, analyze, and persuade. The ideas for teaching with writing presented in this guide—organizing writing groups, sequencing assignments, commenting and grading, and others—are useful for faculty and graduate student instructors across the disciplines. Below are some suggestions for how these ideas might apply in science and engineering.

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ASSIGN AND DISCUSS THE SCIENTIFIC LITERATURE

Give readings from the scientific literature. Unlike professional scientists and engineers, who read research articles, proposals, reviews, and so on, students typically read textbooks, notes, and summaries, and for this reason have little experience with the literary practices of professionals in the field. Students need to be introduced to the standard documents of science; they also need guidance on how to read those documents. You can assist by assigning readings from the scientific literature. In discussion, you can then model for students how to read strategically and analyze critically, and draw explicit attention to the ways in which scientists and engineers make arguments. Where are the documents persuasive? Where do they fail? How can students use them as models for their own writing?

Critique data in visual forms. One of the most distinctive aspects of scientific documents is their abundant visuals. Designing effective visuals is not straightforward—witness the emergence of data visualization as an area of research—and requires explicit instruction to establish standards of rigor and validity. Because visuals in the published literature are usually adequate but not optimized, they offer excellent examples for launching discussions. Take five minutes of class time to read a figure closely with your students. What elements make a particularly good figure effective? What are the minimum requirements for clarity? What interferes with the message of a less effective figure? What should have been in the figure that is not? How could the figure be improved?

DESIGN STRATEGIC ASSIGNMENTS

Incorporate interpretation into standard assignments. Because professional scientists and engineers not only produce data but also interpret it, students need to practice interpretation with assignments that ask for more than the presentation of established facts. Assignments that ask for interpretation usually include prompts such as “analyze,” “assess,” “evaluate,” or “argue for.”

One simple way to incorporate interpretation into standard assignments is to ask for a narrative explanation to accompany a numerical or quantitative return. The central premise in science is that the world is explainable; even when what happens is unexpected, things happen in the laboratory for a reason. Asking students to explain why these data constitute an answer to a particular question shifts their focus away from simply getting the correct answer to thinking about the science behind that correct answer. In addition, asking for writing in small doses makes writing into an everyday practice of science, which can greatly reduce the anxiety many students feel when confronted with large research projects, like the Senior Thesis.

Set intermediate writing deadlines in research projects. Less experienced researchers typically have difficulty managing the research process. Because they can't imagine in detail everything they have to do, they often produce much of their work in a frantic rush to meet a deadline, to the frustration of both the writer and the reader. You can help students learn effective research management by setting intermediate writing deadlines in advance of the final one. Such deadlines offer short-term goals that help manage the process as well as create opportunities for revision. Even without feedback, simply building in time for revision improves the quality of the final product. With feedback, students can correct a problem early in the process that might derail the final product.

Here's an example of an effective intermediate deadline. In a laboratory course, as soon as students have produced the first piece of data that's guaranteed to appear in the final document, give a short assignment to "write it up": ask students to prepare the figure, give it a title, write its caption, describe the method, and report the result. The piece of writing that they produce might be two or three pages at most, but as students work through these new tasks, they'll start to see the new challenges: How much detail is sufficient? What does a figure caption require? Well in advance of the final deadline, students will recognize that completing the assignment will require that they obtain some additional information and guidance.

PROVIDE MEANINGFUL FEEDBACK

Write helpful comments. Because intellectual work in all fields involves language, experts in a discipline know things about language that can help students do the discipline's work more skillfully. But since few scientists are studying grammar, focusing intensely on grammar in your comments will deflect the writers' attention from more important issues. Instead, your comments will be more helpful if they focus on your areas of expertise: the science and the argument.

In particular, you can use your comments to reflect back to students the concerns of scientific readers, who expect to find certain elements in any scientific paper:

- *An explicit, significant, and well-defined purpose.* Readers expect a paper to have a significant purpose, one that is worth examining and is explicitly announced in the introduction. Fulfilling the purpose successfully will resolve some still undecided question and will connect to the broader questions of the field.
- *Appropriate sources.* Although scientific documents rarely quote their sources, readers nevertheless expect the paper to cite the sources that are

essential both to establishing the known facts in the field and to clarifying the boundary between accepted facts and still unresolved issues.

- *Valid and justified methods.* Readers expect the methods to be justified and explained in sufficient detail such that the techniques can be evaluated or even reproduced. Too little detail calls the whole enterprise into question, but too much detail overwhelms readers.
- *Visual presentations of data.* Readers expect every figure to be roughly interpretable on its own, to make a clear point, and to include all the data necessary to support the argument.
- *Results and analysis.* Readers expect papers not only to present the data but also to analyze the data and present results, which fulfill the purpose of the paper and answer the questions posed initially.

Create opportunities for students to give each other feedback. Writers benefit from feedback, but that doesn't mean that all the feedback needs to come directly from you. Students can benefit as much from giving feedback as from receiving it because responding to their peers requires that they make judgments—and justify them. Writing groups of two or three members give students the chance to engage in the practices of professionals and internalize the standards of the scientific community.

Peer response has an additional practical benefit: it preserves your resources. By giving student writers an opportunity to resolve for themselves the problems visible to them and their peers, you can focus your energies on pursuing the less obvious issues that your greater experience enables you to see. For example, by letting students comment on the missing labels in a figure, you can concentrate your comments on whether the data plotted in the figure address the scientific question at hand.

EXPAND THE DEFINITION OF WRITING

As the above ideas suggest, perhaps the most significant assistance you can offer students is to expand their definition of writing to include all forms of inscription intended to communicate or make meaning. Writing in science and engineering includes not only sentences but also figures, graphs, images, and drawings. This broader definition can help students recognize that whenever they interpret data, whether by drawing a figure, graphing variables to discover a relationship, or designing an apparatus, they're in fact writing science.

The approaches to teaching with writing described in this guide can be significantly enhanced when the language that writers and readers use to talk about writing is public and shared. Even if you don't realize it, you already use a language for describing writing, whether you're a chemist presenting "results," a historian analyzing "primary documents," or some other type of scholar or scientist in conversation with others about writing. Humanists and some social scientists, whose writing is based primarily on texts, might include "evidence" and "analysis" in their writing lexicon. Scientists, engineers, and some other social scientists, whose writing is based primarily on quantitative data, might instead include "data" and "discussion" in theirs.

You can capitalize on your experiences as a scholarly or scientific writer by making your writing lexicon as explicit as possible for students. Some possibilities follow. But whatever language you use, you would be wise to avoid the false dichotomy between "writing" and "content." What's usually meant by "writing" in this context is "mechanics"—grammar, punctuation, and spelling. Yet writing, as we all know from experience, comprehends so much more: the establishment of a viewpoint in relation to others' viewpoints; the organization of complex ideas and arguments; the convincing analysis of evidence, and so on. Rather than limiting your writing lexicon to the two large, undifferentiated categories "writing" and "content," try using terms that can facilitate a more nuanced and meaningful discussion of *everything* that's on the page.

When asked to describe academic writing in their fields, scholars and scientists use many of the terms defined in the writing lexicon below.⁷

A WRITING LEXICON

Thesis: A paper's central claim or promise.

In humanistic disciplines, the thesis is an arguable claim—i.e., an assertion someone could reasonably argue against; as such, it provides unexpected insight, goes beyond superficial interpretations, or challenges, corrects, or extends other arguments. In scientific disciplines, the thesis is a statement of purpose indicating that a particular investigation will be described and significant results presented—results that challenge standard opinions or methodology, or add to knowledge in the field.

⁷ This lexicon was developed by the author with assistance from Judith A. Swan, Assistant Director of the Princeton Writing Program, and was inspired by Gordon C. Harvey's "Elements of the Academic Essay," available at <http://www.princeton.edu/writing/elements.doc>.

Motive: Defined by Gordon Harvey as the “intellectual context” that’s established at the beginning of a paper to suggest why the thesis is original or worthwhile.

In both humanistic and scientific disciplines, the motive is typically an incongruity, puzzle, or surprise in the primary sources or data; and/or holes, limitations, or disagreements in the secondary literature. All good academic papers have a well-defined motive, which, according to Harvey, is “usually defined by a form of the complicating word ‘But.’”

Structure: A paper’s line of reasoning, from beginning to end and also within and between paragraphs.

A successful structure is logical, coherent, and easy to follow. In humanistic disciplines, the structure allows for a dynamic development of ideas (is not merely a list of points or examples). In scientific disciplines, the overall structure is typically signaled with subheadings, such as Title, Abstract, Introduction, Literature Review, Methods, Results, Discussion, and References; within each section, the structure allows for a logical development of ideas.

Key Words: A paper’s main terms or concepts.

Key Words usually appear in the title, are defined early on (often with the aid of sources), and could be used in a library or Web search to locate the paper if it were published.

Methodology: The methods and strategies used to make an argument or conduct an investigation.

In humanistic disciplines, scholars typically don’t discuss their methodology, except to describe an analytic framework, but social scientists and scientists always do, whether their projects are empirical or theoretical. One reason for the difference is that social scientists and scientists value reproducible results, which are dependent on methodology.

Evidence, or Data: Interpreted primary sources, empirical observations, or factual information.

In humanistic disciplines, evidence is usually quoted and analyzed. In scientific disciplines, data are visually summarized in labeled graphs and figures.

Analysis: The interpretation of sources.

In humanistic disciplines, analysis of primary sources is used to support claims, while analysis of other kinds of sources is used to advance the overall argument

(for example, by providing a theoretical framework). In scientific disciplines, analysis of data leads to results (described in the Results section); the results are further analyzed for their larger implications (in the Discussion section).

Sources: The various materials used to develop an argument, including artifacts, information, and other people's ideas.

Primary sources are uninterpreted documents, artifacts, data, or information that, when analyzed, function as evidence. *Secondary sources*, also known as "the literature" or "the secondary literature," are texts that make direct claims about the topic and may be used to establish a problem or question worth addressing, the standard opinion(s) on the topic, the standard way in which the problem or question is approached, or the current state of knowledge in the field. Other *relevant sources* are texts that relate indirectly to the topic and may be used to provide context or background information, key words or concepts, or points of comparison.

Sources appear in any of several forms: they may be *quoted* (if the style of writing is special or significant), *paraphrased* (if the style of writing is complex or jargon-laden), *summarized* (if the source is long and complicated), or *referenced* (if the source is briefly mentioned). In humanistic disciplines, sources appear in each of these forms. In scientific disciplines, sources are usually referenced or summarized, almost never quoted or paraphrased.

Orienting: Defined by Gordon Harvey as "bits of information, explanation, and summary that orient the reader."^{*}

The amount of orienting, or context, a writer provides depends on readers' likely expertise in the subject. Even experts require some orienting; those with less expertise require more.

Citations: Bibliographic information that enables readers to track down a paper's sources.

In academic writing, sources are always cited; the citation style employed (e.g., MLA, APA, CMS, CSE) depends on the discipline. A list of sources is called the Works Cited, Bibliography, or References, depending on purpose and discipline.

Conventions: The accepted standards of various elements of academic writing, such as paper format, voice, tone, diction, and citation style.

Academic writing in different disciplines follows distinctive conventions. Should a writer include a roadmap at the beginning of a paper or divide the

paper up into conventional sections? Is the active or passive voice preferred? May a writer refer to him- or herself in the first-person singular? Is there a specialized language, or jargon, that the writer should use? Which citation style is appropriate? Writers can infer answers to these and other questions of convention by glancing through the most widely read journals in the field—for example, *PMLA*, *Social Science Research*, and *Nature*—or by reading excellent papers (by students or professionals) distributed by the professor or graduate student instructor.

Mechanics: Grammar, punctuation, spelling, and citation format.

Writing guides that focus on mechanics are readily available online, as are guides to the citation styles used in various disciplines. See, for example, “Resources for Writers” at <http://www.princeton.edu/writing/resources> and “Citing Sources” at <http://library.princeton.edu/help/citing.php>.

These are just a few of the terms that are widely used by scholars and scientists when discussing writing. By adopting these or other useful terms as you work with students on their writing, you’ll make visible the practices—and values—of your discipline while giving students some of the critical tools they need to excel at Princeton and beyond.

