Chapter 5. Structuring Intentional Learning Across Your Courses

By now, you've probably started to see how writing is a social activity that can contribute to learners' development in many ways. It can help students explore and situate themselves within the community of practice of your field when you *teach with writing*; it can help writers develop their thinking and show what they know when you *teach writing*. As Chapter 4 emphasized, writing also can be a way for you to connect with your students as people and as learners—*teaching writers*—because writing is tied to identity and experience. All of this occurs when you understand the roles that writing can play for students in enabling them to join the community of practice that is constituted by your field and in which you participate and create ways for students to connect with and even push those boundaries, providing both *access* and *opportunity*.

While previous chapters have included moments of application, this chapter asks you to put all your ideas into practice, structuring effective learning environments by relying on what scholarship tells us about how learning works.

Goals for this chapter include:

- clarify the nature of learning, especially how learning works for novices
- situate your course and writing within a learning framework
- learn how to scaffold for learning
- provide opportunities for you to rethink specific elements of your courses and assignments, including assignment design and feedback

To accomplish these goals, focus on one course as you work through the activities in this chapter. This way, you can dig deeply into assignments, activities, and the learning environment you want to design for that course. It might be most effective if you choose a course that has proven difficult for students or frustrating for you. You're going to use this course to dig into students' prior learning experience, outline course goals, and consider how you'll design the course keeping both of those in mind. It's important to emphasize at the outset: The steps you'll take in this chapter will primarily facilitate *access*, making knowledge-creating practices (especially writing) in your field more visible, and creating scaffolded strategies to support students' work with those. As this book has emphasized, providing access is essential; learners need to know how knowledge-creating works and how fields operate in order to write successfully in courses. But as the previous chapter demonstrated, without *opportunity*, access is simply another word for assimilation. Thus, the ideas in this chapter for creating access are necessary but not sufficient if your goal is to invite many kinds of learners into the work of your fields, and to be open to ways they may change the work of your fields.

Activity 5.1: A Challenging Course

Identify and collect your teaching materials for a course you teach where students frequently struggle or where you are often frustrated with student outcomes. A course where more students than usual receive grades of D, F, W, or Incomplete (aka "a course with high DFWI rates") would also be a good option. You will use this course throughout this chapter. For now, reflect briefly on why you think the course is challenging for students.

What is Learning?

Writing is always bound up with learning. The principle behind "writing to learn" (WTL) approaches (discussed in Chapter 4) is that writing can help people learn; the idea underscoring "learning to write" (LTW) is that learning is almost always demonstrated in some kind of composed knowledge (writing, mathematical figures, sound compositions, films). Because of the close connections between writing and learning, it's critical to reiterate some of the key ideas introduced throughout Chapters 1–4:

- Learning is a process that leads to change, which occurs as a result of experience and increases the potential for improved performance and future learning.
- Learning involves acquiring skills, practicing integrating them, and knowing when to apply what they have learned (Ambrose et al., 2010).
- Learning does not occur in a vacuum.

Deep learning, then, is *situated*—that is, it occurs in specific places. Deep knowledge about something occurs *in* a place. It requires not just knowing *what* (i.e., the "facts" or "formulas") but also knowing *how and why*—how and when to apply knowledge within the disciplinary or professional context. Thus, deep learning requires both declarative knowledge (knowing about) as well as procedural knowledge (knowing how)—and understanding how and why this knowledge matters and where else it can be applied. Declarative knowledge is "knowledge of facts and concepts that can be stated or declared," while procedural knowledge "involves knowing how and knowing when to apply various procedures, methods, theories, styles, or approaches" (Ambrose et al., 2010, p. 18). Procedural knowledge generally doesn't occur without declarative knowledge, but declarative knowledge *often* is separated from procedural knowledge, especially in school.

For instance, researchers studying introductory STEM courses have noted that those courses sometimes ask students to memorize things (periodic table, what meiosis is, principles of gravitational force), but don't as often ask students to apply those things in introductory courses (Mazur, 2009). Similarly, students in history

classes are provided with dates and names associated with historical events, but are less often asked to situate these within broader contexts (Wineburg, 2018).

Activity 5.2: Goals for Your Course

Thinking of the course you identified in 5.1:

1. List the declarative knowledge you would like students to gain. What would you like them to know about by the end of the course?
2. Next, list what you would like students to be able to do with that knowledge by the end of that course (their procedural knowledge).
3. Finally, write a few sentences explaining why students need declarative and procedural knowledge and where and how both can be applied.

Experts, Novices, and the Challenges of Community of Practice

As this book has repeatedly emphasized, instructors are expert members of disciplinary and professional communities of practice. One feature of that expertise, in fact, is the ability to bring together declarative and procedural knowledge. In workplaces and other non-school communities (such as apprenticeships, clubs, etc), newcomers learn to move toward this kind of expertise by engaging in what Jean Lave and Etienne Wenger (1991) call legitimate peripheral participation—they begin by doing small things that are central to the work of the community and then move toward expertise and full participation. Paradoxically, schooling presents a challenge because it is not typically set up like a community of practice. In non-school communities of practice there are more oldtimers (experts) than newcomers (novices), and people are often focused on doing the work of the community (making shoes, selling insurance) rather than the learning goals of individuals. In school settings, there is typically one expert (the teacher) and many novices (the students) and the activity is "schooling" or individual learning. Thus, for classrooms to result in truly effective learning, the expert teacher needs to be aware of what novice students need to learn and then design careful learning experiences and opportunities to support that learning. As experienced teachers know, this isn't as easy as simply telling students, "Learn this, and then go and apply it." This is why learning researchers identify a difference between content expertise (being an expert in a subject) and *pedagogical* content expertise (Shulman, 1986).

Researchers note that teaching novices can be difficult because experts are typically not consciously aware of how they (as experts) do what they do—their practices have become *tacit*, and their perspectives *embodied*. They forget what it was like to learn declarative knowledge, combine or skip steps that turn that knowledge into practice, see patterns between elements of declarative knowledge that novices cannot see, and underestimate the amount of time tasks take nov-

ices to complete (Bransford et al., 2000). Experts are often operating at a level of unconscious competence (National Research Council, 2000; Shulman, 1986), not consciously or explicitly recognizing what they are doing or know how to do.

Take, for instance, the example of driving a stick shift. Experts know the "shape" of the gears (on the floor, on the steering column), know how to push the clutch and move the gearshift at the same time, and when to do so. They also have some sense of why it's necessary to do so, and how use different gears to do different things (e.g., shift up to reduce the number of rotations of the engine as the rate of speed increases, downshift to use the engine's force to slow the vehicle, use a lower gear when more torque is required, and so on). Once someone has mastered driving a stick shift, they do so without conscious effort or awareness and they can use their knowledge for more "advanced" purposes, like downshifting. Teaching someone else to drive a stick shift requires re-seeing all the steps involved and how one undertakes them, and then figuring out how to explain what to do—and providing safe opportunities for the learner to practice doing it herself.

Recognizing that experts know, do, and see things that novices do not can be an important revelation for teachers and students alike. One classroom activity that easily illustrates this point is asking everyone in the class, including the instructor, to write instructions for an activity that they are very good at. (The activity needs to require no special equipment.) Then, the class breaks off into pairs and each person completes the experience exactly as described in the instructions, but without asking any questions, one at a time. After the experience the activity completer describes what they wish they had known; the activity writer describes what they knew but forgot to include in the instructions.

Activity 5.3 asks you to reflect on your experience with a class in the same way the illustration above does with paired participants. You'll refer back to what you write in Activity 5.4, too.

Activity 5.3: Considering Students' Challenges

Continuing to focus on the course you chose for this chapter: think about times when you were surprised by how long it took for students (the majority of the class) to accomplish something, or when you realized that there were skills needed for the task you assigned that the majority of the students did not have. This might be related to (or the same as) the learning bottleneck that you identified in Activity 1.4 (in Chapter 1).

The Need for Scaffolding and How to Scaffold

When attempting to learn and apply new and difficult knowledge, learners benefit from working through an iterative process. In the literature (and practice)

on learning, this is referred to as "scaffolding." Scaffolding so that students can build knowledge and skills does not mean you are avoiding rigor; it means providing access and inviting students into the rigorous, challenging work of your field by providing them with support. Scaffolding also requires providing students with feedback to help them improve their practice as they undertake that work (Cohen et al., 1999). One of the main goals of a rigorous learning environment, in fact, is to help students engage where tasks are too difficult for them to accomplish alone, but attainable with support and help (Vygotsky, 1978). If they can do the work by themselves with ease, they do not need a class to learn it. And if the material is too difficult even with help, then it is not pitched at the right level.

One goal of a rigorous but supportive learning environment is to design learning experiences that are scaffolded so that students can accomplish difficult tasks over time. This requires you as a faculty member to start with with the desired *end* result—the most conceptually sophisticated thing that students will need to show and/or know how to do—then designing learning that helps them learn and practice with the knowledge and skills they will need to use to achieve that result. (This is often referred to as "backward design" [Wiggins & McTighe, 1998]). Backward designing also requires you to recognize where your own expertise blinds you to what students don't know or can't yet do, so that you can build in learning opportunities to make the hard task possible.

Activity 5.4: What You Know/What's "Missing"

Referring to your reflection in Activity 5.3, identify what *you* know about this activity. How do you do it? What do you do before, during, and after the activity? Then, reflect on what is "missing" or you are not seeing in students' work with the activity. Since you've identified it as something that is difficult or took longer for a number of students, think about what they are not collectively "getting."

Activity 5.4 draws on elements of what "decoding the disciplines" research (described in Chapter 1) calls an "expertise interview." You may find it productive to undertake the activity with someone who can ask you to describe the moment(s) you're thinking about in some depth. But whether you complete it individually or on your own, it's safe to say that when you identify things that are "missing," you're beginning to also identify what you can build into your teaching to address students' challenges.

Identifying Course Goals, Outcomes, and Needed Skills

Once you've started to address elements that can address challenges, you can reflect on your course goals, outcomes, and the skills you want students to attain in

the course. One way to do this is to identify a major, high-stakes course assignment and engage in some backward design in order to develop course activities, materials, and checkpoints that ensure students can complete the assignment. This entails identifying some major course outcomes and the related declarative and procedural knowledge students will need to achieve them, considering what assignments students might complete in order to gain this knowledge and meet course outcomes, and identifying the skills students will need in order to produce what you want them to.

For example, if one of your goals is for students to know about a general area of research in your field (course outcome, declarative knowledge) and to be able to explain major research trends in writing to others in the field (procedural knowledge), you might assign them to write a literature review (major assignment). What skills and knowledge do students need in order to accomplish writing an effective literature review for others in your field about a major research area? They need to be able to:

- find appropriate sources (use databases, know which ones are relevant to your field, understand how to use search times, understand what sources are credible and relevant);
- read sources (know how to read in ways you expect, take useful notes that lead to synthesis, and find important points in the sources);
- understand and summarize sources (know how to summarize, paraphrase, integrate source material into notes and summaries);
- synthesize sources (be able to compare ideas across sources, see patterns, make connections, and organize written materials); and
- write about ideas from across a variety of sources in ways that are appropriate for your field/field (identify themes and findings you see as relevant, find gaps in the literature, use terms and conventions your field uses, use citation as your field does).

As this example illustrates, to help students complete a difficult and meaningful task by the end of your course, you first need to uncover the invisible tasks and skills required to get there.

Activity 5.5: Identifying Major Course Outcomes and Related Skills

1. What is a major assignment that you give in the course you are focusing on in this chapter?
2. What are the learning outcomes students will achieve by completing this assignment?
3. Make a list of every skill or type of knowledge you can think of that students will need in order to successfully complete this major assignment.

Defining Your Terms

For students to achieve the outcomes you have defined and develop the skills related to those outcomes, it's also useful to ensure that you have defined key terms in the assignments and instructions. For instance, the previous section referred to a "literature review." This is a very specific genre, and you probably have a clear idea of what *you* mean when you ask students to produce it. Have you, though, defined the parameters of that genre for students? Often, faculty have very specific ideas as experts in a community of practice about what they mean when they refer to the genres that they'd like students to create. For instance, the term "theory" means different things in different disciplines; so do the words "model," "mechanism," and "change." And just as often, faculty do not share with students *their* definitions of the genres they ask students to write (what an art historian means by "essay," "research paper," or "literature review," for example). Laura Gonzales and colleagues documented this phenomenon in a short video (https://youtu.be/2SzMWLoR4C8), one that instructors often find very compelling (and troublesome) because it illustrates to them that because they are experts and have models in their heads of precisely what these things should be, they assume that their meanings are both shared and understood by everyone else (Mathew, 2014). This applies equally to terms that faculty use to refer to what should happen *in* these genres—activities like "analyze," or "describe," or "compare." These activities, too, have very specific meanings—but students, especially in introductory courses, rarely have insight into what the terms mean.

When faculty are asked to review key terms in one another's assignments, they invariably ask questions such as: "What does 'success' mean? What are the conventions of writing a sociology paper—what should it look like? Are there central principles that students will use to respond to the 'why' questions in this assignment? What should I know about case studies that are mentioned in the assignment?" When faculty members read the assignments written by other faculty members and even have a good deal of familiarity with those faculty members' courses, instructors from different disciplines tend to find they need more information about what is expected. Sometimes these explanations are a matter of a few sentences—but they are sentences that make a difference.

Activity 5.6: Defining Terms in an Assignment

In the same assignment you've selected for Activity 5.5, circle the key terms associated with what students need to do to complete the assignment. For example, these could be "write a research paper," or "analyze [these things]." Then, see where (or if) you have defined these things. If no definition is included, try to write one to two sentences for each so that students can understand the expectations of the assignment. Remember that you also should provide students opportunity to practice with these key terms/activities, especially if the assignment is "high stakes" or counts for a large portion of their grade.

Creating a Scaffolded Series of Low-Stakes Activities

Once you have defined the key terms and identified often-invisible skills and abilities students will need to complete your major assignment (and have taken inventory of the prior knowledge and experience they bring with them), you will want to create a scaffolded series of activities and assignments to help them accomplish the major task. In doing this, you will need to think explicitly about *high-stakes* and *low-stakes* assignments. A low-stakes assignment is worth few or no points or is counted as participation points; it may or may not be seen by the instructor and is primarily intended to support students as they work toward more high-stakes projects. A high-stakes assignment is worth considerable points in the course. It may consist of revisions of drafts that are more low stakes (worth fewer points), for instance.

To continue with the previous example of the literature review, Table 5.1 provides a list of skills students will need to write that genre, as well as a series of activities to help students gain (or review) those skills.

Table 5.1. Necessary Skills (An Example of Scaffolded Activities for a High-Stakes Assignment)

Skills/Knowledge Needed to Complete a Literature Review	Scaffolded Assignments & Activities
Finding sources (use databases, know which ones to use, how to search, qualifying sources)	Library activity: to learn how databases work, mini-activities to find sources on a topic that the full class shares (participation grade). Students complete heuristic to qualify the sources and compare with peers. Share a preliminary list of sources for their own project. (5 points)
Reading sources (how to read, take notes, find important points)	Read and annotate an article as a full class. (participation grade) Read and annotate individually; share with small group and compare understanding of a text. (5 points)
Understanding and summarizing sources	Students all summarize the same article, compare summaries, re-write summary based on comparison. (5 points) Complete annotated bibliography of some sources for their individual projects. (10 points)
Synthesizing sources	In small groups, students synthesize three articles they all read. Compare syntheses across groups. (5 points) Individually, create a chart of all their sources identifying areas of agreement, disagreement, and gaps in the research. (10 points)
Writing about these in ways appropriate for your field, ability to identify themes, findings, and gaps in existing research	Analyze three examples of good literature reviews. Write a list of characteristics of effective literature reviews, what they do and don't do. (5 points) Major high stakes assignment: complete literature review (50 points)

Note that in this example list of activities, students are working both alone and with others. They are often doing something as a group or full class before they try it individually. They are also, in every case, *actively* doing something rather than simply being told about it by the teacher. Learning is active. Telling is not teaching, and hearing is not learning. Students must attempt something and reflect on what they know with others. They need feedback along the way (though not always from the teacher) because learning is social. We will come back to the matter of feedback later in this chapter.

Try your hand at creating a series of low-stakes activities to scaffold the major assignment and outcomes you've identified.

Activity 5.7: Designing Activities to Support Major Learning Goals

Create a two-column table. Place the list of skills you identified in Activity 5.6 in the left-hand column. Then, in the right-hand column, brainstorm low-stakes activities or assignments that can help students either gain these skills or refresh their memories on what they already know.

Often in a learning environment, students view small activities and homework as "busy work." Thus, is it important to ensure that low-stakes assignments clearly build toward more difficult and high-stakes learning goals, and that students understand how the work builds. As activities and assignments are introduced, it can be helpful to explain how they connect to what students previously learned and did, and how they will build to what's next. Our course design strategies should be transparent to learners.

The Role of Prior Knowledge in New Learning

The preceding set of activities, as well as the activities in Chapter 4, likely reminded you that students do not come to our courses as blank slates. They come with extensive prior knowledge and experience about both course material and the kinds of writing we expect them to produce in the course. As Chapter 2 discussed, students also come with *different* prior knowledge, which can sometimes make designing the low-stakes activities (as you did in Activity 5.6) a challenge. Understanding what prior knowledge students bring with them is an essential part of designing a well-scaffolded learning experience. You can learn more about what students bring by asking them directly about their experiences and prior knowledge (for example, you can survey them, as Chapter 4 suggested).

At times, students' prior knowledge doesn't match the knowledge that instructors expect them to have. Activity 5.8 asks you to look back at previous iterations of your course (if there have been any) to consider what students know about a course.

Activity 5.8: Exploring Students' Knowledge and Beliefs

Focusing on the course you have been working with throughout this chapter, consider:

1. What do students typically know about the declarative content of the course when they enroll? What don't they know? What misconceptions do they often bring?
2. What experience do students typically have applying the kinds of content they will study in this course? What tends to be easy/hard for them, and why?
3. What do students typically think is the use value of the ideas and methods of this course when they enroll?

Your work in Activity 5.8 can build on what you learned by asking students what they bring to the course (from Activity 4.3). Sometimes, for instance, students' prior knowledge comes from a slightly different context—for instance, they might be enrolled in a biology course, but their experience with writing comes from a literature course. Students may have learned to write very well in a literature course and not recognize that the style and organization are inappropriate for a science course. Students also bring cultural assumptions and beliefs with them that may impede their ability to undertake the work of a particular course.

Addressing prior knowledge, especially when it doesn't match what is accepted in your field, might seem uncomplicated. But keep in mind that learning and writing are embodied—everyone believes what they believe (about a subject, about writing, or anything else) because they belong to communities of practice that reinforce and perpetuate those beliefs. When people enter into new communities and encounter different beliefs, those encounters can lead to what researchers refer to as "troublesome knowledge." As Chapter 4 demonstrated, dismissing students' prior knowledge has the potential to cause harm. But research has shown that you can mitigate these potential effects when you are very clear about what your field is, why the activities in your course are related to disciplinary knowledge and clear course goals, and why the knowledge that you want students to practice with and develop can contribute to their abilities to join (*access*) and change (*opportunity*) the field from the inside.

Even as you ensure that students' thinking is situated in *your* field's context by using clear language about what that context is and how the course activities reflect that context, sometimes prior knowledge can be hard to shift, as when inaccurate prior knowledge is conceptual. For example, students often believe that some people are just born good writers and others are not and that, because writing is hard for them, they are a bad writer for whom nothing can be done. This conception is difficult to change without activities, research, and reflective practice across time.

Students need to activate their prior knowledge for most effective learning. They need to recognize what they already know that is relevant and helpful in the current context, as well as what prior knowledge is not helpful or needs to be adapted. Quite often, students do not recognize that they already know things that can be brought to bear in the current context. Other times, students do not recognize that what they already know may not be appropriate or perhaps needs to be adapted.

Teachers can help students surface, name, and reflect on their prior knowledge and consider its relationship to the work of the current course. It's also possible to ask students about how they feel about this knowledge, especially bolstering the importance of that knowledge as they orient themselves to new learning. Quick writing prompts can, for instance, ask students to activate prior knowledge by:

- using writing as a "values affirmation" by asking students to reflect prior learning experiences in similar contexts, including describing what is challenging and how they overcame challenges (Binning et al., 2020; Miyake et al., 2010);
- providing "minor prompts and simple connections" to prior knowledge (Ambrose et al., 2010, p. 16; Bransford & Johnson, 1972; Gick & Holyoak, 1980);
- asking questions to "trigger recall" (Ambrose et al., 2010, p. 16; Woloshyn et al., 1994);
- asking students to draw on their own prior knowledge or experience to generate examples related to the new content they are learning (Ambrose et al., 2010; Peeck, et al., 1982); and
- asking students to actively create connections themselves rather than simply telling them what the connections are (Ambrose et al., 2010, p. 31).

Instructors can also talk to others who have taught the course or its prerequisites, give students a pre-course or pre-major unit survey like the one described in Chapter 4 to determine their prior knowledge and assumptions, ask students to complete an ungraded written reflection about their prior knowledge and experiences, or ask them to draw a concept map related to particular ideas (see Ambrose et al., 2010 for more ideas and details).

Often students' prior knowledge needs to be adapted, expanded, or repurposed in order to be usefully brought to bear on new knowledge and contexts. Research demonstrates that students are best able to adapt prior knowledge when they can say how that prior knowledge is "like" and "not like" what they are encountering now (Kim & Olson, 2020; Reiff & Bawarshi, 2011). For example, if they learned to write a five-paragraph essay in high school, they can be prompted to explain how some of the features of that text apply to their current history research paper (there need to be main claims supported by evidence) and how others do not apply (there are likely many more than three pieces of evidence needed and many more than five paragraphs (e.g., Perkins & Salomon, 2012; see also Yancey et al., 2014).

Activity 5.9: Activating Students' Prior Knowledge

1. Identify a major assignment or course unit where students typically struggle to draw on prior knowledge—either at all or appropriately. What problems do students generally have here?
2. Brainstorm two to three small activities, prompts, or reflections that you can build into class time, the assignment, or as homework in order to help students draw on, activate, and/or repurpose/adapt their prior knowledge.

As Chapter 4 suggested, students also bring with them prior knowledge and experience that is cultural and personal. Sometimes, this can lead to troublesome experiences learning new threshold concepts or even more basic course material that is simply unfamiliar or at odds with their personal experiences, values, and home cultures. For example, Elizabeth and her former student, Nicolette Clement, wrote about Nicolette's experiences as a first-generation college student from a conservative working-class family encountering new and challenging ideas about gender, sexuality, and art in an honors seminar course (Wardle & Clement, 2017). Nicolette's prior experiences and family values were at odds with the course content, and because her instructors did not provide space for her to reflect on the conflicts, she struggled to speak and write about the course material. Her writing illustrated these moments of conflict, but because her teachers were not aware of the conflicts, they attributed her writing challenges to lack of understanding or preparation. Other researchers also identified instances where students' prior knowledge led to what was perceived as "problematic" readings but, upon investigation, proved to be related to the lenses that came from their proior experiences (Hull & Rose, 1990; Sternglass, 1997).

In situations like these, writing can serve as an opportunity for students to reflect (for no grade, and perhaps not even to be shared with the teacher) about how the current course material aligns or conflicts with their values and cultural experiences. While humanities and social science courses may frequently attend to topics that can conflict with students' values and home cultures, science courses may also do this (consider, for example, topics such as evolution or vaccines). And all courses use some research methods and data/evidence and do not allow for others (for example, narrative and personal experience may not be allowed at all in science or engineering courses and may need to be front and center in some humanities courses), which may prove difficult for some students. Building in opportunities to reflect on what is being asked of students and how they are able to bring their prior knowledge, values, and experiences to bear is an important opportunity to engage all students, Chapter 4 illustrated.

Activity 5.10: Identifying and Working with Conflicts of Culture or Values

1. Consider some of the ideas, topics, and content of your courses that at times cause students to feel conflicts with their existing values and home cultures. What are they and why have they caused conflicts (if you know)?
2. Next, identify a few points in those courses when you could invite students to reflect on the conflicts they may be experiencing in a safe way. For example, invite them to freewrite for a few minutes in class about the conflicts or invite them to engage in small group discussions about conflicts that students might experience when they engage with these ideas.
3. Finally, consider how you will invite students to integrate their reflections on possible conflicts into the coursework. For example, if they know that discussions of evolution conflict with the beliefs of their religious communities, what strategies can you invite them to use in order to engage with the material of the course?

Some strategies for helping students reflect on, activate, and effectively draw on or use prior knowledge include:

- *Short surveys* (at the beginning of the course, a new unit, or a major assignment) that ask questions such as: what do you know about X? Where have you done Y before? What questions do you have about this content/genre? You might refer to the questions included in Activity 4.3 for this, as well.
- *Brief reflective writing:* ask students to write briefly about the topic or the genre/assignment type: what do they think of/what comes to mind about this? Then ask them to talk in pairs and share what they are bringing to this work. Then as a teacher you can identify where their prior knowledge is useful or correct, where they may need to adjust their ideas, and/or where they may need to repurpose or expand their ideas.
- *Group concept review:* Discuss a concept or genre you think students have encountered elsewhere. Ask them to share where they have encountered it, and then illustrate how they will be using/encountering the concept in your class/field/profession.
- *Reflect and Expect chart:* Ask students to identify what they already know about a concept or genre, what they want to know, what they have already learned about it, and what they want/expect to learn.

In all cases, activities to help students reflect on and activate prior knowledge should be very low stakes: the goal is not to grade these but to use them as scaffolding to help students usefully engage in the work of your course(s). It is also helpful to use these activities throughout the course, whenever new content or

genres are introduced, not just at the beginning of the course, even connecting new ideas in the course to material you previously covered in the course.

Roles for Writing in Supported Learning Environments

As you have seen while engaging in the activities of this book, there are many uses for writing within a course. It is important when designing a course to clarify your own goals at different points and ensure that you are using writing—and grading (or not grading) writing—in ways that align with your goals. It's helpful to think about why you're asking students to write at particular times in the course. For instance, writing can be used:

- To support student learning and reflection. Small writing activities (as the previous section illustrated) can be used for a variety of purposes: for instance, for students to work with difficult concepts, reflect on their prior knowledge or performance, or serve as components of larger projects. These kinds of activities most frequently fall under the "writing to learn" umbrella.
- As a means of communication and conversation. As Chapter 2 discussed, writers often write to communicate with others—to share their ideas, to get feedback, to connect. In courses, writing is often implemented as a strategy for students to share their ideas with a teacher or with other students. Research, too, is often referred to as a process of dialogue with others, a way of "entering the conversation" (Rose, 1989). Often, when writing is used as a form of conversation with other sources (as in research-based writing) there are expectations about how those other sources or voices will be incorporated. The discussion of source use and citational study in Chapter 3 is important to consider here, since the quality of the writing may depend on the extent to which students successfully conform to citational or stylistic expectations. In these instances, "learning to write" activities—that is, opportunities for students to practice and receive feedback on the conventions of the genre and disciplinary style—are important.
- As a tool for assessment. Writing can also show you what students know and have learned or what they are able to do.

As you introduce writing, it's key to clarify the goals and uses of those writing tasks—for yourself and for students. Different goals lead to different choices about feedback, as well, as delineated in the following chart. You can read much more about these choices in books like *Ungrading: Why Rating Students Undermines Learning (and What to Do Instead)* (Blum, 2020), or *Specifications Grading: Restoring Rigor, Motivating Students, and Saving Faculty Time* (Nilson, 2015), or blogs like "Grading for Growth" (https://gradingforgrowth.com, Grading for Growth, n.d.).

Table 5.2. Writing Goals

Goal	Feedback	Grading
Reflection	Encouragement for next steps	Completion or ungraded
Writing to learn complicated ideas, concepts, or theories	Definition—correct and fully developed? Application—appropriate and fully explained?	Completion or small percentage of total grade
Communication/conversation	Evidence/data appropriate? Evidence/data incorporated in ways expected by readers in the field?	Completion or small percentage of total grade
Assessment—showing what's known/been learned about X	How/did the writing show what the writer was expected to? Where did the writing need further development to do so? What ideas in the writing were appropriate/accurate? Where could the writer improve knowledge of ideas in the writing?	Provided previously scaffolded (through lower-stakes writing): higher percentage of total grade, potentially rubric with comments

Activity 5.11: Identifying Purposes for Writing in Your Course

Review the writing assignments or activity in the course you're focusing on. Using terms from chart above (and potentially adding to or modifying it), identify the purposes for each of your assignments or activities. After you've identified the purposes, make notes for yourself about what text the student should or would produce related to that purpose. Note that if you identify multiple purposes, you might want to revise so that each writing activity has one purpose, or one primary purpose.

The Importance of Modeling

As you work with students to practice with and then use genres of writing in your field, students will be more successful if you provide them with models of what you expect, as well as opportunities to study and practice with elements of those models that you think are especially important. Chapters 2 and 3 provided you with many examples of how to study writing and writing practices, and then

consider the implications for your teaching. You can engage in that study with students in your field as well. First, you'll need to determine what you want them to know. For example: how arguments are structured, what different elements of writing (abstracts, thesis statements, evidence/data from others, citations) look like, what stylistic conventions are expected (sentence length, syntax, or mechanics)? Whatever you want students to focus on, if you can spend time (even a single class day) providing them an opportunity to focus explicitly on the *structure, syntax, citations, and other genre conventions* of a model, they will have a much clearer idea of how to compose the texts you expect.

Vanessa Woods, a faculty member in psychological and brain sciences, for instance, found that students struggled with one of the starting points for a research-based analysis in her psychology methods course. To help them get going, Woods created a starting model with component elements for her students to write the results of an ANOVA as part of a peer review activity (see ANOVA Write-Up in the appendix for this chapter).[5] Students then build on this model in the broader research assignment that they produce. Woods tells students that this is a "bare minimum" starting point, and they should plan on making the writing seem less repetitive and more expansive.

> A 2 (___) x 2 (____) ANOVA was conducted and showed that IV1 on the DV was [significant/insignificant] (F[df, df] = ____ p = ____), (Ms = ____ and ____). [make sure to indicate what each mean is referring to). This indicates that the main effect of [IV1] on [DV] was [explain in words]. The IV2 on the DV was [also insignificant/insignificant] (F[df, df] = ____ p = ____), (Ms = ____ and ____). [make sure to indicate what each mean is referring to). This indicates that the main effect of [Moderator] on [DV] was [significant/not significant]. This indicates the main effect of [Moderator] on [DV] was [explain in words]. The interaction effect of [IV1] and [IV2/Moderator] on [DV] was [insignificant/insignificant] (F[df, df] = _____ p = _____) [compare cell means here] This indicates that there is an interaction between [IV1] and [Moderator] on [DV] [explain in words].

Another example comes from gerontologists and philosophers at Miami University, who annotated pieces of writing to show students examples of the kinds of textual "moves" they are expected to make. See https://tinyurl.com/6aycxbjk and https://tinyurl.com/y6rz4ppa, respectively.

5. In addition to linking directly to resources on the web, we provide archived versions of the materials in the appendix on this book's web page at https://wac.colostate.edu/books/practice/expertise.

Activity 5.12: Using Models to Reinforce "Good Writing"

Find the best model of the kind of writing you'd like students to produce to demonstrate knowledge in the class you're focusing on in this chapter. This could be a short answer on a multiple choice exam, an extended research project, or anything else.

After you've located the model, focus on one to two elements of writing that you consider *especially important* for students to do correctly in the writing. Write for yourself: What makes this an especially excellent example? You'll want to write as many sentences describing the good/outstanding qualities of the writing as you can. Consider: is it the way the analysis is outlined? Is it the use of evidence? Connections between the writer's thinking and the data? The use of a theoretical framework? The seamless ways they have incorporated evidence?

Note that it is highly unlikely that one of the outstanding qualities you will define is the elegant use of commas or periods. That's because readers notice mechanics and punctuation only when they violate our expectations and start to pull us away from what they *do* care about in writing. This is a distinction worth considering when you work with students. A perfectly punctuated paper that says nothing is not a good paper. On the other hand, a paper whose *unintentional violation* of expectations of mechanics or punctuation that refocuses readers' attention on those features may become distracting.

Feedback

As you design your course and build activities and assignments, you will want to consider how particular tasks contribute to students' knowledge and who can provide feedback on them. It would be easy to make every activity and task one that was seen and responded to by you as the instructor; however, that is neither practical nor in keeping with what scholars know about how learning works. As previous chapters demonstrated, learning and writing are social. Thus, designing a course in which students also learn together, try out new ideas with one another, give feedback on ideas, and work together is most effective in helping students reach the learning goals you have set. Students can also engage in self-reflection. When feedback from you as the instructor is necessary, there are many ways to provide such feedback beyond line-editing each student's work (which is, in fact, not as helpful to their learning as many faculty believe it to be).

Self-Reflection

In smaller classes, you can provide students with structured prompts asking about how they went about the writing, what they included and chose not to include, and what more they think is important. Even in large STEM courses students

often complete exam wrappers, such as the exam wrapper found in the appendix for this chapter, that serve the same function. With guided prompts from you, students can look at their own work with fresh eyes and then revise.

Peer Feedback

Whether face-to-face or via electronic platforms (such as ones built into Canvas or other LMSs, or external platforms like Eli Review, at https://elireview.com), students can provide feedback on one another's writing. It's useful to remember that providing feedback is something people have to learn to do well; it doesn't come naturally. Faculty are often disappointed when peer review isn't useful. But peer review can be incredibly helpful when it is highly structured—when it focuses on specific elements of writing, and when students receive specific prompts both for the writing and review activities. For instance, you might consider developing separate peer review activities focusing on *concepts* that you want students to work with, and *ways of writing* that they should use for those concepts. This is what instructors like Woods have done. The ANOVA model discussed at the beginning of this sestion is part of a peer review assignment where students read one another's ANOVA descriptions and provide feedback to peers where they reflect the expected elements, where they need revision, and what they can to improve the *way of writing* that is expected in psychological and brain sciences papers.

Alternatively, in an international relations course, political scientist Julia Morse wants to make sure that students understand and can apply paradigms that "international relations scholars employ to make sense of a chaotic world and explain state behavior." In a peer review activity, then, she asks students to "write a summary of each of the four IR paradigms that . . . describe[s] the core motivating assumptions of the paradigm,"and then to "practice writing a thesis statement for each paragraph" that explains "how that paradigm expects states to behave in the international system." She reminds students that "Each thesis statement is about implications. Ask yourself: If the assumptions of this paradigm are true, what does that mean for state behavior and the international system?" She then provides an example to students, and explains why they are practicing writing about these concepts. Morse's peer review opens by reminding students that "as a reviewer, your job is to help classmates understand the nuances of the different IR theories," and that reviewing responses will also "strengthen your [own] understanding of each theory's core" as they prepare to write their first answer. They then: 1) indicate, via a trait ID checklist, whether the definitions of each IR theory include the relevant elements; 2) indicate how strong the response's "grasp" of the theories seem to be on a 3-point scale; 3) explain why they rated the "grasp" as they did and indicate, as a reader, what more they'd like to know; and 4) provide any final feedback. Both the prompts for the writing and peer review activity are created and delivered in Eli Review, an online peer review platform.

They are highly structured, providing students guidance so that they can practice with the difficult ideas in the course, and provide useful feedback for their peers.

The models of peer review provided by Woods and Morse are among hundreds developed by instructors that incorporate the "highly structured" approach. Early studies of this approach to peer feedback in a STEM course show that when students complete two or more writing and review activities during a term, they earn higher grades. This finding controls for previous STEM GPA, as well as demographic factors (Woods et al., 2021). It's also worth considering the timing of peer review, too. You can do so by asking yourself how and when, in your life as a writer, you relied on others for different types of feedback. Sometimes conversations before beginning to write are the most effective use of peer feedback. Other times, you may have a complete but very rough draft and seek guidance on big ideas rather than editing. Help students engage in peer interaction around writing all stages of that writing, and to ask specifically for the kind of feedback they need at that point.

Teacher Feedback

When most students think of feedback, of course they focus on feedback from instructors. As you think about the balance between peer and instructor (or TA) feedback, it's also worth considering when in the process of writing students benefit the most from extended feedback from you. However, feedback needs to happen at the right time and be followed by the opportunity to act on the feedback (Ambrose et al., 2010). Faculty often invest effort in end-of-course or end-of-project comments which students are unlikely to read or act on; it can be more productive for student learning for faculty to instead invest that labor to feedback earlier in the course or earlier in the project when students can actively read and use those comments to guide revision.

As you comment, it might be useful to remind yourself: if a writer knew how to do the thing you were asking them to do in an assignment, they would do it. No student sits down to write with the intention of frustrating the person commenting on or grading their assignment—and yet, often instructors approach feedback with frustration. Comments that tell students "wrong word," or "not this," or "evidence!" don't help writers do a better job, either—because, again, if writers knew what something was supposed to look like or contain, they would produce writing that looked like what was expected. As you consider assigning and providing feedback, then, consider the following strategies:

- Chunk major assignments into smaller components or assign draft due dates. This allows opportunities for feedback on drafts or pieces of a draft before a student gets too far down the road on a large project.
- Concentrate on a few things at a time based on priorities. Few writers are able to write a complete, comprehensive, insightful, appropriately-sourced

document that uses appropriate mechanics (syntax) and punctuation. Instead, as you've learned by reflecting on your own processes, writers work in their own chunks. When you give feedback, work in the same way. It's typical to focus on *higher order* concerns first, like research questions, claims, lines of argument, evidence, and organization. Once those are in place, focus on *lower order* concerns like syntax and punctuation. After all: a perfectly punctuated paper that says nothing isn't going to be very good.

- Focus your feedback on a few areas at a time. Research has clearly shown that too much feedback tends to overwhelm students. They can't be sure what to do first (or second, or third), and it's challenging to identify what's most important. It's likely, too, that students will focus on what's easiest—often, mechanical errors or punctuation—rather than higher-order concerns (Ambrose et al., 2010; Sommers, 1982).
- Identify patterns. Research shows that when it comes to lower-order concerns, people make errors in patterns (Shaughnessy, 1977). For example, they might not use commas or periods in ways deemed appropriate for the genre, resulting in run-on sentences or comma splices. When you see patterns, don't "fix" them. Writers can work on these patterns most effectively when commenters point to them and show how to address them (Ambrose et al., 2010; Shaughnessy, 1977).
- Don't write over students' words. Remember that students need to do the writing—it's not helpful when you do it for them, and writing over another person's language is a form of taking over ownership of the text.

After you have given students feedback and they have engaged in further drafting and revision, they will need additional feedback from you on how effectively they addressed the concerns or suggestions. Ask students to read your feedback and actively make a plan to respond to it. For example, you can give them a few minutes in class to read or listen to feedback, ask clarifying questions about what you mean, and write a revision plan for their own use (describing what they will draft and revise next and when). This is useful even at the end of a major writing task, when students can reflect on how to transfer what they have learned to future writing tasks.

While the idea of giving feedback to all students on drafts might feel overwhelming, it need not be. Many instructors have felt quite liberated after they've realized that they don't need to line edit and can focus their feedback and have students conduct productive peer review even before handing in writing for instructor or TA commentary. When you do provide feedback, you can do so when it's most useful for writers to apply your commentary. You also do not have to respond to each student individually. Instead, for example, you might read all the students' research questions and then give oral feedback to the entire class about how to improve the questions—and then provide a few minutes in class for students to engage in this revision and share their new question with a partner. You

might provide models of what you are asking them to write (for example, models of a methods section) and then after reading their drafts, return to the models with the full class to illustrate some rhetorical moves that the models made that students could better emulate.

If you do give individual feedback, you don't necessarily need to do so with written comments. You might consider recording oral comments using a program like Screencast-o-matic or Jing so that you can show areas you want students to attend to while orally walking them through your feedback.

Many instructors like to use rubrics in order to cut down on response time. If you do use rubrics, consider why and when. If you have been providing feedback throughout the drafting process using shared criteria that all the students have been engaged with all along, then a rubric might serve as a final opportunity to give quick feedback on how the draft has improved. Many rubrics are generic and acontextual, however, and thus not particularly useful as a feedback mechanism (Anson et al., 2012). Just rating "correctness, clarity, evidence," for example, is not very useful (for reasons named repeatedly throughout this book).

Keep in mind that grades are not equivalent to feedback. Grades may provide an overall sense of how close the student is to the target you have in mind, but grades do not convey what has gone well or badly and what students might do to continue to improve. Thus, grades are summative, end of project or end of course assessments. If the goal is improved learning, however, students need *feedback* (Ambrose et al., 2010).

As you provide students with feedback, try to respond with compassion and with a focus on learning. Students are learners who will not improve overnight; all of us always have more to learn about writing. As students write their way into your field or profession, they need opportunities to practice and receive feedback across time (in your class and in other classes). Keep your expectations for improvement in line with what you have learned in this book about how learning and writing work—and remember your own experience learning to write in new and difficult ways.

Preframing, linking performance and prior learning, providing constructive feedback, defining terms, scaffolding writing—these are all elements of providing students access to what makes writing good in your discipline or field. This is the epitome of "learning to write." At the same time, students can "write to learn," using writing to study and practice with those characteristics. The activities in this chapter will enact WTL and LTW manageably, in ways that make your teaching (and perhaps that of TAs, if applicable) more efficient, effective, and enjoyable. At the same time, the activities in this chapter are integrally linked to all that you've explored in previous chapters: defining core (threshold) concepts, learning bottlenecks, or ways of thinking and practicing in your field, identifying genres and conventions, and learning about learners. This is because writing is always linked to individual identities and disciplinary/field membership that need to be carefully yoked.

Activity 5.13 Linking Performance and Prior Learning

Potentially focusing on the same piece/element of writing you did in classroom application Activity 5.9, reflect on where students sometimes struggle with the writing—for instance, with defining concepts or theories and applying them; with incorporating evidence; or something else.

Once you have defined these elements, write down:

1. What the element of writing that students have struggled *should* look like (i.e., how to do what you're asking);
2. Why it should look the way it does (i.e., what it does for the field, why it has been deemed important to write it in this way, why the concept is important for the field);
3. Why it is important in this class to revise the writing as you've outlined.

This explanation, initially written for you, can serve as the foundation for framing you can give to students ("It's important to emphasize this in your writing because _____"; or "The citations are structured as they are because _____") and/or feedback that you provide.