Chapter 4

Connecting

INTRODUCTION

Although you probably know him solely as the author of *Animal Farm* and *1984*, British writer George Orwell produced a massive amount of fiction and nonfiction in his lifetime; his complete body of published and unpublished writing totals more than 8,000 pages. Since my disciplinary research in British literature focuses partly on Orwell's work, I've read much (though not quite all) of Orwell's writings, including *A Clergyman's Daughter*, a novel that was little read when it was published and perhaps even less read now. I count it as one of my favorite of Orwell's works, though he had a different opinion of it; he disliked it so much that he forbade it to be republished, after the original printing, during his lifetime. The novel's protagonist is Dorothy Hare, the daughter of a selfish and indifferent rector living in the English countryside in the early part of the twentieth century. Dorothy undergoes a traumatic incident in the first half of the novel that results in her waking up in London with total amnesia. After bouts of homelessness and seasonal farm work, she finally winds up as a teacher in a small private school outside of the city. When she first encounters her new pupils, who range in age from 5 or 6 to their late teens, she concludes with despair that the mechanical and rote methods of instruction of their previous teachers have

been spectacularly ineffective. Whatever knowledge the students have consists of "small disconnected islets" (Orwell 1986, p. 209) in a vast sea of ignorance. Those scattered bits don't add up to much: "It was obvious that whatever they knew they had learned in an entirely mechanical manner, and they could only gape in a sort of dull bewilderment when asked to think for themselves" (p. 209).

I don't find my students gaping at me too often in dull bewilderment. But Orwell's description of Dorothy's students—one that likely stemmed from the several years he spent teaching at an English boarding school—caught my attention when I first read it because it does capture an experience I have encountered in the classroom more times than I would care to count. It typically happens when I begin pressing students to make connections between disparate sets of concepts or skills in a course—asking them, in other words, to build bridges between the disconnected islets described by Orwell. For example, when we are tackling a new author in my British literature survey course, I might begin class by pointing out some salient feature of the author's life or work and asking students to tell me the name of a previous author (whose work we have read) who shares that same feature. "This is a Scottish author," I will say. "And who was the last Scottish author we read?" Blank stares. Perhaps just a bit of gaping bewilderment. Instead of seeing the broad sweep of British literary history, with its many plots, subplots, and characters, my students see Author A and then Author B and then Author C and so on. They can analyze and remember the main works and features of each author, but they run into trouble when asked to forge connections among writers.

That problem is especially acute at the beginning of a semester. In *How Learning Works*, Susan Ambrose and her co-authors offer a clear explanation for that by noting the different ways novices and experts in a field process and position new

knowledge. Experts, they explained, have a much richer "density of connections among the concepts, facts, and skills they know" (Ambrose, Bridges, DiPietro, Lovett, and Norman 2010, p. 49). When they encounter a new piece of information or a new idea in their field of expertise, they immediately slot it into a fully developed network that enables them to see connections between it and dozens of other things they know. When I encounter a new work in recent British literature, then, I can immediately see how it connects to other similar works, to major events in British history, to a specific region of Britain, or even to current events there. My students, by contrast, are novice learners in the field; their knowledge of it, to borrow a phrase from *How Learning Works*, is "sparse and superficial" (p. 46). Especially at the beginning of a semester, Ambrose et al. explained, students might" absorb the knowledge from each lecture in a course without connecting the information to other lectures or recognizing themes that cut across the course" (p. 49). They don't know enough about British history to understand that Scotland and England have a complex and fraught history and that therefore we might find connecting threads between Scottish authors in terms of how they portray their neighbors to the south.

In short, they have knowledge, in the sense that they can produce individual pieces of information in specific contexts; what they lack is understanding or comprehension.

And they lack comprehension, even more shortly, because they lack connections.

IN THEORY

James Zull is a biologist whose career took an interesting new turn when he began to reflect on how a better understanding of the biology of the brain could help teachers do their work more effectively.

The title of his first book, *The Art of Changing the Brain: Enriching the Practice of Teaching by Exploring the Biology of Learning* (Zull 2002), articulates nicely the major point he wants teachers to understand: when we learn anything new, we are making changes to our brains. When we are helping other people learn new things, like our students, we are making changes to their brains. It would seem only natural, then, that a little bit of understanding of how brains work should accompany our efforts to change them. Since the last science course I took was Concepts in General Science more than 25 years ago, you can imagine how welcome I find books like Zull's, which translate the research of brain researchers into imagery and language accessible to English professors like me.

To understand the link between *making connections* and *building comprehension*, on which this chapter focuses, consider for a moment Zull's depiction of what happens when we learn. Our brains are filled with cells called neurons, which do the work of what we call thinking. A human brain has at least 100 billion neurons, and those neurons contain branching structures called axons that allow them to communicate with other neurons; they do so not by touching the tips of the axons together (as in a handshake) but through the release of chemical neurotransmitters into a tiny space between one neuron and the next called a synaptic gap. As Zull puts it, in his folksy way, neurons "make friends easily" (Zull 2002, p. 96). A single neuron can form literally tens of thousands of connections with other neurons, both near and far away. (The axons, he explains, can extend as far as 6 feet.) Neurons form new connections with one another with every new experience we have: new sensations, new thoughts, new actions. As the neurons are connecting to one another in novel ways, growing and strengthening new connections, they are forming networks. The first time neurons link up in a new way, that connection is a temporary or fleeting one; if that connection is used again (because we repeat the thought, or recreate an experience),

the link strengthens. The more times the pathway is used, the stronger the connection. Neurons that fire together, goes the saying in this corner of the biological world, wire together (Lang 2013, p. 114).

With that brief summary of your brain under our belts, we can now better understand Zull's explanation of how learning constitutes a change in our brain—a change, more particularly, to our neuronal networks: "The knowledge in our minds consists of neuronal networks in our brains, so if that knowledge is to grow, the neuronal networks must physically change. This is the change that a teacher wants to create. It is change in connections ... unless there is some change in connections, no learning can occur" (Zull 2002, p. 112). According to this definition, we learn when our brains form new neuronal networks or modify existing ones as a result of our experiences; this means that, quite literally, learning requires the continual formation of new connections between our neurons. Think back to the image that Orwell gave us, which now seems quite apt: an individual and isolated piece of knowledge, one that students can't do much with, is exactly like a disconnected islet—just as Dorothy observed in her students. It has few connections to other neuronal networks in our brain. An initial neuronal connection might form when a teacher tells us some piece of information and will fire again in a very small and limited range of circumstances. A piece of knowledge that we understand thoroughly, however, and that we can reflect deeply on and apply to new contexts and more, will have connections to lots of other neuronal networks. It might have come in from the teacher, but then we recognized how it related to something we already knew; we thought about it when we saw something similar in a movie later that day; later still we were able to use it in an essay we were writing. Each of those new uses of that piece of information connected it to another set of networks, until it

eventually sits at the heart of a dense weave of connections—what we normally think about as understanding or comprehension.

Hence, a simple way of understanding how to build comprehension in our students would be that it consists of helping them forge rich, interconnected networks of knowledge—ones that enable each existing piece of information in our content area to connect with lots of other information, concepts, and ideas. Shifting our language from the biology of the brain to the ways we normally think about student comprehension, we want them to have rich frameworks of knowledge in our content areas, ones that enable them to connect and organize information in meaningful and productive ways. In the past several chapters we have considered how we can help students form and strengthen primary new connections in their brains—creating strong wiring that will allow them to retrieve course content when they need it. In this chapter we consider how we expand those connections into networks that enable students to see the bigger picture, make meaning, apply what they have learned into novel contexts, and more. Our role as teachers now expands as well: we want to facilitate the process of students making connections. Ambrose et al. argued that the primary difference between teachers and students lies in the realm of connections: "One important way experts' and novices' knowledge organizations differ is in the number or density of connections among the concepts, facts, and skills they know" (Ambrose, Bridges, DiPietro, Lovett, and Norman 2010, p. 49). As an expert in your discipline, your network is thick with connections. As a teacher in your discipline, your task is to help your students develop a denser, more richly connected network of knowledge and skills in your course content areas.

As a further illustration of this notion, consider a famous little study on memory that was conducted by British psychologists in the early 1980s (Morris, Gruneberg, Sykes, and Merrick 1981). The researchers in this case showed a list of football (soccer) scores

to more than a hundred undergraduates at the beginning of a lecture; they were not told to memorize them, however. After a brief interval the students were given a test designed to check their knowledge of football, with questions like this: "Who is manager of Birmingham city?" The lecturer than showed them the list of teams from the beginning of the session and asked them to fill in the scores they had been shown previously. When the researchers compared the results of the two tests, they found that a stronger understanding of football corresponded with a better ability to remember the scores. This experiment is usually used to illustrate the importance of prior knowledge on our learning of new material, something we will get to in just a moment.

But if you reflect on what happened in this experiment, you can see how it provides a handy demonstration of the power of connections. The students who had a general knowledge of football would have been able to assign meaning to the scores they had been shown, and that meaning would have come in the form of connections between the scores and other things they knew about those scores. For example, they might have noticed that one score represented an upset: a team with a historically poor record had upended a championship-caliber team. Or they might have remembered that one of the teams had recently acquired a star player and thought about how that star player could have affected the outcome of the game or about how a particular score meant that a team was going to advance to the playoffs, which were coming up. In all of these cases, what the knowledgeable students had was a rich network of connections among lots of different facts about football—individual players and their histories, the current and past win-loss records of favorite teams, recent trades—and that rich network of connections enabled them to take in the *new* piece of information (i.e., the football score) and put it into a meaningful place. The more we can help students develop rich networks in our content areas, the more we

enable them to build meaning and comprehension of what we are teaching them.

We have to note an essential qualification here. You can't fire the synapses in your students' brains. For the connections to be meaningful and effective, the students have to form them. Your task is to create an environment that facilitates the formation of those connections rather than simply lecturing at them about connections. Believe me, I speak to my British literature students about connections between various authors and events in British literary history all the time. However, just telling them about those connections isn't enough. They have to build up the connected networks in their own brains—with our help. An excellent illustration of this notion comes from another intriguing experiment conducted on psychology students. In this case students were given, in advance of class, either a complete set of notes on the lecture for the day or a partial set of notes—one that consisted of "headings and titles of definitions and concepts, which required students to add information to complete the notes" (Cornelius & Owen-DeSchryver 2008, p. 8). So the students who received the full notes had the knowledge network for the day handed to them prior to class (through the course learning management system); the students who received the partial notes received only the frame of that knowledge network, and had to fill in the rest on their own. The students in both conditions performed comparably on the first two examinations for the course. On the third and final examinations, however, as the amount of course material increased and required deeper understanding, the students in the partial-notes condition outperformed their full-note peers. Especially relevant for the argument that connections improve comprehension, the students in the partial-notes condition outperformed their peers on conceptual questions on the final exam. As the authors explained, "On a [final] test that required knowledge of a large number of concepts, rote memorization was not

feasible, so students who encoded the information by actively taking notes throughout the semester may have performed better because they had experienced better conceptual understanding" (p. 10). This experiment has obvious implications for classroom teaching, or even the creation of reading guides or lecture notes for an online courses. However, the important point for now is that the partial notes gave students an *organized framework* that enabled and encouraged them to *see and make new connections* on their own.

One final takeaway from this explanation of connections and their role in learning is that the prior knowledge that students bring into a course or class period has an obvious influence on their learning. Although you might think your students know absolutely nothing about your subject on the first day of class, that's probably not true. They know—or think they know—something: they might have folk theories or a simplistic understanding of key terms. When you first begin presenting information and ideas to them, then, their synapse-forming brains will start to search for connections between what they already know and what they are hearing. Much has been made of the ways poor or inaccurate prior knowledge can interfere with their new learning; as Zull explains, you can't make existing connections in people's brains disappear (Zull 2002, pp. 105–106). Instead of attempting this futile task, or ignoring their prior knowledge completely, the universally recommended strategy to address this issue is to surface and address their prior knowledge. Asking students to activate what they already know about a subject before they learn it more deeply helps light up the connections that they already have (just as prediction activities can do) and will give you a better understanding of where you might need to start in terms of your presentation of new material. If that prior-knowledge-surfacing process reveals deep misconceptions, you might have to work more deliberately to demonstrate to students the inadequacy

of their connections and help them form more accurate and productive ones. Without undertaking some effort to discover and assess whatever prior knowledge they might have about your subject, you might find that their existing networks distort new information to make it fit with what they already know rather than using it to build up rich and productive new networks.

MODELS

Strategies to help students modify and enhance their connections can fall at any point during the semester or during any class period. The following four strategies include opportunities for students to activate prior knowledge at the beginning of the semester, to build connected networks throughout the semester with and without technology, and to prepare for final exams and projects as they are finishing the semester. Small teaching here takes the form not only of brief activities within and outside of the classroom but also of single-class activities that will help students forge connections within a semester's worth of material.

What Do You Already Know (and What Do You Want to Know?)

As noted already, the existing intellectual connections of your students represent a valuable and important starting point for helping them build new knowledge networks in your subject area. "Prior knowledge plays a critical role in learning," explain Susan Ambrose and Marsha Lovett, "which means that ... faculty members need to assess the content, beliefs and skills students bring with them into courses and ... use that information as both a foundation for new learning as well as an opportunity to intervene when content knowledge is inaccurate or insufficient"

(Ambrose & Lovett 2014, p. 16). Essentially, you want to ask your students to make individual and collective knowledge dumps, telling you everything they know—or think they know—about your subject before you begin teaching them. This not only will help you recognize and correct mistaken perceptions they have but will also activate whatever knowledge they currently have that you want to build on or reinforce. In that sense, it has a function similar to the kinds of prediction activities discussed in Chapter 2, in that it fertilizes the intellectual soil for the knowledge and skills that you will help them to develop in the coming days and weeks. The strategy for soliciting and addressing existing knowledge networks need not be a complicated one: simply ask them about it. You could do this in multiple ways that fit the frame of small teaching:

- Prior to class, ask students to take a prequiz or respond to two or three questions about the subject matter on the course's learning management system and then summarize those results briefly at the start of the first or second class.
- At the start of any individual class period, ask students to spend 5 minutes writing down what they think they already know about the subject; take another 5 minutes to solicit some responses and discuss them.
- At the start of the semester, devote part of one class period to assessing students' current state of knowledge, either through whole-class or group activities or through a written pretest (a strategy that also fits well with what we learned about the learning power of prediction).
- At the close of the first class of the semester, after you have introduced the subject matter and the course, ask students to write down three questions they have about the subject matter or three things they would like to learn over the course of the semester. Discuss their responses in the second class.

Once you have heard what students have to offer in such an exercise and have thus gained a glimpse into their existing networks, you can strategize how to build upon them most effectively in the course.

As an example of the third suggestion, when I teach a seminar on twenty-first-century British literature and culture, I set aside 30 minutes on the first day of the semester for a knowledge dump in which students respond to the following question: "When I say the word 'British,' what are the primary impressions that form in your mind?" I pose this question and give them a few minutes to make a list on paper, and then we fill up the board with their impressions. I try to categorize their impressions so we can see patterns—and the same basic patterns always emerge. *British* to them means the royal family, traditional activities like having tea and biscuits or taking long walks in the country, green landscapes and ruined castles. The more culturally sophisticated among them will throw in contributions like the Beatles or Ricky Gervais. None of them ever mention the ethnic diversity of Britain or the fact that *Britishness* encompasses the peoples of Scotland and Wales and Northern Ireland or its recent political history. The second class period, in which we begin considering the political and cultural context of British literature, then gives me an opportunity not to dismiss their impressions but to demonstrate how limiting they are and to begin to connect them to the parts of Britishness that they have never encountered. Throughout the semester I will occasionally return to the impressions we laid out on that first day and remind them about how our current text or discussion connects back to them. Such an opening-class activity can obviously work in almost any type of course, modified in ways that best fit your inclinations. For an upper-level course you might want to narrow down the questions, since they might have more general extensive knowledge than would fit into a paragraph. The overall strategy here remains happily simple: prior

to the introduction of any major new chunk of course content, spend a class period (for a whole course) or a few minutes (for a new unit) asking them what they already know.

Provide the Framework

As you are providing first exposure to students, in the form of either your lecture or their readings, help them avoid Orwell's disconnected islets (Orwell 1986, p. 209) by providing them with the organizing framework of the material and letting them fill in the details. As we saw in one of the aforementioned studies, giving students an organizing framework with hierarchies and key concepts in advance of the lecture helped students master conceptual questions on the final exam more effectively than giving them a full set of completed notes. This strategy enables you to help them build accurate connections without simply handing them an already completed network and without leaving them to devise the organizational principles of the material on their own (which, as novice learners, they will have trouble doing). As the researchers in the experiment did, you can make such an outline available online for students to print out and bring to class; you could hand it out at the beginning of class; you could require students in an online environment to complete such an outline as they watch videos or complete required online readings. Another option in a traditional environment would be to write the skeletal outline and key terms on the board prior to the start of class, which would take just a few minutes. Make sure that students understand not to simply copy down the entire outline from the start but to use it as a guide as they take their notes throughout the class. My observations of instructors in multiple disciplines throughout the past dozen years or more has suggested to me that most of us don't think very strategically about the positive role that boards can play in student learning. We tend either to

cover them with our notes or to use them to write down ideas or comments that strike us as important in that moment. Setting aside a small section of the board that contains an organizing framework and facilitates students taking meaningful notes and building up rich knowledge networks could help provide some meaning to that kind of impressionistic board use.

Overall, when it comes to providing students with the material from your slides of your lecture or any other course content, remember that smaller is better; you will help them connect most deeply if you provide only the outline and let them do the rest of the work.

Concept Maps

A rich literature exists on the use of concept maps (also sometimes called mind maps), which present a fast and easy method to help students visualize the organization of key ideas in your course. I like the use of concept maps in particular for group exercises, since group work so often falters when students have not been given a clear task with a concrete outcome, or been given a task that they find too easy or too challenging. The creation of a concept map is a manageable task for a small group of students to undertake at the conclusion of a lesson or a unit of material and offers the additional benefit of being an interesting and (in the best of all possible worlds) even enjoyable activity. The phrase *concept map* essentially describes the activity; Ambrose et al. defined a concept map simply as "a visual representation of a knowledge domain" (Ambrose, Bridges, DiPietro, Lovett, and Norman 2010, p. 63). Concept maps can be constructed on sheets of paper, on posters, on tablets or computers with or without the help of concept-mapping software. One can use concept maps to allow students to construct a visual depiction of everything they know, with key concepts located in boxes or circles in the center

of the map and then lines branching off of those central concepts or ideas to other subsidiary elements: other concepts, supporting points or details, examples, and so on (think about the image of all those neurons connecting to each other in your brain). The lines between the different elements of a concept map can be labeled in ways that define the relationships between them.

An even better use of concept maps, though, is to provide students with a focus question to which the concept map comes as a response. So a historian might ask students to construct a concept map that demonstrates the positive and negative consequences of violent revolutions; an environmental scientist could assign a concept map that asks students to depict all of the consequences of some major climatological event. I have had my students create concept maps around the major characters in a single novel or around the appearance of a key theme in multiple novels. Even better still, follow the suggestion of *How Learning Works* and have students make multiple maps with different organizing principles. As the authors explain, "Giving students practice organizing their knowledge according to alternative schemata or hierarchies helps them see that different organizations serve different purposes and thus builds more robust and flexible knowledge organizations" (Ambrose, Bridges, DiPietro, Lovett, and Norman 2010, p. 63). If I ask students to create a map of novel characters one day, I might ask them to create one around its themes on a second day and yet another around its images on a third day.

Back in the age of the dinosaurs, I used to have my student groups construct concept maps by giving them blank overheads and asking them to create their maps with dry erase markers; this allowed us to spend the latter part of the class taking a quick look at everyone's maps on the overhead projector. Sometimes I still will ask students to do this, or I will stop at the bookstore before class and pick up some posters and markers and have them create their

maps on a larger scale. But you might not prefer these ancient tools of the trade, or you might be teaching in an online environment, or you might have too many students to supervise and display all of the maps produced in your class. Fortunately, a wealth of free concept-mapping programs now exists for your students to create online versions of concept maps. Just search online for "free concept mapping," and you will find yourself with more options than you know what to do with. You can find programs to download and save to your device, and you can find websites that allow you to begin creating a new map instantly online. Some learning management systems even include concept-mapping options within them, so you might begin by checking there first if you are teaching in a blended or online environment. If your students already have devices in class, using technological tools for concept mapping will help you keep the activity small without worrying about using things like posters or overheads.

The Minute Thesis

After close to 20 years of teaching, and more than half that time studying and writing about teaching in higher education, I have had exactly one good idea for a teaching strategy that I can't trace back to anywhere else; everything else I have ever recommended, in this book or elsewhere, comes from someone or somewhere else. My single good idea consists of a game called the Minute Thesis, and it represents in some ways the germ of this book, in that it constitutes an ideal small teaching activity: free, easy, and capable of use in any size class, for any length of time you wish, from 10 minutes to the full class period. I began using it a dozen years ago as an attempt to help students at the end of the semester see connections across the various works we had read in an effort to develop ideas for their final papers—which mostly, in my classes,

require them to do comparative analyses of several works from the course reading list. I wrote the name of the seven novels we had read on the board in a single column; in a second column, I wrote a list of themes that we had seen in various novels throughout the semester. I handed a marker to a student in the front row, asked her to walk up to the board and circle a single theme, and then asked her to draw lines connecting that theme to two different novels. Then I asked the students to spend 1 minute thinking about a thesis for an argument that would explain how those two novels connected to that theme. Some of them stared off into space, thinking; some of them actually wrote a phrase or sentence in their notebooks. After a minute (maybe 2), I asked them to tell me what they had come up with. A brief silence ensued (this always happens); then a tentative hand arose, and a tentative student made a tentative statement. I praised the student's idea and asked for another. More hands arose, more confidently, and more ideas emerged. After 5–10 minutes listening to the fascinating new set of connections that were emerging, I stopped the discussion and handed the marker to another student, asking him to circle a new theme and connect it to two different novels; the process then began anew. Over the course of a class period, the students created dozens of brief thesis statements that connected the novels and themes of the course in new and interesting ways, and many of the students took an idea they expressed in that class period and developed it into their final paper.

This brief little activity occurs in the final week of every class I teach now, as a way to help students solidify existing connections they have developed or envision new ones as they are preparing for their final papers or projects or the final exam. The potential variations in how you might conduct it are endless, as are the ways technology could modify or enhance it. You could, for example, use your course learning management system to start a handful of

discussion threads that pair various course elements in different ways and ask each student to contribute a one-sentence thesis to that discussion thread over the course of a 24-hour period; to push their thinking even further, you might then assign students to articulate what the supporting evidence would look like under someone else's thesis. In the classroom you could likewise play out each iteration of the Minute Thesis further by selecting one thesis from those initially proffered and spending 10 minutes spelling out what the argument might look like. Or you could use three columns instead of two, requiring the students to think even more creatively about how to see the course material in newly connected ways. All that's really required is that you or the students set up columns or categories of essential course concepts or texts, connect them in new and creative ways, and then ask the students to describe how or why those connections make sense (or even don't make sense). In this way, just as in the practice of giving students an outline and key terms and letting them fill in their notes, you are offering the scaffolding through the columns or categories but then requiring students to make the connections themselves.

One final benefit of the minute thesis is that it can help students gain some practice in what might seem to them the mysterious process of coming up with new or original ideas—something we frequently ask of them when we assign papers or presentations or research projects. What we typically think about as "original" thinking usually means forging new connections between things that have not been connected before (Lang 2013, pp. 192–205). Ideas always have lineages, and those lineages can help us see the key role that creative connections play in the process of generating new thinking. Playing the minute thesis demystifies the process of coming up with new connections, and gives the students a tool they can use in all of their classes when they are trying to brainstorm ideas for their assignments.

PRINCIPLES

Connection exercises provide a bridge between your expert comprehension of your subject matter and the novice understanding of your students. As you consider how to help your students create their own connections, keep that primary focus in mind. You are helping your students obtain the big-picture view that informs and animates your grasp of the material.

Provide the Framework Remember that one of the most important ways your knowledge of the course content differs from your students lies in your ability to organize and connect concepts and information in meaningful ways. As you encounter new knowledge in your field, you can remember and work with it because of that organization. New learners in a field initially need lots of help in seeing the framework or organization of the material to be learned. You can help them by making the framework as visible as possible, pointing them back to it frequently, and helping them recognize where new material fits into the frame. The more familiar the students become with your course content, the less of this you will have to do.

Facilitate Connections The network of connections in your head doesn't transfer wholly into the heads of your students. Providing the frame to your students not only will help them better understand the organization of knowledge in your field but also leaves open the space for them to create the connections in their brains that will fuel deep learning. Be creative in developing techniques that allow students to see unexpected juxtapositions, chart new pathways through the material, or invent their own new knowledge networks. Be present as the guide and expert who can provide feedback on their discoveries, and help nudge them in productive new directions when they get stuck or stray too far from what you know works for experts in the field.

Leverage Peer Learning Power Of all the small teaching techniques considered in this book, this one lends itself most easily to the use of groups or peer learning activities. Your students all share the position of being novice learners in your field and can help each other understand how to build bridges between those disconnected islets. When you are providing opportunities for students to create connections, allow and encourage them to help each other. The process of creating connections lends itself to collaborative exercises that can revitalize the classroom and inject some fun into learning. The days on which we play the Minute Thesis game are always the most enjoyable ones of the semester; the room fills with energy and curiosity as the students make their own connections and consider the connections made by their peers.

SMALL TEACHING QUICK TIPS: CONNECTING

Making new connections is more complex than retrieving a remembered piece of information, so you may need to set aside more space and time in your course plans for connection exercises. Rather than trying to squeeze them into five- or ten-minute sessions in class, see if you can allot them more time in single-class sessions at the opening, midway point, or closing of the semester.

- Solicit the prior knowledge of your students at the beginning of the semester or individual class periods with brief written or oral questions or with whole-class knowledge dumps.
- Ask students to create concept maps that answer questions or solve problems; use concept maps multiple times throughout the semester with different organizational principles.
- Consider providing students only with the scaffolding or framework of lecture material in advance of class; let them fill in the framework with their own connections.

- As much as possible, offer examples or cases from everyday or common experience but also—and more importantly—give students the opportunity to provide such examples on their own.
- Consider using the Minute Thesis or other in-class activities that help students see or create new connections prior to major assignments or exams.

CONCLUSION

In *A Clergyman's Daughter*, protagonist Dorothy Hare discovers an ingenious method for connecting the disconnected islets of her students' minds in their history lessons. She buys a sheet of wallpaper, plasters it around the circumference of the room, and charges the students to fill it in with the events of English history. They leap into the task, filling in dates and characters and cutting out pictures and stories from illustrated papers to create a vast timeline of their national story. At long last, with the help of a simple framework provided by the teacher and the students' creation of their own connections, Dorothy's students begin truly learning.