As the father of five children, I frequently get roped into serving as the coach or assistant coach on youth sports teams. Despite the fact that I stopped playing all sports except golf and ping pong (do those count?) in my freshman year of high school, I have now imparted my sports-oriented wisdom to young people in the areas of baseball, football, and soccer over the past dozen years or so. As a result, I have become thoroughly familiar with what I call the “good jobbing” of American youth today, and in fact am one of the main practitioners of this dubious coaching technique. No matter what a kid on one of my teams does, I find myself saying “Good job!” to it. Hit a single in baseball? “Good job!” Scored a soccer goal? “Good job!” When the child has actually not done a good job, I add some clarification. Dropped a pass in football? “Good job! You really dove well for that ball!” Struck out at the plate? “Good job! Way to swing at that pitch, instead of watching a called third strike!” I can find a reason and language to praise almost anything a child does in a sporting event, as long as they are not sitting in the field picking dandelions in the middle of the game. (Although I am tempted sometimes to congratulate those children on engaging in civil disobedience with their passive protests against the madness that youth sports can sometimes become.) I am quite adept at the skill of “good jobbing,” which is probably why I am in such demand as a coach.

The first technique that might occur to you when you are thinking about helping students overcome self-efficacy prob-
lems, which ranked fourth in our list of factors that might induce students to cheat, is to engage in lots of “good jobbing” in your classroom. But there is a problem with this—one that occurs on a smaller level in children’s sports, but becomes much more intense in higher education. If we do nothing but praise children for their efforts, we give them a false sense of their skill level. This really doesn’t matter much to five-year-olds on a soccer field. Over the course of the next few years, they will gradually be able to see for themselves how they stack up with their peers on the soccer pitch, and no amount of “good jobbing” will cover up the significant and visible differences that begin to emerge between excellent and poor athletes as the children enter middle and high school. But it can create a significant problem for college students, in that poorly gauged overconfidence in their knowledge of course material can lead them to understudy—and hence might be as likely to induce cheating as a lack of confidence in their abilities.

To help instill a strong but realistic sense of self-efficacy in our students, one that will give them the confidence they need to undertake the challenges we give to them without underestimating the effort it will take, we can look to two very concrete strategies: improving student metacognition, and improving faculty communication. I will take them up in that order, because I believe that improving student metacognition requires harder thinking about your teaching, and has the potential to inspire deeper changes in the way that you conduct your classes. Once you have made your decision about how—or whether—to make those changes, you can then build more effective communication into just about any course with the strategies I will cover in the final part of the chapter.

I was first introduced to the fancy five-cent notion of metacognition by Stephen Chew, a cognitive psychologist who has pro-
duced a terrific series of YouTube videos for college and university students on how they can learn to study more effectively. When I first discovered these videos, I wrote a profile of Chew and the videos for a *Chronicle of Higher Education* column. I focused especially on the first video in the series, in which he introduces students to the concept of metacognition.¹ Stephen Chew will serve as our guide through this concept and what it means for our students, and his work in the videos and in the interviews I conducted with him stands behind this entire chapter. But Stephen will join us formally only for a few pages, and then I want to introduce you to a group of physicists at MIT who published an essay about how they reduced cheating in their large, introductory physics courses—and did so, at least in my analysis, by giving their students a significant metacognitive boost.

Put as simply as possible, according to Chew, metacognition “is a person’s awareness of his or her own level of knowledge and thought processes. In education, it has to do with students’ awareness of their actual level of understanding of a topic.”² Students with excellent metacognitive skills have a clear and accurate picture of how well they know the material they are studying; those with poor metacognitive skills have an inaccurate picture of their learning. Although a small number of students may underestimate their knowledge about the material they are trying to learn (which could result in low self-efficacy), more typically students err in the other direction. Students with poor metacognition, Chew says, are usually “grossly overconfident in their level of understanding. They think they have a good understanding when they really have a shallow, fragmented understanding that is composed of both accurate information and misconceptions.”³ If you have ever had a distraught student visit your office hours after an exam, lamenting that he thought...
he knew the material cold and then bombed an exam, you were likely staring at a student with poor metacognitive skills.

The reason that those poor metacognitive skills cause problems for students is that they lead them to make poor study decisions, which then have consequences for their performances on exams or assignments. As Chew puts it, “once students feel they have mastered material, they will stop studying, usually before they have the depth and breadth of understanding they need to do well. On exams, they will often believe their answers are absolutely correct, only to be shocked when they make a bad grade.”4 So a student with poor metacognitive skills may imagine that two hours of studying for a major exam has given him complete mastery of the material; a student with excellent metacognitive skills recognizes that two hours of studying has only scratched the surface of what she needs for such an important exam, and will continue working for another six or eight hours. The student with poor metacognitive skills will not realize the depth of his error in judgment, though, until he is sitting in front of the exam and realizing how badly he has miscalculated—or, for those students with especially poor metacognitive skills, until you give them back their failed exam.

In the interview I conducted with Chew, I asked him about the single best strategy that faculty could use in order to help their students improve their metacognitive skills. “The best way to reduce the impact of poor metacognition,” Chew said, “is to use formative assessment during teaching. Formative assessments are brief, low-stakes activities that students do in order to give both themselves and the teacher feedback about their level of understanding. There is a wide assortment of assessments that faculty can use, such as think-pair-share activities, minute papers, and so-called ‘clicker’ questions.”5 I noted in the last chapter that Michelle Miller’s in-class activities represent a form of
the “minute paper,” and we can now put those activities in the terms described by Chew here as “formative assessments.” The more such opportunities that the students have to test out their knowledge and receive feedback on it in formative assessments like the ones Chew mentioned, the more accurate a picture they will have of their own learning—and the more accurate that picture is, the more they will be able to make good decisions about their studying. The better those study decisions are, the less likely they will be to find themselves stuck behind the eight-ball in the hours before an exam, or in the final weeks of the semester, knowing that their only option for success in the course is an academically dishonest one.

The most effective low-stakes assessments you can give, of course—as we have already reviewed in our chapter on the testing effect—are ones that will reappear in high-stakes form on your exams or assignments. So whatever skills the students will need to succeed on your high-stakes assessments, they should have had multiple opportunities to practice and receive feedback on those skills on prior low-stakes assessments. Doing so will both help them learn the course material more deeply through the testing effect, and will help them gain a clearer picture of their own learning (that is, better metacognition). (And, as a helpful bonus, it will help you gain a clearer picture of what students are learning or not learning in your class, allowing you to modify your teaching accordingly.)

In his class, Chew uses “clickers” in order to provide the students with a better understanding of their knowledge in the course, and to give them practice on the kinds of questions that they will see on the exam:

I present the class with a multiple-choice question similar to ones that will be on the exam. Students select their answers individually, and I poll the class. They can then discuss their answer with
other students, after which I poll the class again. Finally, we discuss the answers as a class. This gives me a sense of how well students understand the material. I can identify and address problem areas. I also emphasize that the question I use is similar in difficulty level to questions they will see on exams, so if they did not answer correctly or were confused, they need to improve their understanding. Formative assessment helps students study and learn more effectively before exams, and they are less likely to feel “tricked” by questions they didn’t expect. The actual exam should never be the first time the faculty or the students get feedback about the actual level of student understanding.6

Done well, the kind of formative assessment that Chew describes here can help address both ends of the metacognitive spectrum. Students who overestimate their understanding of the topic should see their mistake if they are consistently getting the answers to the questions wrong, or are having to guess at the answers. Students who are underconfident in their learning—and hence have the kind of low self-efficacy that might lead to cheating—should be able to gain confidence by consistently doing well on the clicker questions, especially if they know that those same types of questions will appear on their graded exams.7 In neither case, as Chew points out, will students feel “tricked” by what they see on an exam, or even anticipate feeling “tricked” by an exam. And as you may remember, one aspect of self-efficacy that made a difference in cheating was whether or not the students felt they would be assessed fairly by their professors. The formative assessments described by Chew give students a very clear picture of how they will be evaluated, reducing any potential feelings they might have of receiving unfair treatment on their exams.

But you don’t need clickers to create formative assessments in your class, as we saw with the example of Michelle Miller; you
can use such assessments in a variety of ways, and you can even attach points to them if you prefer, though you want to keep those stakes as low as possible. To offer another example, suppose that you typically give your students a midterm and a final exam that require them to synthesize concepts or information from your course in several long essay questions. How can you prepare your students to do well on those exams, improve their metacognition, and reduce their incentive to cheat? The additional paper assignments you have for the course won’t help, nor will the presentation you also assign. In those cases you are asking the students to do something different, drawing on different skill sets. To help them develop the skills they will need to succeed on your essay exams, you might occasionally ask them to perform concept syntheses in class in ten- or fifteen-minute writing exercises throughout the semester. Once a week, for example, you might begin class by asking your students to write a two-paragraph response to just such a synthesis question. Each of those responses might count for a very small fraction of their final grade. Imagine the difference between a student who has spent the semester gamely reviewing her notes every once in a while and believing that she has the concepts mastered, but who has never attempted a written synthesis of those concepts, and a student who has had a dozen opportunities to practice writing a synthesis and has received feedback on how he has done. Which student will have learned this skill more deeply and effectively? Which student will be less likely to bomb the midterm, become terrified about the final exam, and be motivated to do whatever it takes—honest or otherwise—in order to ace that final exam?

Practicing with short writing exercises to prepare students for essay exams will work only in some disciplines, obviously, so you will have to translate this example into whatever discipline in which you are teaching. The principle is simple enough: take a look at whatever you require of students on your high-stakes
assessments, and break it down into smaller chunks or pieces on which you can give students low-stakes assessments during the intervals between those higher-stakes exams or assignments. Doing so will not only make use of the testing effect in order to reinforce your course content in your student’s brains, but it will also help firm up their metacognitive awareness of their knowledge in your course. And doing both of these things will reduce the incentive for students to cheat. To hearken back to the first historical situation we considered, the ancient Olympics, imagine you were the world’s fastest sprinter, and you knew you were faster than everyone else—why in the world would you bother bribing the judges in order to ensure your victory? The students’ knowledge, and their metacognitive awareness of that knowledge, can be one of the best remedies we have against cheating.

The clicker strategy described by Stephen Chew was initially developed by Eric Mazur, a physicist at Harvard University. To help see more clearly how frequent low-stakes assessment activities can both improve metacognitive skills and reduce cheating, I want to turn to a group of four physicists across town from Mazur, at MIT, who published an essay in the January 2010 edition of the online journal *Physics Education Research* about how they reduced cheating on homework assignments and increased learning and course retention in their large, introductory physics courses for nonmajors. Their study focused initially on two large sections of the courses in the fall of 2003. With approximately 215 students in each of those two sections, the courses were taught in traditional lecture-recitation format: the faculty offered three lectures per week, as well as two recitation sessions. Attendance was not required at either the lecture or recitation sessions; unsurprisingly, attendance rates clocked in at a rather low 60 percent. The major assessments for the course, following an initial pretest to check students’ knowledge prior
to taking the course, included three in-class examinations and a final exam. But students also had to complete weekly homework assignments: one of them an electronic problem that they solved through an online homework system called MasteringPhysics (worth 10 percent of their total grade in the course), and one of them a written assignment. The physics professors who co-authored the study were concerned about two issues: how much cheating was taking place on those electronic homework assignments, and how many students were either dropping out or doing poorly in the course. They wanted, in part, to understand whether there was a correlation between these two factors—but mostly they wanted to reduce the rates of both cheating and poor performances in the course.

In order to determine how much copying was taking place on the homework assignments, they decided to analyze the amount of time it took students to complete the online homework problems. They estimated that students who were actively and authentically engaged with the homework took ten minutes or more to complete each problem. When they looked at the reports, which indicated how many minutes had elapsed between the time the student opened the problem on a browser and the time it took him to complete the problem, they saw a significant number of students were doing so in a minute or less—less time than it would take to read the problem in its entirety and type in a response, much less actually think about it and work out the answer. Using this time-to-completion factor as their main piece of evidence, they estimated that around 10 percent of the total problems completed in the course had been copied from another source. That gross number of total problems copied breaks down in two important ways. First, the researchers were able to see the number of students who engaged in different rates of copying. They found a small number of students (10 percent) who copied at least half of their homework problems; a
majority of students (51 percent) who copied either not at all or less than 10 percent of the problems; and a messier group of “light” or “moderate” copiers (39 percent) who copied between 10 and 50 percent of the problems. Second, and more interestingly—if perhaps still unsurprisingly—they were able to determine that copying intensified as the deadline for the homework approached, and spiked right around deadline time and slightly afterward. Looking more closely at this, they discovered a primary difference between heavy copiers and those who copied little or not at all. The noncopying group, they reported, “does their work in a timely fashion; working steadily over three days before due time and completing ~½ of their problems two days before they are due”; the heavy copy group “typically does only ~10% of their work two days early, and leave[s] almost 60% of the assignment to the final six hours, and about 15% until after it is due.” The more work they left until the hours before the deadline, in other words, the more the students were likely to copy.9

How does that information square with what we have already learned about cheating? Just as we saw in our opening chapter, we have a small number of students (10 percent) who are cheating regularly, a larger number of students who cheat much less regularly, and a much larger number of students who either do not cheat at all or do so very infrequently. So in that respect what we see in this course matches the basic picture we have of how many of our students engage in academically dishonest behavior. As for the issue of the copying increasing dramatically in the hours before the due date, we can certainly attribute some of that to poor time management on the part of the students—a common enough problem that, as faculty, we have limited ability to help our students overcome. But I think we can also attribute much of this deadline copying to poor metacognition on the students’ part. Metacognition in this case would involve a
recognition of the difficulty of the homework problems and an assessment of their ability to solve the problems in the required time period. Students with sharp metacognitive skills were obviously aware that these were difficult problems that would challenge their understanding, and so began working on them three days in advance, completing over half of them two days before the due date. Students with poor metacognitive skills, by contrast, assumed that they would be able to complete most of the problems within six hours of the due date and time, and so unwisely left most of them until the day they were due. When faced with the realization that they had badly miscalculated the amount of time they needed to complete the problem, many of them resorted to copying.

And many of them, as a result, did increasingly poorly in the course. The authors looked at the student scores on all five exams, from the pretest to the final, and compared them with the amount of copying that the students did. In simplest terms, they explain, “repeated homework copying” correlates sharply with “severely declining performance relative to class average over the five primary assessments.” In other words, the test scores of the heaviest copiers show a mostly steady decline from the beginning of the semester to the final exam. The authors are able to demonstrate that repeated copiers and noncopiers scored in roughly the same range on the pretest. In other words, all students began the course with the same basic set of skills and background knowledge. But as the semester progressed, the students who engaged in repeated copying saw their scores gradually decline from test to test in comparison with noncopiers, culminating in a “copying” final exam score average that was two full standard deviations below the “noncopying” exam score average. The authors make the excellent point, as a result of comparing these averages on the pretest and final exam, that “contrary to the typical belief of American students that innate
ability . . . is the principal determiner of exam success, doing all assigned work is a surer route to exam success than innate physics ability." As I see it reflected in this sentence, and in other parts of the article, the authors of this study struck me as driven by the admirable desire to address cheating in their course because cheating reduces learning. They wanted as many students as possible to learn physics, and so they wanted as few students as possible to copy the homework problems.

To achieve these goals, the authors revamped the course entirely, shifting it to what they call a “studio model” following the fall of 2003. They continued to tweak the structure of the course through the fall of 2006, the last semester included in their analysis. (In the first year of trying out the new format, students had the option of signing up for the studio model course or the traditional lecture course; by 2006, all sections of the course had shifted to the studio model.) The changes made to shift the course to a studio model included the following:

The course was divided into sections of ~75 students each; each section met for 5 hours total each week with one professor and several teaching assistants. During class periods, students were given minilectures interspersed with questions answered using a personal response system followed by peer instruction, hands-on experiments, and group problem-solving sessions, often at the board. Students were broken into groups of not more than 3 and each student group had access to a computer used to enhance demonstrations and collect their experimental data.

They shifted the nature of the homework slightly as well, moving to two assignments per week from MasteringPhysics and one written homework assignment (more frequent assessments, in other words).

The shift to the studio model helped the authors achieve both of the consequences they desired. The total number of
problems copied fell from around 11 percent in the fall of 2003 to around 3 percent in the fall of 2006. The fall of 2006, the year of the lowest cheating rate seen in the study, had also included a technical shift the authors made to the MasteringPhysics problems, which made it more difficult for students to copy their answers. But even in 2004 and 2005, when they were still using the previous types of questions, the copy rate dropped by nearly half. The number of students who earned D’s or F’s in the course dropped by an equally dramatic rate from the fall of 2003 to the spring of 2006. Out of 428 students who began the course in the fall of 2003, 38 of them ultimately failed; out of 619 students who took the studio model courses in the spring of 2006, only 10 of them failed. In their laconic and cautious scientific language, the authors state that “[w]e suspect that reduction in homework copying is responsible for a significant part of this reduction in failure rate.” In this quote we arrive once again at the happy juncture that animates Part II of this book, in which we see that the strategies which reduce cheating are precisely the strategies that increase learning. Reducing the amount of students who are copying their homework increases the number of students who are passing the course. I would argue that improved metacognition stands at the heart of this junction, even though the authors of the study do not specifically address that concept. It seems clear enough to me that when students are completing the homework assignments in class, under the guidance of their professors, they are—in addition to gaining more practice at the skills they will need on the exams—receiving a much clearer picture of their ability to do physics. That more accurate picture should help them direct their studying and practice more effectively, and make better decisions about how much time and effort they need to commit to the course.

In the second decade of the twenty-first century, a new set of phrases has emerged for describing the phenomenon of profes-
sors restructuring their classes in the way described by these physics teachers, from traditional lecture models to ones in which students are actively engaged in problem solving or other course-related work: the “flipped” or “inverted” classroom. The basic idea captured by these phrases (and others like them) is that instead of students sitting passively for lectures on the information or concepts they need to know and then going home to try and apply those concepts or information to answer questions or solve problems, the instructor flips or inverts these elements of the course: students get the basic information they need prior to coming to class and then spend class time working on problems or answering questions with the instructor on hand to guide and supervise. In order to get that information to students beforehand, faculty can videotape their lectures, post presentations to a course website, or provide necessary readings. The students study that material in advance of class, and come to class prepared to work instead of simply to listen. This represents an inversion or flipping of the typical lecture-recitation model of science, technology, engineering, and mathematics courses (usually referred to with the acronym STEM), in which instructors might lecture on key concepts or even model problem-solving techniques in class and then expect students to go home and solve homework problems on their own. That is not exactly what was happening in those MIT physics courses in the fall of 2003, since the instructors still presented key concepts to the students during class time through “minilectures,” as they describe them. In a truly flipped classroom, those minilectures would be presented to the students prior to their coming to class, either in videotaped format or through written materials. When these physics instructors shifted to a studio model, though, and had students working on practice problems in class, they were employing at least one of the main strategies of the flipped classroom—having students spend time in class practic-
ing their problem-solving skills and receiving directed feedback from the instructor. And it’s that feature of the flipped classroom, I would argue—low-stakes classroom activities with direct feedback from the instructor—that helps students improve their metacognitive skills in the course.

As has been suggested by Derek Bruff, Director of the Center for Teaching Excellence at Vanderbilt University, none of this may seem very revolutionary to humanities or qualitatively oriented social science faculty. In these fields, professors typically assign reading in advance of the day’s lecture or discussion and expect students to come prepared to engage in discussions or other interactive activities. But speaking as a humanities professor and drawing upon many conversations I have had with my colleagues on and off campus, as well as observations I have done in their classrooms, I can point out one major problem with assuming that my co-disciplinary colleagues have nothing to learn from the flipped classroom and the improved metacognition it can bring to our students—namely, that in my discipline and many others, students often do not do the reading. During the years I directed the Honors Program at my college, I had an office right next to a lounge area where students congregated and socialized between classes. I was astounded at how many times I heard our best students on campus discussing reading assignments they had skimmed, skipped, or forgotten about. It scared me to think about how many non-Honors students were following their lead. But of course we don’t give students much reason to do the reading in advance of class if we step to the front of the room on most days and deliver lectures about the readings we have assigned. In that case, I would have complete sympathy with students who don’t bother to do the readings in advance. Why do so, when the professor will simply explain to you in class what you need to know?
The research on the flipped classroom tells us that what makes it such an effective teaching strategy is the fact that students get the opportunity to practice and receive immediate feedback on the skills that they will need for the course assessments. As Susan Ambrose and her colleagues point out in How Learning Works, “generally speaking, both professors and students underestimate the need for practice” in the acquisition of new intellectual or creative skills. As faculty, we often assume that modeling the techniques for problem solving on the board or having students complete a problem or two in class will provide the students with the skills they need to succeed on their assessments. Ambrose and her colleagues note that faculty typically “move from concept to concept or skill to skill rather quickly, giving students no more than a single opportunity to practice each.” But the research on how students develop mastery of a skill tells us that students need multiple opportunities both to practice any skill they are trying to learn, and they need to receive targeted feedback in order to help them improve those skills from one practice session to the next. The simplest analogy, used by Ambrose and her colleagues, is to learning a musical instrument. Just as novice musicians must spend many hours practicing basic skills like playing scales or mastering difficult passages—and frequently do so in the presence of their teacher, receiving immediate and individualized feedback—so must our students spend many hours practicing the basic intellectual skills of our discipline. The flipped classroom offers precisely this opportunity: instead of sending students away to struggle in their dorm rooms on problems that you have modeled for them once in class, in the absence of any direct guidance or feedback from the instructor, you are giving them those multiple opportunities to practice problem solving (or whatever skill you are teaching) in your presence, and with your direct (one on one) or indirect (whole
class) guidance. That practice time both helps them improve on the skill and gives them a clearer metacognitive picture of their learning.

The language of problem solving might seem more appropriate to STEM disciplines than to humanities or other qualitative courses, but that absolutely does not have to be the case. Whenever I teach a course that involves writing, one of my main objectives is always to help students learn to compose effective introductions to whatever genre of essay they are writing. In my early years of teaching, I would have students read several model essays, and then in class we would look at the first paragraphs of all of those essays, talk about which ones seemed most effective, and categorize them into different strategy types. Then I would let them know that they needed to follow one of those exemplary models and write a great introduction to their next paper, and I sent them away to do so on their own. Gradually, however, I realized that the students’ introductions never quite lived up to my expectations. I was not giving them enough help in accomplishing this task. So a few years into my teaching career I started to teach this skill differently. When the students had an assignment due, I still asked them to read the introductions to several different essays, and we still analyzed them (albeit more briefly) and categorized them into different strategy types. But then I asked them to take out a blank of piece of paper and write an introduction to a paper with an approaching due date, again following one of the exemplary models we had just read. While they wrote, I circulated around the classroom, giving individual pointers to students. When they had finished, I asked them to turn the paper over and write another introduction, following another one of the models we had studied. Again I walked among them, working with individual students. This single practice session in the classroom probably still does not give
them enough focused practice on this specific skill, but it definitively made a positive impact in the quality of their introductions, and it inspired me to adopt similar studio-style class sessions for teaching skills like incorporating quotations into a sentence and writing concluding paragraphs.

Flipping the classroom helps learning, but it also has tremendous potential to reduce cheating in your courses as well. That happens primarily because of the way in which the flipped classroom improves students’ metacognitive awareness of their learning in the course. The benefits extend both to students who are grossly overconfident in their learning and to students who are underconfident, with the kind of low self-efficacy I describe in Chapter 2. First, as we saw in the case of the MIT physics students, cheating students were overconfident and poor judges of how much time and preparation they needed to complete the online homework problems. Most of them waited until the hours immediately prior to the deadline, and cheating levels increased as that witching hour approached. No doubt we should attribute some of that cheating to students who were lazy, had poor time management skills, were inveterate procrastinators, or were planning to cheat all along and just waited until the last minute to do it. But if that accounted for much or even most of the cheating taking place in those final hours, then the change to the course format would not have reduced the cheating in the online assessments. So we can surmise that poor metacognition, especially in the form of overconfidence in their ability to complete the problems within a given time period, accounted for a substantive amount of that homework copying, and that increased time practicing homework problems in class accounted for a substantive reduction in that cheating. Students who had the opportunity to work on the problems in class gained an immediate understanding of how difficult they were, and of how
much time they took to complete. A student who had not had this opportunity would get the first set of problems without that knowledge, and hence could badly miscalculate.

But in the second case, for students who are plagued with low self-efficacy, classroom practice would increase their confidence in their ability to do the homework problems, especially if they are receiving immediate and ongoing feedback from the instructor or teaching assistants in those sessions. As a reminder, we can break down the concept of student self-efficacy into two parts: outcome expectancies, which, as Susan Ambrose and her colleagues explain, “reflect the belief that specific actions will bring about a desired outcome”;17 and efficacy expectancies, which “represent the belief that one is capable of identifying, organizing, initiating, and executing a course of action that will bring about a desired outcome.”18 Put together, these two expectancies mean that, in order to feel sufficiently motivated to undertake a difficult challenge, “a student must not only believe that doing the assigned work can earn a passing grade, she must also believe that she is capable of doing the work necessary to earn a passing grade.”19 The first of these beliefs relates to students’ perception of the fairness of the evaluation criteria of the course. We can help students with this perception in the ways that Stephen Chew identified in his description of his clicker activities—by explaining to students that the low-stakes assessments undertaken in class are the same kinds of assessments that they will encounter in their graded work, and by evaluating that work fairly and transparently.

The second belief presents us with a more complex challenge: how do we convince students that they are capable of doing what we ask of them? In their list of recommendations to help faculty members meet this challenge, Ambrose and her colleagues provide the following key suggestion: to “provide early success opportunities.”
Expectations for future performance are influenced by past experiences. Hence, early success can build a sense of efficacy. This strategy is incredibly important in courses that are known as “gateway” or “high-risk” course[s] or for students who come into your course with anxiety for whatever reason. For example, you might incorporate early, shorter assignments that account for a small percentage of the final grade but provide a sense of competence and confidence before you assign a larger project.20

This is precisely what problem-solving sessions in the remodeled physics courses accomplished, and what low-stakes assessments in any course will help accomplish as well. Giving students confidence in their ability to successfully meet the challenges of the course, as well as a better awareness of the time and effort they need to expend in order to do so, should go a long way toward improving metacognition in your students—and an equally long way in reducing the kind of cheating through desperation that comes from hopeless or hopelessly lost students.

If you work with students on a regular basis in the classroom, you will gain a clearer and more accurate picture of their knowledge and skills in the course material before the assessment is due. Suppose you give a first assignment of the semester, and you have not had any opportunity to see the students’ work or assess their abilities prior to receiving the assignment. Unless you spot some obvious plagiarism, you have no way of knowing whether the abilities demonstrated by the students on the assignment match what they are capable of. I know that in my discipline we frequently rely on our familiarity with the particular writing style and skill level of each student in order to help us spot possible cheating. Students might suddenly turn in a far more sophisticated essay than they have shown themselves capable of producing, or even far more sophisticated sentences or phrases than they have employed previously, and these tip us off
to the possibility of plagiarism. But this strategy only becomes effective later in the semester, when we become familiar with students’ capabilities. Students could easily get around this informal plagiarism detection method by plagiarizing or cheating on their assignments right from the beginning of the course. As long as they kept a low profile in class—so as not to reveal their true abilities in discussion or lecture questions—they could plagiarize or even purchase essays for the course throughout the entire semester. This will not work, however, if you have spent time individually supervising and guiding students from the first through the very last class session.

An even better guarantee to ensure that students are doing their own work on your out-of-class assignment is to require them to either begin or complete part of it during class time. So let’s say I asked my students to turn in those two introductory paragraphs they wrote in class for a writing exercise grade. I would give them a quick glance and ask students to revise one of them and use it as the actual opening of the upcoming paper assignment—and to turn in the original version they wrote in class with the final paper, so I can see how they revised and improved it. I can absolutely guarantee, in that case, that at least one of the paragraphs in that paper will not be plagiarized. But I would also know that, in addition to the introductory paragraph, the main idea for the paper—which they need to have in their heads in order to write their introduction—has come from them as well. (This will only work if I have told them in advance that they will be settling on their paper topic in class that day, since I would not want them to have to improvise a paper topic without time to think about it.) Giving students time to work on pieces of your assignment in class, or asking them to develop the initial or main idea of an assignment, should be compatible with just about any kind of assignment or material. If you are helping
students learn how to write a research paper in your discipline, spend thirty minutes teaching them what they need to write a literature review, and then have them bring in hard copies of three sources and begin writing their literature review in class. If students are working on a group presentation in pairs, spend thirty minutes modeling what an effective presentation slide looks like, and then have them work with their partner to create three slides in class. Ideally, you would hold them accountable for this in-class work in some way: have them turn in the material they wrote in class with their final paper, or have them send you the slides they created. A quick glance at them, when you are grading the final product, will help you identify discrepancies substantive enough to indicate potential cheating.

Many professors might protest that they have only a few hours a week in which to present their course material. If students work on their projects during class time, will you have to gut essential course content? Maybe—but remember that while you may have lots of material to cover in your class, just because you are covering it doesn’t mean that students are learning it. Any good lecturer knows that the material will be better absorbed if reduced to a few main ideas that are repeated over and over again. So, likewise, a good teacher should know that simply battering students with as much information as possible over the course of a semester will produce nothing but frustration for both teacher and student. It can be difficult indeed to let go of material that you feel is absolutely essential for a student in your course to have—I understand completely and feel your pain. But you will be doing your students a much greater service by reducing the amount of material that you are covering and actually ensuring that students are learning it, rather than making sure that you are ticking off every checkpoint on your ideal syllabus. Learning comes from practice, and you have to help and teach
your students to practice just as you help and teach them the basic knowledge and skills of your discipline.

Before we conclude this chapter, I want to introduce you to our final guide, who convinced me that the ways in which we communicate with our students can also help them develop an appropriately gauged sense of self-efficacy. Joe Ben Hoyle is an associate professor of accounting at the University of Richmond who has won multiple accolades for his teaching over the course of a career that has lasted more than forty years, including an invitation by the students at the University of Richmond to deliver the school’s inaugural “Last Lecture” in the spring of 2009. I first met Joe when he sent me a copy of his self-published book on teaching, and a link to his blog. Although I have an innate—and perhaps unwarranted—suspicion of self-published manuscripts sent to me in the mail, something about this one caught my attention, and I sat down and read it cover to cover. The ways in which Joe Ben Hoyle described helping his students learn were striking and original, and led me to profile Hoyle’s reflections on teaching in a column for the *Chronicle of Higher Education.* And although Hoyle has sharp insights into the job of teaching in a wide variety of areas, I believe he offers a truly inspiring model of communicating with his students to foster their self-efficacy and inspire them to learn.

Indeed, what first really grabbed my attention, and continues to strike me as both an excellent reflection of Hoyle’s teaching style and a wonderful teaching innovation, is presented at the outset of that book. Hoyle explains that, at the end of each semester, he sends an email to all of the students in his course who received an A. That email contains his congratulations for their effort and success in the course, and then asks a favor of the students: Hoyle asks them to describe the study strategies they used that allowed them to achieve the grade they earned. Although
he uses their responses to help him determine whether he should make any changes to the course—if students are earning A’s by all-night cramming, for example, he knows he wants to make changes to the exams—what distinguishes Hoyle’s method as an model for building self-efficacy in his students comes next.

All of the [student responses] are . . . cut and pasted into a single document which is distributed to the next class of students on the first day of the following semester. It is one handout that they read with interest and care; they are always inclined to believe the words of their fellow students. These short essays help remove any rumors or mystery associated with my class. From the beginning, I want every student to understand exactly what it takes to earn an excellent grade. In most team sports, the players who are seniors are expected to teach the freshmen what it means to be part of the team. That is what I am seeking: One group of students instructs the next on how to achieve excellence.23

I will note without comment that in fifteen years of teaching I have never communicated a congratulations to students who did well in the course or on the final exam, although I have often intended to. That Hoyle makes this a regular part of his teaching practice speaks volumes about his dedication both to his profession and to his students. But, more important, it reflects an awareness on his part that students need both tools and encouragement to succeed. We all work to give them the tools they need to succeed—we hope—in the ways in which we teach our courses, but how many of us think to give them encouragement in the way that this note does? The special genius of this note is not that it says “You can do it!” It says, instead, “You can do it—and I have evidence to show you that. Others just like you have done it before.”

If you scan through Hoyle’s writing about teaching, and the articles that have been written about his teaching, I would argue
that you will find three essential threads that characterize his communication with his students, and that I believe can help create the kind of self-efficacy we want in our students. The first of these sentiments relates as much to fostering intrinsic motivation as it does to communication, but it strikes me as an essential piece of the package that we find in Joe Ben Hoyle’s work; the second and third thread twine together—and must twine together—to foster the self-efficacy our students need.

I Have Something Wonderful to Teach You

This sentiment shines through almost every piece of writing Hoyle shares with his students—and, I would imagine, his presence in the classroom as well. I haven’t studied formally anything related to mathematics or the business world for a good twenty years now, but reading through Hoyle’s descriptions of his discipline to his students makes me want to audit his Intermediate Accounting II class, the course I will focus on for the remainder of the chapter. Remember that, as we saw in Chapter 4, students are both less likely to cheat and more likely to learn when they see the course material as intrinsically fascinating, useful, or beautiful. Hoyle works hard and continually to help his students see his course in this way. In the most recent iteration of the course, for example, he began the process of sharing his genuine love for his course material, and helping his students learn to love it as well, several months before the semester started. In April of 2012, after the students had registered for their fall courses, Hoyle sent an email to all of the students on the roster in the Fall 2012 section of Intermediate Accounting II. His email spends several paragraphs telling the students about what the course will entail, and offering advice about how to succeed by doing some simple review work over the summer. But it moves beyond those simple practical messages.
course, he explains to them, “[w]e cover some of the most interesting topics in all of accounting.” That brief phrase prepares the way for a later section of the email, a final piece of advice to the students that encourages them to think about the larger world of business in which the course material exists, both because it will help them in the course and because it is an inherently fascinating topic of study. Over the summer, he exhorts them,

keep up with the world of business. School should not be separate from the real world. (Did you know that Wal-Mart disclosed this morning that it had legal risks because of possible bribery in Mexico—what does that mean to the company?) . . . The study of the business world is like the study of a gigantic game with many interlocking pieces. The people who are successful in business understand the game and play it very well. The more you learn about business the more you realize that there is so much more to learn. It is not just a way to get a first job; being in business should be an adventure. And, the more you learn in college, the better that adventure will be.

The enthusiasm for the world of business and accounting that shines through this paragraph infects everything that Hoyle writes to his students. I love the parenthetical aside about Wal-mart: Here’s something in the daily news that relates to our subject matter—let’s think about what it means! Business as a game, as an adventure, as a context that connects their studies with the world around them—all of these words and phrases and ideas help convince students that, in Hoyle’s course, they are participating in something worth learning.

That attitude continues into the semester when Hoyle actually meets the students for the first time and presents his syllabus to them. I can hardly imagine a course that sounds more like it would induce thoughts of mechanical learning than Intermediate Accounting II. Hoyle makes it very clear to them on his
The syllabus that such will not be the case in his course. While naturally they will be doing computations and other seemingly mechanical activities, the real focus of the course lies with thinking about and understanding the practice of accounting. As his syllabus puts it:

Sherlock Holmes would have been a wonderful accountant because he constantly pounded himself with the question “What happened here and why?” 2 plus 2 is 4 is mechanical knowledge that can be learned with little or no thought. Why accounting works in a particular fashion is not mechanical and takes serious contemplation to truly understand. People who don’t do well in Intermediate Accountings tend to be obsessed with the mechanics rather than with the “why.”

Hoyle’s course, by contrast, will always keep that larger picture in view, encouraging students to think about the meanings behind the numbers. They will engage in “serious contemplation.” And, indeed, he explains to them that the main purpose of the course is not learning to crunch numbers, or even really just to understand accounting more thoroughly. The main purpose of this course, like every course he teaches, is much more fundamental:

I feel that you will hold a competitive advantage in life if you obtain a basic understanding of financial accounting. More importantly, I believe you will be more likely to make something of yourself if you learn to think . . . In this class, we use financial accounting simply as a means for stimulating your ability to think and reason.

Maintaining the focus of the students on the larger picture of the business world, and on the fundamental thinking skills that will help them live richer lives, no doubt helps maintain their
interest in the subject matter when they find themselves slogging through the more mechanical tasks of accounting—or of any discipline, for that matter. I tend to assume that the relationship of literature to larger questions of meaning and value should be apparent in all aspects of my courses, but I suspect students might disagree with that when I am holding their noses to a poem—or tying it to a chair, in the words of the poet Billy Collins—and asking them to identify the various forms of figurative language they find in there. Hoyle continually asks his students to step back from the smaller mechanical tasks and take a look at the complex and fascinating whole—to think about accounting, about business, and about thinking itself. I love this stuff, his messages to the students imply—and you will too!

I Am Going to Challenge You

In addition to the five times he has won the University of Richmond’s Distinguished Educator Award, in the spring of 2005 the senior business majors at the university voted him the “Most Feared Professor” on campus. As a result of this interesting distinction, the university’s alumni magazine invited him to contribute an essay on his teaching philosophy. He concludes that essay with a remark that captures well his convictions about challenging students: “Our students can do amazing things, but if we don’t challenge them fully, they will never realize what marvelous talents they truly possess.”24 In the introductory email to his students in the spring, he addresses right away the impression students probably already have that his course will prove “fully” challenging. Intermediate Accounting II, he says to them, “is not a course to be taken lightly.” And that same language continues on the syllabus when students arrive, where Hoyle explains to them that good students will achieve much in
his course, but “achievement does not come without sacrifice.” He then explains what that sacrifice will look like, and why he asks it of them:

Proper preparation is the key to achievement whether you are trying to get a team ready to win the World Series or the Super Bowl or earn an A+ in this course. There is just a right way and a wrong way to do things. I expect you to arrive at class every day having thought about the material and being ready to explore it with me. Don’t expect to come to class and just take notes as I pass out pearls of wisdom. That’s not learning—that’s memorization. I’ll ask questions and I’ll expect answers, answers based on your preparation and your ability to think.

This explanation is essential to the structure of the course, which Hoyle teaches in a completely Socratic fashion. He poses at least one question to every student in class every day. Students have to undertake the kind of preparation he describes here in order both for his teaching style to work, and for them to receive the benefits of a Socratic teaching style—engaging with difficult questions, thinking for oneself, challenging and being challenged by the other thinkers in the room. When so many college courses still rely primarily on lectures or discussions in which participation is optional, you can imagine how his teaching style represents a full challenge to today’s college student.

We might expect that a teacher who conducts his class by discussion, and who values it so highly, would include some kind of participation grade in the course, as many of us do. We would be wrong. “I don’t see any reason at all to reward something that’s simply expected,” Hoyle said in an interview about his teaching with BusinessWeek magazine. “I don’t reward breathing. I don’t reward participation.” We might also expect that participatory classes like this one allow for plenty of opportunity for the teacher to dish out praise to student comments, reinforc-
ing the “good job” phenomenon I described at the outset of this chapter. But praise comes only to those who earn it. “I say, ‘Good job!’” Hoyle explains in his article in the alumni magazine, “when a student gives me a thoughtful, well-conceived answer.” But, unlike me on the softball field, he does not simply hand out ‘Good job’ praise for any contribution: “I say, ‘Listen, you can do better than that!’ when a student gives me a bad answer.” And when students consistently come to class unprepared, or do not give the kinds of answers he expects from them, they do not get a break either, as he explains in his teaching tips book: “If any students consistently fail to prepare, I call them in and we discuss the advantages of being able to provide and support answers.” Notice the way in which, in the case of students who are not doing the preparatory work they need in order to succeed in class, Hoyle avoids browbeating them, and instead focuses the message on the importance of students continuing to challenge themselves: you can do better than that, rather than you did poorly; and here’s why preparation helps you in this course. And notice as well that, for students who consistently underperform, Hoyle calls them into his office and talks to them about how to succeed in the course, rather than simply giving up on them.

Hoyle’s confidence in his students’ abilities leads us to the second half of the sentence that began this section. I am going to challenge you, that sentence began; it finishes like this:

You Are Capable of Meeting that Challenge

Joe Ben Hoyle may hammer away at this point more than any other in his written and face-to-face communications with students. It appears in every document he sent to me in one form or another. “I honestly want Intermediate Accounting II to be the best course you have ever taken,” he tells them in his pre-course email. “If I do my job really well and if you do your job
really well, we can achieve that goal . . . with a good effort from both of us, you are more than capable of handling that challenge.” His eight-page syllabus concludes with the following exhortation, in all capital letters: “BELIEVE IN YOURSELF—YOU REALLY CAN DO THIS STUFF!!” In the document that he gives to his new students about how to achieve an A in class, compiled from students who have done so in previous semesters, his introduction to that advice includes the following sentences: “I want to help you ratchet up your game. To me, that is as important as learning accounting. I really do want you to learn how to be successful when faced with a genuine challenge.” Follow the advice of these wise students, Hoyle continues, and “I guarantee you what they say can form a road map for your getting an A.”

Do we really need to offer this kind of cheerleading to our students? If you are not going to challenge them, you probably do not. If you are going to challenge them, you not only need to offer them exhortations like these, but you need to back up the exhortations with concrete advice about how they can meet the challenges you set for them. Hoyle does not rely exclusively on the wisdom of past students to help his current students. The entire second half of Hoyle’s eight-page syllabus provides advice for students on how to do well in the course. It contains the usual material you might find on any syllabus about putting in the time on the reading and homework and so on. But you will also find sharp and interesting comments like these:

A lot of students like to gather in the Atrium 30–45 minutes before my classes just to sit and discuss the handouts. I think that is wonderful. I think that really helps. They always walk into class ready to go. If I could, I would require that. Absolutely!!! However, do me a personal favor. If there are people in the atrium from our class, include everyone in the conversation. Some people are quiet and don’t want to butt in. I want everyone in the
class to become part of the group. Don’t be snooty. You make the move to be friendly. Look around—is there anyone there that you can ask to “come on over and help us talk about this accounting nonsense.”

What I think deserves particular notice in this paragraph—aside from the excellent advice for students to engage in these informal study sessions before class—is the fact that Hoyle encourages them to engage with each other in an ethical and generous way. You see this ethic of generosity in everything he writes to his students, or writes about his teaching. We’re all in this together, he seems to say—so let’s all help each other succeed.

And when Hoyle implies to the students that “we” are all in this together, he casts a wide and generous net. Consider an email that Hoyle sends—brace yourself—to the parents of the students who are enrolled in his class. At the beginning of the semester, Hoyle asks the students in his course to give him the email addresses of their parents, if—and only if—they would like to receive occasional updates from him on the course that their son or daughter is taking. (The parents can choose to opt out after the first email.) As Hoyle explains in the email, he began doing this after he sent his own children to college and was distressed at how little he knew about what was happening in their daily educational lives. And while Hoyle’s message does provide the parents with information about the course, the bulk of it actually focuses on providing tips for parents on how they can help their son or daughter succeed in the course. “When your child is at home,” he writes, “talk with them about your job or your investments or a business story that you read in the paper or just anything having to do with business.” So the parents get a taste of the same enthusiasm for business and accounting that Hoyle shares with his students. But they also get some friendly advice about parenting any student through a difficult learning experi-
ence: “Never fail to tell your child that you are proud of him/her for doing the work; tell your child that you know there is a lot required but it is only for 3 months or so and that the work will really make them better. One of the hardest jobs that I have is convincing students that the hours of work before each class really are worth the effort—and you can help.” Anyone who has parented a child through multiple levels of education—and I have five of them, so I speak from long and sometimes painful experience—knows how badly they need to hear that message from us sometimes. I wonder whether I ever would have thought to continue speaking it to my soon-to-be-college-aged children without this reflection from Joe Hoyle.

In *How Learning Works*, Susan Ambrose and her colleagues point out that one of the best means we can use to help improve students’ sense of self-efficacy is to provide the kind of strategic advice that Hoyle gives to his students (and their parents!). Especially in challenging classes, they explain, “[s]tudents may not be able to identify ways in which they should appropriately change their study behaviors following failure . . . it is important to discuss effective study strategies to give them alternatives to the behaviors that resulted in poor performance.”26 When we communicate explicitly with our students about the strategies that will help them learn in our courses, we demystify what students might see as an impossible or baffling challenge. We have all heard students who say they are “bad at math,” or “just can’t write”; those beliefs demotivate students by implying that, no matter how hard they work or study, they will never succeed. Providing them with concrete advice for how to succeed in a course or a discipline—from how to read your notes to how to meet before class—helps them see that learning depends on their effort instead of some innate learning skill that they were blessed with (or not blessed with) at birth. Remember that the MIT physicists also noted that the pathway to success in their
course was not some inborn scientific intelligence, but doing the homework. When we communicate these notions clearly to our students, we are giving them the tools they need to succeed—and in doing so, are removing one more reason they might have to cheat.