

# Lecture versus Active Learning: Reframing the Debate

Educators today would be hard-pressed to identify a teaching technique more heartily maligned than the lecture. Lectures are boring: “Some people talk in their sleep. Lecturers talk while other people sleep” (Albert Camus<sup>1</sup>). Lectures are ineffective: “A lecture is a process in which information passes from the notes of the lecturer into the notes of the student without passing through the minds of either” (Mark Twain<sup>2</sup>). Lectures are pointless: “Lectures were once useful; but now, when all can read and books are so numerous, lectures are unnecessary” (Samuel Johnson). Lecturing is currently considered to be so bad that one author imagines a future when universities are required to issue a warning to students that “lectures may stunt your academic performance and increase risk of failure” (Dawson, 2016). The list of criticisms continues and includes charges such as old-fashioned, overused, obsolete, and even unfair (see, for example, Abrams, 2012; Jensen & Davidson, 1997; Lambert, 2012; Paul, 2015; Segesten, 2012; Wieman, 2014).

Most of us have experienced listening to a lecture in which the speaker droned on and on; our minds wandered, our bodies fidgeted, and we would have dashed for the door had that been an option. One student expressed a similar sentiment: “I was so bored, I feared all the blood had left my head and I would pass out in the aisle” (El-Shamy, 2004, p. 24). Despite the surfeit of disparagements, research indicates that most college and university faculty members still lecture.<sup>3</sup> Lectures have remained popular for many reasons, including that they serve several important instructional purposes. Furthermore, lectures don’t have to be dreary and mind-numbing. We—and students—have encountered situations in which we sat transfixed as we listened to a particularly captivating lecture. Indeed, a colleague recently shared that these kinds of lectures were the transformative events of his undergraduate education.

Although most college professors continue to lecture, researchers have also found that few today rely on the lecture entirely;<sup>4</sup> instead, they use lecture in combination with a variety of other teaching techniques, such as small-group work, case studies, discussion, and

problem-solving—strategies that fall under the banner of “active learning.” Active learning is a pedagogical approach that puts into practice over a half-century of research that demonstrates that, to truly learn, we need to make new information our own by working it into our personal knowledge and experience. As attractive as active learning is conceptually, however, many college teachers struggle with promoting it in practice. For example, assigning students to group work is a popular active learning pedagogy, yet teachers know that it is not safe to assume that students who are talking to each other are learning and that it is equally risky to conclude that students are learning when they are listening to other students talking. Furthermore, although lectures can leave some students disengaged, active learning strategies can engender full-blown resistance. We once overheard a student passionately protest, “Today was awful! My teacher . . .” [with our curiosity piqued, we waited for her to complete her complaint so that we could hear what terrible thing the professor had done] “assigned us to group work!”

Thus lecturing and active learning strategies have potential pitfalls, and although neither method is perfect, neither is despicable. Yet currently there is a fierce debate that sometimes intimates otherwise. This either-or dispute sets educators against each other in ways that we propose are unproductive. In this book, we aim to move past the premise that instructors must choose one or the other approach and suggest instead that faculty members can *combine* lectures with active learning to create a vibrant instructional environment that capitalizes on the benefits while minimizing the constraints of each. Our approach, a form of interactive lecturing, helps professors navigate the process of integrating lectures and active learning into a seamless whole that promotes deep learning.

We begin in Part I of this book by establishing our conceptual framework, which is grounded in research evidence. In this chapter, we answer the following questions:

- What is a lecture, and what is it good for?
- What is active learning, and what purposes does it serve?
- What are the main points of contention in the lectures versus active learning debate?
- Why is this debate problematic? And how can we reframe the basic proposition?

## The Lecture

The word *lecture* comes from the Latin word *lectare*, which translates roughly into “to read” aloud, whereas the term *lecture* means “that which is read.” To ancient Greeks, a lecture was the primary method of transmitting knowledge and information (Brown & Atkins, 1988), and this understanding served as the foundation for later developments. About the sixth century CE, scholars traveled hundreds of miles to European monasteries to hear monks read a book aloud from a lectern; as the monk read, scholars copied down the book verbatim (Exley & Dennick, 2004). With the establishment of universities in the Middle Ages, lectures persisted. Lecturing continued to be a core pedagogy as European higher education expanded during the subsequent centuries, and these traditions were transplanted to the colonies. By the mid-nineteenth century, lecturing was firmly established as the primary method of instruction in the American college classroom (Garside, 1996). But what exactly is a lecture?

## Definitions of the Lecture

Bligh (1999) suggests a working definition of a lecture as “a more or less continuous exposition by a speaker who wants the audience to learn something” (p. 4). The literature is replete with similar definitions, such as the following:

- A lecture is an educational talk to an audience, especially to students in a university or college (*Oxford Dictionary*, n.d.).
- Lecture is a method of teaching in which the instructor gives an oral presentation of facts or principles to learners, who are responsible for note-taking (Good & Merkel, 1959).
- [A lecture is when] a teacher is talking and students are listening (Singh, 2006).

These definitions rely on a view of the lecture as a method of transmitting information. This model of lecturing became the prevalent pedagogy because it provided an essential method for conveying and spreading knowledge, especially in the centuries before the printing press facilitated widespread publication of books.

## Purposes of the Lecture

Lectures have remained popular because they serve several important purposes. We summarize those purposes in Exhibit 1.1.

### Exhibit 1.1 The Purposes of Lecture

Teachers use lectures to . . .

- Present information otherwise unavailable to students
- Present a synthesis of information from across multiple sources
- Organize information into a logical structure
- Share important background and contextual information and ideas
- Highlight similarities and differences
- Clarify confusing concepts, principles, and ideas
- Help learners consolidate information
- Model higher-order thinking strategies and skills
- Convey enthusiasm for the content
- Communicate why content is worth learning

## Active Learning

Despite the trend of describing it as modern, active learning—similar to the lecture—has a long history in education. In 1852, John Henry Newman proposed that true learning consists “not merely in the passive reception into the mind of a number of ideas” but rather “in the mind’s energetic and simultaneous action upon and towards those new ideas . . . and making the objects of our knowledge subjectively our own” (from *Idea of a University*). Page (1990)

traces the origins of active learning back to the eighteenth and nineteenth centuries as found in the work of Rousseau, Pestalozzi, Dewey, Kilpatrick, and Piaget. She describes four common themes associated with active learning, including rejection of traditional teaching methods, belief in the cognitive learning paradigm, faith in the ability of the student, and belief in the importance of the relationship of school to society. Although active learning's roots run deep, the actual term *active learning* wasn't popularized until the late twentieth century with the publication of Bonwell and Eison's (1991) ASHE-ERIC Report titled *Active Learning: Creating Excitement in the Classroom*. But what exactly is active learning?

## Definitions of Active Learning

Whereas definitions for the lecture seem relatively focused and straightforward, descriptions of active learning are broad and imprecise:

- Anything that involves students in doing things and thinking about the things they are doing (Bonwell & Eison, 1991)
- A process whereby students engage in activities, such as reading, writing, discussion, or problem-solving, which promote analysis, synthesis, and evaluation of class content (University of Michigan, Center for Research on Learning and Teaching, 2016)
- A method of learning in which students are actively or experientially involved in the learning process (Weltman & Whiteside, 2010)
- A process of learning through activities and discussion in class, as opposed to passively listening to an expert; it emphasizes higher-order thinking and often involves group work (Freeman et al., 2014)

Thus active learning is typically characterized by attempts to clarify what it *is*—a process or method of doing—as well as by what it *is not*—listening to a lecture.

## Purposes of Active Learning

Active learning provides a means for students to apply knowledge in ways that achieve a variety of learning goals, as summarized in Exhibit 1.2.

### Exhibit 1.2 The Purposes of Active Learning Methods

Teachers use active learning methods to . . .

- Reinforce content, concepts, and skills
- Help students deepen their subject matter knowledge
- Help students develop higher-order thinking skills
- Provide students with the opportunity to think about learning
- Provide students with an opportunity to apply learning through discussion and other activities
- Improve student engagement in learning
- Increase enthusiasm for a topic
- Improve student motivation
- Improve classroom climate and sense of community

## The Debate: Lecture versus Active Learning

The debate over which method college instructors should use—lectures or active learning—is intense, with both sides claiming to have *the* correct claim. The key proposition in the debate is this: *professors should not lecture; they should instead engage students in active learning activities.* Let us explore the fundamental assertions of each side of this debate.

### Arguments against the Lecture

Lecture critics proclaim that “the lecture is dead” and argue that the development of new theories of learning, new instructional approaches for engaged and active learning, and new learning technologies can (and should) take their place in college classrooms (see, for example, Abrams, 2012; Allain, 2017; Gross-Loh, 2016; Lambert, 2012; Segesten, 2012; Talbert, 2016a, 2016b). Critics of the lecture are united on several core contentions.

#### **Contention 1: Students Are Passive Learners in Lectures**

Perhaps the most common reproach to lecturing is that students are passive. This critique is so pervasive that educators have dubbed the lecture a “passive learning” pedagogy. The teacher stands in front of an audience of students and delivers a formal, structured presentation while students listen and take notes. Lecture critics suggest that students are passive in these lecture-based classes because teachers spend too much time lecturing, have too much back-to-the-class and face-to-the-board time, miss opportunities for student activities or engagement, and neglect to provide sufficient ongoing assessment, which means in turn that students receive little feedback on their learning.

Freire and others call this the *banking model*. In his *Pedagogy of the Oppressed* (1968, p. 58), Freire describes the banking model in this way:

Instead of communicating, the teacher issues communiqués and makes deposits which the students patiently receive, memorize, and repeat. This is the “banking” concept of education, in which the scope of action allowed to students extends only as far as receiving, filing, and storing the deposits.

Thus in this view of lecturing, faculty members try to deposit information into the minds of students who store it so that they can call the information up later, when the bill comes due in the form of a test.

#### **Contention 2: Lectures Do Not Offer Students Authority and Control over Their Own Learning**

Lecture critics suggest that to truly engage with their own learning, students need to have some say in what they do and how they do it. Some educators argue that lecture is too teacher-centered and that we should allow students to have some input into the way in which they learn. The concern is that lecturers are too taken with their own roles as the center around which the rest of the classroom revolves to allow students to take control of their learning, whereas

active learning provides students this opportunity. As Weimer (2015), a teaching and learning expert, puts it:

Those of us who shake up the classroom with active learning see value in teacher and student activity. We're committed to students asking questions, attempting explanations, and testing ideas. We want them doing the hard, messy work of learning while we're there to help, support, and yes, correct. We don't feel that our expertise is eroded when teaching and learning happen elsewhere in the classroom. Rather, this dynamic fills the learning space (physical or virtual) with more promise and possibility than we can provide on our own.

### **Contention 3: Research Documents That Lectures Are Not the Best Approach**

Lecture critics have been emboldened by a host of research studies that indicate the lecture is not the most-effective pedagogy for improving student learning. There have been hundreds of experimental and quasi-experimental studies over the past couple of decades that document this finding (see, for example, the well-known study by Deslauriers, Schelew, & Wieman, 2011). Several authors have written excellent research reviews describing these works (see, for example, Hake, 1998; Michael, 2006; Prince, 2004). Moreover, through a process of combining results from several meta-studies to determine an effect size, researchers have confirmed that transmission-based lectures are not the best approach to improving student learning in a college classroom. In particular, a widely publicized, useful meta-analysis by Freeman et al. (2014) compares student outcomes in lectures versus active learning in undergraduate STEM courses through a meta-analysis of 225 studies. The researchers found that when instructors used active learning strategies, student exam scores increased significantly and student failure rates decreased significantly when compared to instructors who used lecture methods alone. Educators have been quick to pick up on this particular meta-study, declaring active learning the “winner” of the pedagogy contest and questioning the very integrity of those who choose to continue to use lectures in the face of such evidence (Felten, 2014). Eric Mazur, the prominent Harvard physicist and educator, for example, stated, “This is a really important article—the impression I get is that it’s almost unethical to be lecturing if you have [these] data.” Mazur goes on to state that the meta-analysis presents “an abundance of proof that lecturing is outmoded, outdated, and inefficient” (quoted in Bajak, 2014). Nobel laureate Carl Wieman argues further that “lectures are about as effective as bloodletting” (quoted in Westervelt, 2016).

### **Contention 4: There Are Too Many Challenges to Learning in Lectures**

Critics of the lecture also cite research related to challenges to student learning in lectures, pointing out the multiple potential problems researchers have identified. First, students often are not sufficiently prepared to participate in a lecture. They may come to learning with misconceptions that influence their ability to learn and that are resistant to change during direct instruction (Dunbar, Fugelsang, & Stein, 2007). Alternately, they may have such novice understandings of the content that it negatively influences their ability to integrate new learning (Hrepic, Zollman, & Rebello, 2007; Schwartz & Bransford, 1998). Second, the human attention span is limited, which interferes with attention during full-length transmission lectures. Critics of the lecture refer to several studies that have found that student attention wanes after a time

during a lecture (Farley, Risko, & Kingstone, 2013; Risko, Anderson, Sarwal, Engelhardt, & Kingstone, 2012; Scerbo, Warm, Dember, & Grasha, 1992). Moreover, students who engage in task-switching behavior (sometimes called *multitasking*), particularly when using computers and especially when choosing unrelated tasks, lose attention as well (Aguilar-Roca, Williams, & O’Dowd, 2012; Hembrooke & Gay, 2003; Kraushaar & Novak, 2010; Mueller & Oppenheimer, 2014; Wood et al., 2011). Third, the limits of working memory can be a challenge for student learning in lectures. If the cognitive load of the information is too high and not been managed appropriately, students will not be able to process the information in ways that result in learning (Hattie, 2016). The constraints to working memory also can affect student ability to take good notes, which deprives them of a valuable record to refer to after the lecture. Fourth, student motivation can be a challenge to lecture learning, and students with lack of interest in the lecture will learn less (Bolkan, Goodboy, & Kelsey, 2016). Furthermore, students are motivated by varied instructional strategies, and teachers who only lecture are not able to capitalize on such motivation (Komarraju & Karau, 2008). Exhibit 1.3 summarizes the challenges to learning using transmission lectures.

### Exhibit 1.3 Challenges of Transmission Lectures

The challenges with these lectures are that they . . .

- Imply that they function as a complete learning experience
- Rely on professorial presentation skills
- Require the teacher to make assumptions about students (what they know or don’t, what they have or haven’t experienced, what they might or might not find confusing)
- Rely on student preparation and readiness to attend to and understand information
- Rely on the limited human attention span
- Rely on student working memory
- Rely on student intrinsic motivation and interest in the topic
- Create opportunities for students to be passive
- Function as if all students learn at the same pace
- Prevent personalized instruction, which may be of particular benefit to marginalized learners

## Arguments in Support of Lecture

Just as there are lecture critics, so there are lecture proponents. Lecture advocates argue that if the lecture were so terrible, it would not have endured as the dominant pedagogy for almost a millennium and that well-done lectures can be a powerful pedagogy. Proponents propose that educators imagine if orators such as Abraham Lincoln, Martin Luther King Jr., or Steve Jobs had assigned audience members to gather in groups to talk to each other instead of giving some of the greatest speeches in history. Defenders of lectures also point to the phenomenal success of TED Talks as evidence of the enduring appeal of good lectures. Proponents also suggest that although students understandably deplore poor lectures, they also recognize the value of good lectures. Strauss (2009), for example, notes that in the many course evaluations he has read, “students love pointed, provocative well-delivered lectures. They appreciate and respect a master narrative . . .” Some proponents of lectures even see active learning as just “another in a long line of educational fads” (Prince, 2004, p. 1). Defenders of the lecture base their arguments on several key contentions.

**Contention 1: Students Can Be Active Learners during Lectures**

Proponents point out that a good lecture is not simply the recitation of facts but rather can take any number of valuable narrative formats that inspire and engage students in learning. For example, a lecture can be a careful construction of an argument that skillfully connects facts and captures the content and critical thinking of the discipline. Or it can provide students with a model of expert thinking or problem-solving. It can also be a captivating story or even a performance, and use tone, emphasis, and pacing to communicate an emotional vitality difficult to convey through other mediums. Live lectures also provide the opportunity for teachers to check in with students “in the moment” and clarify, delve deeper, or change direction as needed.

Lecturing also helps students learn three important ancillary skills, all of which require them to be active learners during lectures. First, students listening to lectures can learn to take good notes. Good note-taking skills involve not simply recording verbatim what one hears but also learning to be attentive and analytical as one reduces what is being said to its essentials. Second, paying attention for a sustained amount of time is a skill that students need to learn. Helping students move beyond the habit of multitasking and instead learn to focus attention teaches them mindfulness and how to “be present,” abilities that are recognized as increasingly important in a culture in which many of us feel distracted and overwhelmed. Third, listening to good lectures requires students to grapple with complex, challenging ideas. Being able to invest the mental energy to absorb a long, intricate argument is hard, active work, and practicing this skill helps students learn to listen more critically. This struggling with multifaceted, substantive content teaches students to be wary of the seductive simplicity of sound-bites and tweets. This, in turn, prepares them to be more responsible and thoughtful workers, citizens, and community members.

**Contention 2: Professors Are Experts and There Is a “Time for Telling”**

The idea of a professor assuming the role “sage on the stage” rather than “guide on the side” (King, 1993) has been taken to task so vigorously that the very idea that professors might tell students anything rather than letting them discover everything for themselves has almost become taboo. Worthen (2015), for example, suggests that “in many quarters, the active learning craze is only the latest development in a long tradition of complaining about boring professors, flavored with a dash of that other great American pastime, populist resentment of experts.” Proponents of the lecture, however, argue that the professor *is* an expert. They also believe, as Schwartz and Bransford (1998) suggest, that there is a “time for telling.” These times include when students need direct answers, when they lack prior knowledge and need to be told what they need to know, when there are conflicting cases and they need information, and so forth. Furthermore, they argue, not all college professors have the skills, especially in terms of facilitation, to ensure active learning assignments are effective, whereas after years of training in their disciplines or fields, they do have the knowledge they need to offer a lecture.

**Contention 3: Support and Research on Active Learning Is Based Primarily in the Sciences**

Many proponents of the lecture point out that the research demonstrating the efficacy of active learning is predominantly based in the sciences and not in other disciplines, such as arts, humanities, or social sciences. They question the inherent assumption that a pedagogical



approach that works well in the sciences necessarily works well in other disciplines. Defenders of lectures point out that lectures are part of a time-honored tradition in disciplines other than the sciences. For example, lecture combined with discussion is essential for teaching the basic skills of the humanities. These skills, which include comprehending and then creatively and critically thinking about big, complex ideas, have been at the heart of a liberal arts education since ancient Greece because their value extends beyond the classroom and prepares learners to be good citizens. Lecture advocates further suggest that we educators acknowledge and value different instructional methods, so why not acknowledge the value of lecturing as an important tool in an expanded repertoire of teaching strategies? Worthen (2015), particularly, is critical that the push for active learning in all disciplines is an attempt “to further assimilate history, philosophy, literature and their sister disciplines to the goals and methods of the hard sciences—fields whose stars are rising in the eyes of administrators, politicians, and higher-education entrepreneurs.”<sup>5</sup>

#### **Contention 4: There Are Cognitive Benefits to Lecture-based Learning in Comparison to Active Learning Methods**

Countering the claim that there are too many challenges to learning in lectures, some educators argue that the lecture provides important cognitive scaffolding for students. Specifically, as a form of direct instruction, lectures can be particularly helpful to novices by providing them with the cognitive structuring they need to stay alert and active. Lecturing can help learners acquire foundational knowledge in efficient ways that prepare them to apply this knowledge productively. However, “minimal guidance” instructional methods, they argue, are not the most-effective instructional approach. The basic premise is that active learning ignores human cognitive architecture, the limits of working memory, issues of cognitive load, and expert-novice differences (Kirschner, Sweller, & Clark, 2006). For example, students with limited prior background on a topic simply do not have the knowledge they need to participate effectively in active learning assignments such as discovery learning, small-group discussion, or casework. As a result, they waste time and energy on unimportant details or, worse, learn or reinforce inaccurate information. Furthermore, attempting to participate in activities that ask them to apply concepts they don’t yet even understand leaves them bewildered and frustrated. Thus active learning methods are not without their challenges, as we illustrate in Exhibit 1.4.

##### **Exhibit 1.4 Challenges of Active Learning Methods**

The challenges with active learning methods are that they . . .

- Do not *guarantee* high levels of student engagement in learning
- Can hinge on professors’ pedagogical knowledge to do well
- Can rely on professors’ facilitation skills to get students to higher levels of engagement
- Can depend on students’ existing knowledge, which can vary by student
- Require student willingness to participate
- Can rely on student engagement in the activities
- Challenge student expectations of what being taught means
- Can make some students anxious, particularly if they are unprepared or unable to participate
- Can be more challenging to promote in large classes
- Can be less efficient than “telling”

## Reconsidering the Debate: How We Frame It Matters

It appears that those who favor active learning are against lectures and vice versa (Paff, Weimer, Haave, & Lovitt, 2016). But is this really the case? If you look more closely at the arguments, you see that those who argue for the lecture almost always talk about the activities they incorporate into their lectures. Alternately, you see that almost all of those calling for the death of the lecture admit that they do some “telling” in their classes. If you examine surveys and observations of faculty practice, you find that most faculty members are incorporating varying degrees of lecturing and active learning (see, for example, Eagan et al., 2014; Ebert-May et al., 2011; Goffe & Kauper, 2014; Hora, 2015; Macdonald, Manduca, Mogk, & Tewksbury, 2005; Mathematics Association of America, 2013; National Survey of Student Engagement, 2015; Smith & Valentine, 2012). Finally, if you drill down into the research, very few of the research studies are of 100 percent lecture compared to 100 percent active learning. Rather, they are investigating classes with almost continuous exposition by an instructor compared to classes with *some* active learning to *some* exposition.

Thus, part of the problem with the current debate is that we have not yet settled on a common language to describe what happens in a college classroom, particularly when it comes to these two pedagogies. We say that active learning is better than “the lecture,” but that ignores that “the lecture” is not a single monolithic thing. Bruff (2015), for example, proposes that there is a challenge in the terminology because *lecture* does not mean the same thing to all people; however, he notes that to many, it implies continuous exposition by the instructor. We agree with this contention and suggest several different dimensions across which lectures can vary, which we describe more fully in our Tip 10: *Select-a-Structure*. The two most important variables for this discussion, however, are how long a lecture lasts and how interactive it is, as we illustrate in Table 1.1.

Thus lecture formats can vary, but researchers have not delved deeply into the different approaches to lecture. What we do know is that a full-length, one-way lecture is not as effective as a mix of lecturing and active learning. For this reason, we argue that researchers need to be asking more nuanced questions about the lecture. When is a lecture useful? How much lecturing is too much? What kind of lecture is best? What supports are most effective?

Similarly, educators also have a tendency to talk about “active learning” as if it is a single monolithic thing. Yet educators include a host of instructional activities or techniques as

**Table 1.1** Lecture Duration and Interactivity

<b>Duration</b>	<p><b>Full-session lecture.</b> The full class period in continuous exposition of content</p> <p><b>Lecturette.</b> Approximately fifteen to twenty minutes, often linked with other lecturettes</p> <p><b>Mini-lecture.</b> A brief, focused content presentation that lasts about five to fifteen minutes in length</p> <p><b>One-minute lecture.</b> Approximately one minute of focused content; also termed <i>micro-lecture</i> when designed for online delivery</p>
<b>Interactivity</b>	<p><b>One way.</b> Little interactivity, with questions entertained at the conclusion of the lecture</p> <p><b>Two-way, limited.</b> Occasional interactivity initiated by instructor</p> <p><b>Two-way, negotiated.</b> Occasional interaction initiated by instructor or students</p> <p><b>Participatory.</b> Students involved in varied exchanges, initiated by instructor and students</p>

**Table 1.2** Examples of Active Learning Methods

Active Learning Technique Examples	Active Learning Pedagogy Examples
<p><b>Think-aloud pair problem-solving.</b> Partners solve problems aloud to try out their reasoning on a listening peer, which emphasizes process (not product) and helps them identify process errors.</p> <p><b>Three-step interview.</b> Partners interview each other and report what they learn to another pair, which helps students network and improve communication skills.</p> <p><b>Think-pair-share.</b> Students think individually for a few minutes and then discuss and compare their responses with a partner before sharing with the entire class, which prepares students to participate more fully and effectively in whole-class discussions.</p> <p><b>Snapshots.</b> The instructor poses a single question or two, and students respond individually. They then try to convince their assigned partners that their responses are correct. The instructor provides the answer so students can assess whether they were correct.</p>	<p><b>Cooperative and collaborative learning.</b> Students work together to solve a problem, complete a task, or create a product.</p> <p><b>Team-based learning.</b> This is a specialized form of collaborative learning teaching strategy designed for units of instruction, known as <i>modules</i>, which are taught in a three-step cycle: preparation, in-class readiness assurance testing, and application-focused exercise.</p> <p><b>Problem-based learning.</b> This is an approach in which students learn about a subject by working in groups to solve an open-ended problem.</p> <p><b>Flipped classrooms.</b> This is a pedagogical model in which the typical lecture and homework elements of a course are reversed. Short video lectures are viewed by students at home before the class session, and in-class time is devoted to exercises, projects, or discussions.</p>

well as more elaborate pedagogies under the banner of active learning. We illustrate just a few examples drawn from a very large pool of techniques and pedagogies in Table 1.2.

Although there is some research comparing different pedagogies against the full-class lecture (e.g., project-based learning [PBL], cooperative learning, team-based learning [TBL], and so forth), we don't know the particular features of these approaches that improve learning most.<sup>6</sup> Thus, what we don't know is what kinds of active learning are best for promoting what kinds of learning in what kinds of disciplines and fields. We simply need more research into what really works with which students in what educational contexts.

## Conclusion

We propose that the debate between lecturing and active learning has become acrimonious and unhelpful, partly because it perpetuates a false dichotomy. Whether to lecture or not to lecture is not the question. Whether to use active learning or not use active learning is not the question. Teachers use lectures *and* active learning in their classrooms, and most don't stress over the distinctions between the two; they are simply teaching students. The real question is how to do this well. It is time to set aside our differences, adopt a common language so that we can better communicate, and get on with the art and craft of teaching students. In short, we need to reframe the current conversation and engage in a more-productive discussion about teaching and learning in higher education. We believe that a start to breaking down this fallacy is seeing that lectures and active learning can be combined in ways that capitalize on the benefits of each and minimize the challenges. The purpose of this book is to help our fellow college teachers find methods to integrate lecture and active learning in ways that best promote student learning and engagement.

## Notes

- 1 According to *Harvard Magazine* (2013), the author of this adage is actually Alfred Capus, a well-known French journalist, and attributes the difference to a typo.
- 2 Some attribute this adage to Fulton J. Sheen, perhaps quoting Thomas Aquinas (Dawson, 2016). There is also a similar adage attributed to George Leonard: “[Lecturing is the] best way to get information from teacher’s notebook to student’s notebook without touching the student’s mind” (Strauss, 2017).
- 3 In surveys of students in which they are asked about their classroom activities—such as the National Survey of Student Engagement (NSSE) or those conducted by the Mathematics Association of America (MAA)—responses indicate that the proportion of faculty members who lecture is somewhere between 60 and 75 percent. Surveys of faculty members show a lower but still impressive percentage. For example, the Higher Education Research Institute’s survey of faculty (HERI) indicates that over 50 percent of faculty members report that they lecture “extensively” (Eagan et al., 2014). However, direct observation of faculty teaching suggests that the percentage may be higher. For example, Ebert-May et al. (2011) surveyed faculty members after completing a weeklong active learning workshop and determined that although 89 percent of instructors reported that they were employing active learning, when observed, 75 percent were still heavily dependent on the lecture. Clearly many college professors continue to rely on the lecture as their primary pedagogical tool.
- 4 The Faculty Survey of Student Engagement (FSSE) (<http://fsse.indiana.edu/pdf/2014/FSSE%202014%20Faculty%20Time%20-%20Teaching%20Related%20Activities.pdf>) estimates that faculty members spend nearly 40 percent of their time on lecturing, which in a fifty-minute class would mean about twenty minutes. Direct observation of instruction supports this report. Hora’s (2015) observational study, for example, found that most faculty members lectured for periods of twenty minutes or less.
- 5 Although much of the research is based in sciences, there are some signs of change. Gasper-Hulvat (2017), for example, reviewed research on active learning in art history and found that active learning improves student-learning outcomes. Mello and Less (2013) looked across disciplines traditionally taught in arts and sciences and found gains of active learners to be significantly higher than their counterparts; in addition, active learners showed less variability in gains in academic performance than their counterparts.
- 6 However, there are some signs of change on this front. Strevler and Meneske (2017) have examined features of active learning that appear to be more effective. They have found that interacting with others and creating new information and content are related to even greater gains in student learning.