

# Saving Lecture From the Dustbin

James D Blagg Jr, PhD, R.T.(R)

**H**istorically, the most universally applied method for addressing cognitive objectives in teaching has been the lecture method. However, the traditional lecture method where faculty members spill out information and students write it down and go away to learn the pearls of wisdom has fallen out of favor. I agree with Christopher Rice who wrote:

*the 50-minute lecture is destined for the dustbin of history. Let's face it, most instructors simply aren't good enough to carry a full 50 minutes. And trying to do so — especially armed with cognitive load-busting, bullet point-packed slide decks — is causing educational harm.<sup>1</sup>*

According to Rice, rather than the “sage on the stage” or “guide on the side,” there will be a growing embrace of the sage on the side. In other words, the instructor will no longer stand on the stage and lecture, nor will the instructor simply provide guidance. There is still a need for the sage — the instructor with high-quality, in-depth knowledge of the subject matter, but the instruction will not be from the stage.<sup>1</sup> It seems there has been and will continue to be a growth of learner-centered teaching models.

Fink stated that if educational institutions want to achieve more powerful learning, college professors must learn about and use more powerful teaching methods. He indicated that active learning, learner-centered course design, effective use of small groups, educative assessment, reflective writing and learning portfolios,

and a deeper understanding of how people learn are examples of concepts and theories to be considered.<sup>2</sup>

Fink also suggested that this level of change needs to be stimulated at the national level by organizations involved in higher education that can influence individual universities and colleges (eg, disciplinary associations like the American Society of Radiologic Technologist, and accrediting associations like the American Registry of Radiologic Technologists).<sup>2</sup>

Fink claimed that “traditional” ways of teaching (eg, lectures, homework, and textbooks) risk being boring and make it difficult for students to retain the information. He also claimed that teaching aimed primarily at conveying knowledge is outdated because students can look up information on their cell phones faster than it can be talked about. According to Fink, students need to be actively involved in the learning process, both in and out of class.<sup>2</sup>

According to Bain, the best teachers establish a natural critical learning environment that engages students in higher-level intellectual activity. He stated that teachers should encourage students to compare, apply, evaluate, analyze, and synthesize, but never only to listen and remember.<sup>3</sup>

Harvard University held a conference to “jolt university teaching.” It showed that there is a growing body of evidence from the classroom, coupled with emerging research in cognitive psychology and the neurosciences, about how students learn, but teaching on most college campuses has not changed much.<sup>4</sup> Several speakers at the

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conference described conventional teaching approaches to be ineffective. Several points were made about the lecture method. It:

- Is designed to transfer information and does not fully accomplish even this limited task.
- Sets up an environment in which students passively receive information that they quickly forget after the test.
- Does not help students confront their misconceptions and they walk out with a false sense of security.
- Fails to encourage students to make meaning from what has been presented, ask questions, extract knowledge, and apply it in a new context.<sup>4</sup>

Lang stated that in the lecture-only model, comprehension lies outside the classroom. That is, students do not develop true comprehension until they apply the concepts to solve problems or answer questions. This occurs outside the classroom when the faculty member is not around to help or give feedback.<sup>5</sup>

### Interactive Lecture With Activity Breaks

There are ways to pull lecture from the dustbin, brush it off to avoid pitfalls of the traditional lecture method, and make it effective by making it interactive. This would move it toward learner-centered teaching, an approach becoming common in colleges and universities. A learner-centered teaching environment grows out of curricular decisions and in-class activities that encourage student interaction with the content, with one another and the teacher, and with the learning process. It encourages student reflection, dialogue, and engagement, and it requires a reliable assessment of their mastery of content.<sup>6</sup>

To make a lecture interactive and learner-centered, at a basic level, one can include active breaks (ie, a pause in the lecture for an activity) to allow students to interact with the material for brief, controlled periods of time. The faculty member must carefully control these breaks and strictly enforce the time limits.<sup>7</sup>

Examples of break activities include:

- Pair and compare – at an appropriate point in the lecture, the faculty member pauses the lecture and asks students to pair off with a neighboring student. The pair compares lecture notes, filling each other in on what they may have missed. This makes students review and mentally process lecture content.
- Pair, compare, and ask – this is the same as the

previous activity except students also write down questions on the lecture content. The faculty member then fields questions that students cannot answer between themselves.

- Periodic free-recall, with pair-and-compare options – students put away their notes and write down 1 to 3 important points of the lecture up to that point, as well as any questions they may have. By working in teams of 2 or 3, they can answer some of each other's questions, thereby reviewing and mentally processing the lecture content.
- Listen, recall, and ask, then pair, compare, and answer – the faculty member has students listen to a short lecture, with no note-taking allowed, and then has them write down all the major points they can recall, as well as any questions they have. The students then pair off and compare notes, filling in what they missed and answering each other's questions.
- Solve a problem – the lecture is paused and students are asked to solve an equation or work problem (eg, exposure calculations) based on the lecture content. They can work individually, but it is better if they work in groups of 2 or 3. Students apply lecture content while it is fresh and are immediately informed as to how well they understood the lecture material. The faculty member then can clarify any misconceptions before moving to new material.
- Quick case study – students are asked to debrief a quick case study that has them apply the lecture content to a realistic, problematic situation. Students are instructed to write down their answers. They work in pairs or small groups.
- Pair/group and discuss – students pair off with a neighbor or form small groups to discuss an open-ended question that asks them to apply, analyze, or evaluate material in the lecture or to synthesize it with other course material. The question should have multiple correct answers. Students are instructed to write down their answers. This activity encourages students to examine and extend, as well as process, the lecture content. It also serves as a great prelude to a general class discussion.
- Pair/group and review – this activity is the same as above but with an essay question designed for pre-exam review. Student pairs or groups present

their answers to the class. The faculty member can mock-grade to demonstrate assessment criteria, or can have the rest of the class mock-grade. The latter helps students learn how to assess their work.<sup>7</sup>

## Flipping the Classroom

A fairly new concept, and a variation of using break activities with lecture, is “flipping the classroom.” Flipping describes the inversion of expectations in the traditional college lecture. It takes several forms, including interactive engagement, just-in-time teaching (ie, students respond to Web-based questions before class and the professor uses this feedback to inform that day’s teaching), and peer instruction.<sup>8</sup>

In a flipped classroom, the faculty member may post lesson materials in advance and assign students to review the lessons before coming to class. The faculty member instead may give a short lecture when students arrive in class. When assigned to review lessons before class, an activity break is given before any further lecture occurs. Otherwise, the activity break follows. Students break into small groups and do what is typically thought to be homework. They solve problems or address scenarios with their professor or peers, and apply what they learn to new contexts. In many cases, they continue this peer interaction outside class. This immediate feedback helps correct student misconceptions well before an examination, and produces more learning.<sup>8</sup>

For example, a biology teacher breaks after a lecture and assigns students to work in small groups to solve a problem or to persuade one another that the answer they arrived at before class is correct. The student groups are scattered around the classroom. The professor drops in on each group to ask and answer questions and to find out where students are stumped. Students are effectively teaching each other, with a sage, or faculty content expert, on the side.<sup>8</sup>

Research conducted at institutions that have used the flipped classroom have documented greater gains in their students’ conceptual understanding. At 1 institution, this kind of learning resulted in nearly double the gain of those in traditional lectures. In 1 case, it was found that students not majoring in physics in a flipped physics class outperformed physics majors who took the same course in a traditional lecture class.<sup>8</sup>

## Conclusion

Many other useful activity breaks likely exist. The point is not that only the examples reported in this article should be used, but rather that straight, traditional lecture to a passive group of students may not be productive. The more the faculty member can do to actively involve students in the content, the deeper the learning that will occur. That applies, of course, to any instructional method, not just to the lecture method.

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*James D Blagg Jr, PhD, R.T.(R), is a professor of health sciences and director of the bachelor of science in health sciences program at the Massachusetts College of Pharmacy and Health Sciences in Boston. He can be reached at james.blagg@mcphs.edu.*

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