Letters to the Editor

Lifeguard Final Exam—Encouraging the Use of Active Learning

To the Editor,

To anyone familiar with the extensive literature on teaching and learning, there is little question that active learning is more effective than passive learning. Thus, we are not directing this letter to that particular audience. Instead, we are attempting to address the question of the best way to convince instructors who have not tried to incorporate elements of active learning into their courses to make such an attempt. There are numerous examples where it becomes immediately clear that active learning is preferable to a lecture/note-taking approach. Here, we provide a question for group discussion that can be used as one such illustration.

If you were drowning, which course would you prefer that the person who was about to try to save you had taken?

1. Swimming 101 (Basic Lifeguard Training—Lecture): A beginner course on swimming, no experience needed. Class meets in room 207, Kinesiology Building. The instructor is a skilled swimmer who will lecture three days each week on methods of swimming. Guest experts will introduce advanced methods using films and computer simulations.

2. Swimming 101AL (Basic Lifeguard Training—Active Learning): A beginner course on swimming, no experience needed. Class meets at the swimming pool, twice each week. The instructor is skilled in swimming and will help you practice basic swimming strokes. Wear swimming attire and bring a towel.

When this question is posed to an audience that is asked to discuss the alternatives in groups and then provide a group answer, they invariably choose Swimming 101AL. The reasons they make this choice vary but, in general, come down to a simple response: If you want to learn to swim you have to get wet.

We use questions such as the one above to demonstrate to the class an obvious concept, that at least in some situations active learning is preferable. The swimming example is rather striking but does not invite a very prolonged discussion. Accordingly, we typically follow with another question:

Imagine that you walk into a room and attempt to turn on the light by flipping the light switch for a table lamp. The light does not come on. Assuming you want the light to be turned on, what would you do?

We ask the audience members to first make a short list of answers individually. Next, we ask them to discuss their answers in groups, and then we ask for group answers. The responses include trying the switch again, checking to see if the bulb is screwed in tightly or is broken, seeing if the circuit breaker has popped, trying the lamp in a different outlet, looking outside to see if the power is out for the entire block, etc. After writing down all of the suggestions, we then ask the students to discuss how they would go about determining whether any of these possibilities was correct. In this case, the answers need to be a little more involved. For example, to determine whether the switch is faulty, you might need to replace it, although you might want to first check the bulb by either tightening it or taking it out and shaking it, etc. In addition, we ask how many people found that they had more answers as a group than they did individually (usually this is unanimous), and we point out that the group can be beneficial because people can draw on a wider range of experiences to solve the problem. The light bulb not turning on is a good problem because everyone is familiar with this situation, so they can easily relate to it, and there are multiple answers. In addition, the participants usually enjoy the opportunity to work together instead of listening to the instructor lecture them or taking notes. Finally, after discussing the various possible solutions, we ask, rhetorically, how many people in the audience have taken “Lightbulb 101” or any other course related to lighting fixtures—the point being that it is not necessary to have a formal education on all topics in order to apply your knowledge to solving a relevant problem. Stated differently, it is more important to learn how to go about solving problems than to memorize lots of facts. After “working” on this problem, the class is usually receptive to additional group activities.

If it is so obvious that group-based active learning is more effective, why are many instructors reluctant to incorporate this methodology into their own courses? Obstacles to the implementation of active learning come from four primary sources: 1) The administration—lack of support at research-based institutions because tenure is based primarily on research, not on teaching. 2) Students—they are typically unfamiliar with active learning and expect a lecture. In addition, most students prefer not to study unless they are forced to do so. 3) Faculty colleagues—at research-based institutions, your very credibility as a researcher can be called into question if you express an actual interest in teaching/learning. 4) The instructor—two common concerns are limitations due to the size of the class and the need to reduce content to make up for the time spent in problem solving.
In our opinion, none of these issues should preclude the use of active learning:

1. Although research may be the primary consideration for promotion, good teaching will certainly help. Furthermore, it is not necessary to spend a tremendous amount of time to begin to incorporate active learning into your existing teaching. In fact, in some ways it is preferable to begin with standard lectures. By assessing student performance when using a lecture approach, it is possible to establish a baseline against which you can compare subsequent pedagogical innovations. As scientists, we think it only natural to compare different teaching methods experimentally (i.e., in the classroom) to determine which works best for a particular course (3, 4).

2. Students are generally willing to follow any format as long as the rules are clearly spelled out and the instructor is confident in the approach being used. With the method that we use (5), students are required to study before every class. Even though they initially consider this a burden, they soon realize the benefits of keeping up with the material and coming to class prepared. Sadly, this is a new experience for most students, as most studying usually occurs only when an exam is imminent; a typical course has two midterm exams and one final exam, meaning that most students try to learn the material at three key points during the course, rather than on a daily basis.

3. There are many ways to address this issue, depending on your particular circumstances. In brief, even at research-oriented institutions, there are likely to be colleagues who are interested in being effective teachers, and you may find that a learning community (7) is a useful way to share ideas and provide mutual support.

4. First, introductory classes are often very large, and it is not clear that a lecture is particularly effective in that scenario (1). We have used an active-learning format in a class of 220 students (2, 3) and would use the same method regardless of class size. Certainly some modifications need to be made for extremely large classes. For example, groups in rooms with fixed seating are essentially limited to the people seated next to each other, but this does not appear to be a problem and in fact can be an advantage. It can be beneficial to have random groups of students interact instead of groups of people who know each other well; in the latter situation, one student is often dominant in the discussion and this pattern, if based on long-time experience, can be difficult to break. Second, we consider the concern about breadth of coverage to be somewhat spurious. That is, we are not convinced about the value of breadth relative to depth. In fact, we would propose that it is more important to actually learn a limited amount of material than it is to simply cover (i.e., in a superficial manner) a larger amount of information (6). In practice, we cover the same amount of material when using an active-learning approach as when we used a lecture format. The primary difference is that most of the breadth coverage is the responsibility of the students prior to class, whereas the instructors assist with a deeper, conceptual understanding; this is most effective when the students come to class prepared, having read the material assigned for that day, and having learned the information covered previously.

We think that continued use of active learning will shift the focus from teaching to learning, will promote a movement away from passive approaches to active ones, will place an emphasis on concepts and problem solving rather than on facts and memorization, and will foster cooperative learning rather than individual competition.

Sincerely,

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REFERENCES