Active learning: If it works, why aren't we all doing it?

J.A. Michael, Department of Molecular Biophysics and Physiology, Rush Medical College, 1750 W. Harrison St., Chicago, IL 60612, USA. (Introduced by M. Roberts)

What is active learning? We are all familiar with passive learning (rote memorisation). When students are engaged in active learning, on the other hand, they are overtly testing and refining their mental model of the new information being acquired. Active learning is usually interactive, and it is much more student-centered than passive learning. When students learn actively they are more likely to achieve meaningful learning (learning with understanding).

What does it mean to say that active learning "works?" When we ask whether active learning "works" we need to be clear about what criteria are being applied. Does more learning occur? Is more knowledge accumulated? Is less time required for learning? Is the learning "deeper" (greater understanding)? Is retention of new knowledge better . . . short-term or long-term? Or are we asking whether students, or even faculty, "like" it better than something else?

How would we attempt to find out if active learning "works?" Obviously we need to define some measure(s) of the outcomes to be assessed. We would want to try active learning in a wide variety of disciplines and courses, and with a wide variety of students. Unfortunately, the wider our sampling, the greater number of known and unknown variables that might be present to influence the outcomes we measure. Finally, we are clearly most interested in long-term outcomes (does active learning affect performance or behaviour one month, one year, 10 years later). But even if we can do the required studies, the longer we wait to look, the more intervening influences will be present (other than the exposure to active learning) that can potentially affect the results.

Does active learning, in fact, work? The available evidence, whether obtained in the cognitive science laboratory or the classroom, overwhelmingly supports the efficacy of active learning. That is to say, active learning has been shown to result in more learning with understanding, acquisition of more knowledge, and better retention of what is being learned, at least in the short term. There have been few, if any, studies carried out about the long-term effects.

If active learning "works," why aren't we all doing it? It is clear that we do not all teach in a way that encourages and facilitates student active learning. There are many reasons for this. First, change is always difficulty and many teachers perceive that a change to an active learning mode of teaching would require too much additional work. Second, teaching in an active learning environment can be scary for many teachers, even quite experienced ones. The teacher has less "control" than in a more passive learning environment and students are more likely to ask questions for which the teacher doesn't have ready answers. Third, many teachers fear that active learning will take so much time that they will not be able to "cover" all the material they think they need to cover. Finally, many teachers are discouraged from pursuing more active learning approaches by clear opposition from students who do want to have to learn in a new way.

What does it take to get started doing active learning? The two necessary, if not sufficient, steps are: (1) recognition that learning is done by the learner and only the learner, and (2) recognition that your job as a teacher, really the only thing that you can do, is to help the learner to learn! Once you have redefined your job in this way you will find that creating an active learning environment in your classroom is a natural step. Then, of course, you have to actually do it.