The Return of Socrates-
Interactive Learning with Voting Technology

Context and Setting

We describe here the feasibility of an interactive voting modality to enhance learning in lectures to physicians and medical students. In reply to questions posed by the lecturer, participants respond using wireless keypads and a computer-assisted device displays a histogram describing the distribution of answers, providing instant feedbacks to the lecturer and to the audience. The modality appears logical, feasible, acceptable and congruent with current theory of adult learning but there are still very few studies probing its effectiveness in general education or in medicine. It may particularly fit educational challenges that demand departure from attitudes, intuitive diagnosis or preconceived notions - by making them explicit.
Why the Idea Was Necessary

Traditional lectures, with transmission of knowledge to a passive audience, have limited ability to maintain attention and to promote change in practice behavior. Innovational modes, such as problem-based learning and case discussions, are being searched for active learning that stimulates the audience to think and participate. While stimulating attention, the anonymous mode of a voting system allows both physicians and medical students a non-threatening realization of knowledge gaps, essential for effective learning. In contrast to the deterministic messages often inherent to expert lecturing, this modality facilitates probabilistic thinking, listening to alternative options and recognition of misconceptions, major ingredients of modern clinical learning.
What Was Done

We tried two of existing interactive teaching systems with infrared-based communication technology (we paid around $5,000 for a system with 100 transmitters). Using questions to the audience during lectures, the electronic interactive voting system was tested to provide real time information about knowledge, understanding or attitudes. Over the last three years, experience has been gained from over 25 lectures to nearly 500 physicians (including residents, board-certified specialists and primary care doctors) and from several courses to more than 400 students. The system promoted the use of case discussions and problem solving exercises. Voting technology helped shifting lectures to an interactive mode that promotes group thinking and provides instant feedback to the teacher and to the audience.
Experience with medical students showed that interactive teaching facilitated probabilistic thinking, such as the application of likelihood ratios in diagnosis: at the end of a session, most students would correctly combine pre-test and test information and refuse to interpret a test result without a pre-test probability. Evaluation of the interactive response system revealed that most attendants felt that the system to a great or very great degree promotes interest and participation in the lecture. The introduction of such a teaching aid requires the development of a training program to expose faculty to the principle of active learning and provide them with the skills needed to utilize the equipment efficiently, including how to structure a lecture with appropriate questions. Today’s technology allows an affordable voting system - as an electronic, group version of the Socratic method – that facilitates interactive teaching, to enhance lecturing in medicine. In our experience, this modality may improve the quality of clinical learning and deserves further evaluation.