

My word

Colored chalk Eve Marder

On the first day of teaching a new class I carry with me a stack of paper syllabi and a new box of colored chalk — each pink, yellow, green, purple, orange and blue stick unblemished and whole, ready to be eroded and broken in the service of teaching neuroscience. My teaching assistants carefully post the syllabus on the web, and even more carefully update it to accommodate my inability to stick precisely to its dictates. But I still teach the old-fashioned way, on the blackboard.

Already some of you are saying to yourselves, but why is she still teaching with chalk in this era of PowerPoint and of publishers who willingly offer all the teaching tools one could imagine? I still teach with chalk as an act of faith. It is not merely because I am used to it, nor because I can't understand PowerPoint, nor because my institution is slow in equipping its classrooms with modern technology. I teach with chalk because I believe that my ability to teach effectively depends on chalk.

There is much discussion about the future of the medieval institutions known as universities in our modern technological world. These discussions instantly force us to confront the deeply disconcerting question of the value of classroom instruction by a fallible faculty member.

When asked, students often say that they like material presented in an organized fashion, and they claim to like class notes on the web. But if one listens to their complaints about their education, they often speak bitterly about faculty who do nothing more than fill in small holes in the

notes that are posted on the web. They complain that they are not “heard” or “cared for as people,” and that they don't like being anonymous web consumers of knowledge. More importantly, I think there is an essential fallacy underlying providing students with class notes. The premise is that if students don't have to take notes, they can think during class. In reality, I think that when students don't have to take notes, a large number of them sleep through class (either in the classroom or elsewhere).

When students don't have to take notes during class, this doesn't necessarily mean they think

Teaching with chalk forces students to experience the material in real time. The tangible reality of chalk and board create the moment — remember Marshall McLuhan's “The medium is the message” (1964)? As I draw or write on the board it gives my students the time to take notes. Images ready-made in PowerPoint or on overheads can come and go too quickly for students to process, and the images can be too complex, making their core principles difficult to discern. (Because I can't draw very well, I can only make diagrams showing the essential points.) Teaching with chalk makes it easy to stop mid-thought or mid-diagram and ask the class what comes next, making students active participants in the developing logic of the lecture.

My students know that I am likely to make some mistakes while writing, so they learn to be vigilant during class; the act of catching those mistakes gives them individual and collective ownership of the material. My need to erase forces delays that give students important time to process material, and spawns questions. Large boards defeat the

linearity of time: they allow me to draw an arrow making connections between material presented many minutes apart. And for the instructor, the lack of a planned PowerPoint presentation makes it psychologically so much easier to digress, either in response to student questions or to something that just seemed like an interesting thing to talk about. I suspect that it is precisely those unplanned moments that provide the conceptual frameworks that make good live instruction so valuable.

Obviously, it is foolish to deny the benefits of new technology. The medieval university survived the printing press; even after the ready availability of textbooks students still found it valuable to attend lectures. So I trust students will still find value in live instruction in the era of online education. But that means that live instruction must be qualitatively different from web-based instruction. At the end of the semester my students have watched me leave class 39 times with chalk on the back of my shirt where I have leaned on the board. They sometimes tell me that I have chalk smudges on my cheeks, and they know that I have to wash my hands before I can sign any of their papers. Perhaps my being covered in chalk makes me more approachable, as well as more colorful. At the end of the semester my box of colored chalk has been reduced to small broken and dirty pieces.

The organic chemist who leaves boards of flawless reaction mechanisms and the physical chemist who leaves neat differential equations remind me of the laborers who construct ice sculptures and sand castles — works of art that exist only in the moment but with lasting value for those who have made and seen them.