

# The ethical responsibility of teaching

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Dear readers,

If you were a general, going to war, you would teach your students warfare, strategies and tactical movements to reach your objective to defeat the enemy. In order to do so you accept that people would die, some on your enemy side and some within your own troops. If you were a physician, you would teach your students how to prevent and treat diseases. Would you teach them how to kill a human being? – Of course not, since physicians must comply with the Hippocratic Oath. This simple example shows that in medicine teaching is not that easy. The amount of new knowledge created per year has dramatically increased in every field and the speed of change is still increasing. Unfortunately, it takes sometimes many years until a discovery makes it into accepted clinical routine. For instance, Buonocore had first published a method to bond resins to enamel in 1955. When I was entering clinical dentistry as a student in 1972 we were taught enamel etching techniques as the newest thing. How do we teachers deal with this time difference? A standard way is not to teach new procedures until there is some evidence that the new therapy is effective and does not show any negative side effects. This may be a good way out, but unfortunately, there are more complications. Many years ago, when worldwide adhesive technology was accepted as being clearly superior, I visited a dental school and was shocked to see that they were teaching how to prepare dove tail retentions for Class III composite restorations. I asked why they do this. The answer was that the students need to know this, because it was required by the state board and if they were not able to do this they would fail. Knowing that the board exam is done on real teeth of real patients this creates an ethical dilemma. Hippocrates taught us “*primum nil nocere*” so my ethical compass tells me not to teach a dove tail retention, because it definitely requires removal of more sound tooth tissue than required for the restoration using adhesive techniques. On the other hand, I know that my students have a higher risk to fail the board, if they don't practice. This creates a conflict of interest, since on one side as a physician I must comply with ethical rules and protect the patients from harm but as a teacher, I am expected to be loyal to my students. A similar conflict with some boards exists in the interpretation of the radiological interpretation of proximal caries in posterior teeth. Many years ago it was unchallenged that when a decalcification was radiographically visible in the proximal enamel and deeper, this was an indication for a Class II restoration. Over the years the knowledge in cariology has increased and we have learned that lesions can be managed as long as the surface is macroscopically intact. It is known from epidemiological studies that approximately half of the lesions that radiologically appear to just have reached the dentin do not show any cavitation. Many years ago techniques have been described how to separate teeth with such lesions, in order to inspect the proximal area. With this, the correct treatment decision can be made. Despite such appealing evidence, there are boards that ignore these facts and insist that the ideal lesion is one that has just reached the dentin-enamel junction. In order to have measurable criteria, a “board” cavity preparation must be one similar to the ones GV Black has described more than a 100 years ago, which means that not only a cavity is drilled, where according to today's standards there is no indication for, but the cavity preparation is not

only larger than needed, but also has a shape that does not allow the best possible bond between the composite material and the tooth. In the view of these facts, the conflict of interest is the same as described above. Some schools offer so-called mock boards, which I consider even worse, because in this scenario the student clearly uses the patient to practice an unethical procedure for his/her own benefit. This sends out the wrong signal: "You can sacrifice ethical considerations for your own benefit". Doing this we should not be surprised that some dentists do overtreatment just to improve their financial situation.

Good teaching requires feedback; better teaching allows self-assessment by the students. This means that reproducible measurements are needed, which is very difficult to achieve with defect oriented cavities for adhesive restorations. So this is a problem for beginners, learning how to cut into plastic teeth. One way around this is to first instruct box-shaped cavities for Class III cavity preparations, which can be easily measured with a periodontal probe. However, doing this we engrave in the students brain a faulty cavity preparation, which does not correspond to the clinical reality. I wonder if the harm that may result from this can be justified for the advantage of a simple measurement.

Looking at all these conflicts, it seems almost impossible to find a solution. To find one we have to look at a different, even more complex teaching situation. The best way of how to learn to fly is flying on a plane with double controls - one for the student and one for the teacher. Tell, show, do, is the classical approach here. The problem of flight instructors is how to teach difficult situations that are dangerous. Therefore I ask, would you as a flight instructor teach your pilot students to perform an emergency landing with a crash with a complex airplane that costs millions, and which is loaded with passengers? Of course, not at all. There, as long as I can think, simulation is the answer. Modern flight simulators can be so realistic, that the trainees forget that they are not really flying and it is reported that even experienced pilots exit the simulator ashen and drenched in sweat after some emergency training. So why not do the same in dentistry? We have all the tools. Scanners can measure what the student has done and compare it to the requested even complex and complicated shape and computers can visualize to the student the degree of discrepancy. There is no better way for grading or examining the psychomotor skills of students, without running the risk of an ethical conflict. Just do it!

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