CAD/CAM can be an incredible teaching tool

By Brendan Day, DTI

Dr. Gary Hack is an associate professor at the University of Maryland School of Dentistry, where he teaches in the Department of Advanced Oral Sciences and Therapeutics. In this interview, he outlines how he integrated dental CAD/CAM technology into his teaching methods and how his students have responded to this.

Dr. Hack, you’ve been in dental education for more than three decades. When did you first introduce CAD/CAM tools into your teaching?

Let me give you a little background. In the early 2000s, there were some representatives from Sirona who came to conduct a demonstration at our dental school. At that time, they had the CEREC Red Cam. I had been teaching in the crown and bridge course for many years at that point, but when I saw this technology first-hand, I was overwhelmed. I knew that this was the future of dentistry. I knew that this would introduce an incredible level of excitement for the dental students. And I knew about the students’ passion for computers and technology.

In 2006, the University of Maryland School of Dentistry moved into a new building. Our dean at that time was a visionary. He wanted to teach to the future, not to the past. I said to him, “The future is digital dentistry.” We were still making impressions while working under a light, just as I did when I was a student back in the 1970s. With his permission, I arranged for a gift from Sirona of ten Red Cams and ten compact milling machines, personally driving them back myself in a truck from Sirona’s headquarters and setting them up in our so-called Dream Room. That was the beginning.

How did you incorporate CAD/CAM into your teaching methods at that time?

I began trying to integrate digital dentistry into everything we were teaching from that point onward. At that time, I was teaching a freshman course on amalgams and composites, and the general thinking was that you couldn’t gain any value from scanning amalgam and composite preparations because they have undercuts. What I quickly learned, however, was that it was very easy to scan these. Instead of ten or 15 students gathered around you and a typodont, failing to really see anything while you try and explain the walls of an intracoronal preparation, a single scan allowed for me to show everybody all the different elements in a way that was much easier for them to understand.

I soon became aware that, not only was this CAD/CAM equipment good for same-day dentistry in a private practice setting, but it could also be utilized as an incredible teaching tool. I saw that it wasn’t just useful for crown and bridge preparations but intracoronal preparations as well. Now, with the software that is available on certain CAD/CAM devices, the students have the ability to evaluate their own preparations and get feedback from the computer. After 35 years of teaching, I can tell you that it’s almost impossible to get patients to look at the same dental preparation and each come up with the same grade. Everyone has his or her own bias, his or her own way of looking at things. However, the computer has no bias.

At the school, we’re using digital dentistry solutions for crowns, bridges, veneers, implants and so on, but we now have to integrate it into CBCT imaging and surgical guide printing. I think the current students are getting into dentistry at one of the most exciting times in dental history. I’m passionate about this and want Maryland to be at the forefront of dentistry.

Is the learning curve greater for students now that they have to learn these digital technologies? There really is no learning curve. These students spend a few minutes, to a point where they understand it better than I do. They grew up with computers and are naturally drawn to this technology. They’re enthusiastic about it and are excited to bring it into their future dental practices.

Many of our graduates who apply for jobs working under older, more experienced dentists are already ahead of the rest of the pack as a result of their familiarity with digital dentistry. The older dentists might be a little nervous about integrating CAD/CAM technology into their dental practices, but realize that CAD/CAM is nonetheless the future of dentistry.

Do you think that the price of investing in CAD/CAM tools and technologies can be prohibitive?

Let me begin with the private practice. The return on investment is clear. If you buy this technology, it can often pay for itself within a few years as a result of savings. If you mill in-house or simply digitally scan at your practice and send things over to a dental laboratory for fabrication, you will be saving money over using conventional techniques.

In my opinion, all dental schools are, to some degree, struggling with this decision. Clearly, they know that they have to do this, that it is incumbent on them that they teach their students this technology, since if they don’t, they are not properly preparing them for their future practice. Yes, the financial cost can be a barrier, but this is clearly outweighed by the benefits that come with integrating CAD/CAM devices into current methods of teaching.

Is there a role for industry to play in supplementing this classroom learning?

My thinking is that, yes, it can play a role. As teachers, we can go back to the manufacturers and tell them what we would like to see in their evaluation software and they will work on it. There is a collaboration between dental school education and the manufacturers that becomes a win-win situation. The manufacturers know that, if the students are being taught digital dentistry, then chances are, when they get into private practice, they’ll move in that direction.

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