

Seven Sins of CAD/CAM

For the past 14 years my goal has been to be on the cutting edge of technology. During this time it has been an ever-evolving learning experience complete with mistakes, common pitfalls and lessons learned. Today, I readily recognize those mistakes made by others and myself. My sales pitch to my customers is 'reduce the suffering'....I am sharing the Seven Sins of CAD/CAM. There are many more, but these are the basic ones:

1. Investing in technology and then trying to generate demand
2. Running your CAD/CAM department differently than your business
3. Hiring computer savvy personnel with no dental experience
4. Setting different quality standards in your CAD department
5. Not giving enough importance to your framework design
6. Allowing CAD/CAM equipment and processes to be a cost center
7. Not standardizing your CAD/CAM department

Early on when I was studying to become an engineer, I saw the benefits that CAD/CAM would bring to the dental industry. Years after I graduated and worked in the dental industry I was convinced that CAD/CAM would replace dental technicians. I was very wrong!

My earlier positions in dental CAD/CAM were setting up milling centers for labs, then running a lab of 70 people and a milling/rapid prototyping center. Eventually, I developed a business plan of a milling/RP center for other labs to send work. This caught the eye of DSG's then CEO Bob Ditta. In 2006, DSG offered me the position of CTO until 2008.

After some initial mistakes, I realized that CAD/CAM would not replace dental technicians,

because artistry and dental knowledge cannot be replaced. Knowledge is achieved by the mistakes we make as well as the experiences we gain. The following shares the lessons I learned the hard way and some ideas to 'reduce the suffering' as I tell my clients.

1. Investing in technology and then trying to generate demand.

Make sure you invest for the demand you currently produce. I can say for a fact that in the past I purchased equipment and then tried to generate the demand for it. Most people do this versus generating the demand and outsourcing until you have a solid ROI for your own equipment. Another common mistake is to calculate the ROI for the units your equipment can manufacture and not for a reasonable demand. Capital equipment sales reps provide this information for the potential of your business. Often times, it is mistaken as actual return. The outcome is painful; understand it takes time to break even. Be okay with being more efficient in the beginning with a solid plan to grow your business in order to take advantage of your equipment's potential.

2. Running your CAD/CAM department differently than your business.

It is just another department. Place a manager that understands your corporate culture. Preferably, this person succeeded running another department in your business and understands that quality and on time delivery is essential and will not release anything that is not in accordance to your standards. A machine is only as smart as the people using it; do not change your criteria for the CAD/CAM department.

3. Hiring computer savvy personnel with no dental experience.

This is one of the common mistakes. For years distributors preached that with CAD/CAM you could hire inexperienced people and be able to turn out units. I used to preach this 12 years ago and the worst is that I believed it; until I started one of the first laser sintering centers in Spain. Very quickly I realized I was profoundly mistaken and my arrogance cost me dearly for not valuing the

craftsmanship and artistry of dental technicians. Let's face it, to design a coping with no anatomy is easy, but when you have to design a framework or full contour you need concepts such as: morphology, anatomy, occlusion, functionality and esthetics that require a well-trained eye from a master craftsman. When you have inexperience you are adding cost and not value to your product in the value chain. Improper restorations, such as high occlusion, will force the C&B department to rework the product, adding time and money, which raises your overall cost. Furthermore, the quality that you will be outputting will be inferior and your customers will suffer from it. Some will complain and others will stop sending work. Many will claim that they have gone this route and are successful, but this is after how many years of training their designers? After all, quality is like the principles of Groucho Marx: "Those are my principles, and if you don't like them... well, I have others."

4. Setting different quality standards in your CAD department.

In your porcelain department, you have strict QC. You should have the same for your CAD department, and not just after it is manufactured. Labs lose unquantified hours reworking cases that have a poor design. In some cases they make it work but at the expense of more labor and less quality. When it is a total failure in zirconia, you lose over one production shift if it needs to be redesigned, milled and sintered. Normally it is the next day. It can also incur rush cases and overtime. Place your QC before the bottlenecks; it saves a lot of cost and suffering.

5. Not giving enough importance to your framework design.

There is a myth that anyone can design a framework without dental experience. When I led a 70-person lab that included the first SLM rapid prototyping machine in Spain, I initially ran it under this principle. This was one of the most crucial mistakes I made. Without a good substructure design, the ceramists are limited in terms of what they can do. It is like a painter without a canvas. Design has always been a differentiator in this industry. Once we changed to an experienced

Knowledge is achieved by the mistakes we make as well as the experiences we gain.

framework technician, quality and units increased while remakes and reworked units decreased.

6. Allowing your CAD/CAM equipment and processes to be a cost center.

It seems you would be better off because it is more transparent, easier to establish your costs and to control. The problem with this metric is that everyone gets the wrong feedback. People focus on how much it costs, especially your internal customers (departments in the lab that have to subsidize the cost center). With cost centers we don't place the right incentives to make it more efficient and profitable. We need to treat it as a separate entity with its own P&L as you would do with any given department of your business. Establish goals of growth, profitability and cost reduction. Otherwise, your CAD/CAM department will be viewed as a black hole that devours all your money and the investment does not give the return. This unfortunately is the reality of many CAD/CAM departments and it could be your reality since some investments have no ROI at all.

Place your
QC before the
bottlenecks;
it saves a lot
of cost and
suffering.

7. Not standardizing your CAD/CAM department.

When I walk into many labs, I see many different CAD software brands in production as well as different CAM software for different equipment. This leads to "MUDA" (Waste) and the "Seven Wastes: Waste from Overproduction, Waste of waiting time, Transportation waste, Processing waste....." found in the New Manufacturing Challenge by Kiyoshi Suzuki. It is a challenge, especially in a high production lab, to standardize CAD, CAM, procedures and software. After all, you have been on the cutting edge of technology for years and much of the equipment still works well. Standardization of CAD, CAM, material, equipment and processes are critical. Otherwise, you will never reach lean manufacturing. The problem lies between IT and the manufacturing. You need to create a team with expertise in dental, IT, CAD/CAM and lean manufacturing. Typically, labs have a production manager and IT manager that only do firefighting. Your IT manager should be hand-in-hand with your CAD/CAM manager; in reality this person should be in each department. By having an IT manager and CAD/CAM manager in the same department, we were able to achieve major improvements in CAD, CAM and in other departments. We increased productivity, quality and turnaround. The strength of a team will always defeat any individual.

I hope you find this article insightful to the digital era we live in and an insider's view on how to 'reduce the suffering'. Remember Groucho Marx's advice, "Learn from the mistakes of others. You can never live long enough to make them all yourself." **JDT**

About the Author

Severino Gomez has more than 15 years' experience in the dental industry and is founder of Business Strategy Consulting (www.b2strategy.com). His firm specializes in business and technology consulting. Its customers range from manufacturers, distributors and dental labs. Severino has acted as CTO for companies such as Bonadent Laboratories and Dental Services Group.

