Incorporating a Digital Dentistry Curriculum using both conventional and digital procedures equally is possible. It takes embracing change and eliminating resistance to incorporating new technology while integrating digital dentistry into school-wide doctoral curricula to enhance the quality of dental education in pre-clinical and clinical settings. It is not an easy task. It takes funds and a team:

* Faculty willing to invest the time to learn and teach the technology purchased by the university
* An IT department willing to be part of the digital dentistry curriculum
* Mentors from other university dental schools that have implemented digital technology into their curriculum
* Space allocation in a laboratory setting for the digital equipment

Including the IT Department on the digital dentistry team is important because they must recognize what software and equipment is compatible. Equally important is to have faculty from different departments involved due to the limitations and versatility of the different applications and design of the software. Every department’s needs should be understood and their rationale for specific software. Investing in software and equipment that ends up sitting on the shelf or in a closet is the worst possible outcome.

Digital technology transforms education. Dental students are now using these systems as early as their D1 year at some universities. While students are still taught how to use conventional impression materials, integrating the digital technology earlier in the dental school experience allows them to perform more advanced treatments with the systems. CAD/CAM technology is highly welcomed by students and they are excited and enthusiastic about this addition to the curriculum. Students who learn how to use CAD/CAM before they step foot in the clinic are competent and ready to work in the clinic with live patients. The Academy of Prosthodontics have provided a [Digital Dentistry Curriculum](../Documents/acp_digital_dentistry_curriculum.pdf) that they are willing to share to make the transition simpler.

The ability to provide a printed model to create a physical model prior to providing surgery is also a great example of keeping up with innovative modalities of digital dentistry. This allows the student and the patient to fully understand the case and their expected outcome of their treatment. It also allows the student to discuss the case with the entire interdisciplinary team if the case is complicated. Digital dentistry and collaboration can be improved providing a more predictable treatment outcome and provide the highest quality patient care with improved efficiency and accuracy of treatment.

Other Digital Technology solutions include intraoral optical scanners such as the Trios, lab-based scanners and design software such as [3Shape](https://www.whipmix.com/products/3shape-e4-red-e-scanner/), in-office milling units such as [Roland](https://www.whipmix.com/products/roland-dgshape-dwx-52dci-dental-mill/), and 3D printers such as the [Asiga Pro 4K](https://www.whipmix.com/products/asiga-pro-4k-dental-3d-printer/) or the [Asiga Max](https://www.whipmix.com/products/asiga-max-dental-3d-printer/). The chairside digital solutions offer same day ceramic restoration strategies for students and patients. The Laboratory Based 3D Digital workflows include the full range of diagnosis, planning, design, and fabrication of the most complex restorations from a broad range of materials.

Autonomy

Providing students with the ability to scan crown preparations for milling and compare them to a master file that a faculty member has provided will assist the students in comparing their work thus seeing the discrepancies or deficiencies in their preparation. This would be a great learning tool for the students to utilize when they are working remotely after hours when faculty is unavailable. The students would not have to rely on the clinic being open or the faculty being present. They could practice and master the software capabilities by having access to their own individual dongle which would also provide the students with a smooth transition into private practice where many offices are currently using CAD/CAM systems.

It's competitive out there.

I believe it is extremely important to enhance the quality of dental education both in pre-clinical and clinical settings because students that are denied access to digital technology will be competing for employment and not having the technological knowledge is no longer an option. It is a necessity. By the time the students are ready to graduate they should have the clinical skills and be competent in intraoral scanning, intraoral impressions for crowns, bridges, dentures, diagnostics and more, designing and milling or printing their restorations, and improving the esthetics with customized staining. As the students advance with their technological skills, the curriculum can provide students with an opportunity to learn about prosthetic implant planning and guided surgery, which improves predictability, reduces complications and improves patient outcomes.

What about the cost?

Today, companies offer educational institutions solutions at substantially reduced pricing.

For example, education institutions can obtain an individual seat of 3Shape Complete Restorative Software for $350.00 without any annual license fees for five years. A laboratory requesting the identical dongle would cost $9,995 plus an annual renewal of $2,500. Of course, the student would be responsible to have their own computer that is compatible with 3Shape software, but it would provide the student with the ability to design crowns, inlays, onlays, bridges, RPD’s, dentures, and splints. There is also an option to purchase an individual dongle with Implant Studio or Orth Analyzer which are the only options that are not included with the Complete Restorative dongle. These offerings would also provide students and faculty with research opportunities and increase a more sophisticated pool for pre-and post-doctoral programs.

No matter what solutions you decide are best for your university, incorporating the latest in health technology to meet patient care and student learning needs should be a priority. Predoctoral and postdoctoral students, faculty, and staff should have access to leading edge digital equipment to enhance learning and apply best practices for patients.  Every dental university already has digital radiography and most have 3D Cone-Beam Computed Tomography (CBCT), all allowing for digitally-based patient assessment, diagnosis, and treatment planning.

In the end, providing a digital dentistry curriculum will graduate dentists with the ability to implement digital dentistry in a private office setting where they will be competing for employment. Without these skills and knowledge their chances will be diminished substantially.