The laboratory technician’s primary role in restorative dentistry is to perfectly copy all functional and esthetic parameters that have been defined by the dentist into a restorative solution. It is an architect–builder relationship. Throughout the entire restorative process, from the initial consultation through treatment planning, provisiona-lization, and final placement, the communication routes between the dentist and the laboratory technician require a complete transfer of information pertaining to existing, desired, and realistic expectations to and from the clinical environment. Functional components, occlusal parameters, phonetics, and esthetic requirements are just some of the essential types of information that are necessary for the technician to complete the fabrication of successful, functional, and esthetic restorations.

For the technician, how many times have completed restorations been sent from the laboratory, only to find that they did not meet the dentist’s or patient’s expectations? The tooth length was incorrect, or the size and relationship of centrals, laterals, and premolars were not what was expected. The centrals were too long, the laterals were too short, and the restorations were contoured so incorrectly that the patient could not speak or function properly.

For the dentist, how often have technicians been sent less than adequate instructions, unreadable impressions, and/or preparations that would not allow correct esthetic or functional creation of the restorations that were requested from the patient? Sounds like a disaster, doesn’t it? From traveling around the world and meeting with many dentists and technicians, it is clear that these problems and many others are, unfortunately, far too common.

At the Dawson Academy, the roles and responsibilities of each half of the dentist–technician team are viewed as a relationship similar to that of the architect and the builder, in which the dentist is the architect and the technician is the builder. The responsibility of the architect is to visit the building site and get a feel for the “lay of the land” (ie, the oral cavity). Based on this investigation, the architect creates a preliminary blueprint (ie, the treatment plan). On completion of the plan, the architect and the builder meet to study the blueprint and to discuss construction methods and building materials. After both sides agree on the building process, a final blueprint is created, and construction is completed following the sequence, construction methods, and fabrication materials that were decided on by the restorative team.
For this type of relationship to work, there must be equality and mutual respect from both sides of the team. The relationship between the dentist and technician is a partnership, and great partnerships are built on a foundation of shared responsibility and an understanding of each other’s abilities, strengths, and limitations. Each member of the dental restorative team can learn a tremendous amount by looking over the other’s shoulders, asking questions, observing challenges, and offering solutions. By seeing through the other’s eyes, both can grow through a better understanding of the total restorative process.

WHERE WE ARE

With so many emerging technologies and the increased patient demand for highly esthetic and functional restorations, today’s state-of-the-art dentistry demands ultimate communication between all members of the restorative team, including the general practitioner, technician, endodontist, periodontist, oral surgeon, and orthodontist. Complete planning and verification of each treatment step, with input from each member of the restorative team, results in a multilateral effort that ensures success based on shared responsibilities.

Dentists and dental technicians share a unique relationship in that they are totally dependent on each other for success, but at the same time, they are trained and practice apart from each other. There is communication, of course, but the prescription pad order is not a two-way street. The occasional curt telephone conversation does not work well for deeper understanding, relationship building, and professional cooperation. Common tools (shade guides) have been developed to facilitate this relationship, but the different observation, interpretation, and application that are inherent to separate individuals who have not been trained within the same parameters can lead to a wide disparity of results. These professionals need more, something more definitive, which will allow the two professions not only to cooperate, but also to have similar definitions, similar knowledge, and similar diagnostic and treatment concepts.

In a perfect world, general practitioners, specialists, and dental technicians would be trained side by side, ensuring a comprehensive understanding of the various aspects of dentistry from the earliest stages. However, for most practicing professionals, it may be too late to recreate this academic developmental experience.
they are educated separately, all professionals must share continuing education, dental literature, common problems, concerns, and solutions. The restorative team must cooperate and work together, and follow all cases from diagnosis and treatment planning through the final cementation, including the laboratory phase. Today, as in the past, dentist–technician communication tools include photography, written documentation, and impressions of the patient’s existing dentition, the clinical preparations, and the opposing dentition. From these impressions, models are created and mounted on an articulator, which simulates the jaw movements of the mandible.

Dentistry’s traditional approach to this dimensional communication between the dentist and technician has been the diagnostic “wax-up.” This model is created by the laboratory from directions received by the dentist using conventional written instructions (laboratory prescription), verbal communication, and photographs. The laboratory applies the wax by injection techniques and by hand application. The wax-up reflects the changes that have been decided on by the restorative team. Restorative diagnostics in the digital world are being developed that will allow “real time” case design and communication between the dentist and technician team.

As restorative dentistry evolves into the digital world of image capture, computer design, and creation of dental restorations through robotics, the definitions of dental communication must evolve also.

WHERE WE ARE GOING

Dawson Academy faculty continually search for new technologies that will enhance their ability to diagnose, plan, design, and provide restorative solutions to their students and patients. Faculty members work with several companies that share the philosophy of comprehensive dentistry as a foundation of success for patient care. One company that Academy members have been working with in an advisory relationship is D4D Technologies, LLC in Dallas, Texas. Dr. Dawson was invited to meet with the engineers and software designers to share his knowledge of function and esthetics and to consult and advise on how to strategically implement and phase in the concepts of complete dentistry into the digital world.

Academy members should always began by looking at dentistry from beginning to end, from initial patient consultation, to comprehensive diagnosis and treatment planning, to digital communication. The goal would be to create a digital community where dentists, specialists, and laboratory technicians could work together to create a unified plan for the health of their patients, and devise a system that allowed all of the users to use that very important foundational information to design three-dimensional diagnostic previews (digital diagnostic “wax-ups”) as well as final restorations. The proposed system would integrate digital diagnostic technologies, such as computed tomography, biometric temporomandibular joint information gathering, occlusal bite force measurement instrumentation, and tooth preparation geometry software. Using these technologies, combined with the development of current and future restorative materials, patients could one day be virtually pre-evaluated for potential long-term restorative success.

Although the diagnostic software is still in development with the D4D system, current technology allows users to design several teeth at the same time, as all teeth are active. This means that the teeth to be diagnostically altered are chosen during the initial file creation, and are all digitally open to corrections during the entire design process. With the simple click of a button, the user can move from tooth to tooth and reposition each individual tooth for optimal function and esthetics. For example, with anterior teeth, users can change the incisal edge shape, or mix and match to create a multitude of esthetic arrangements (Figure 1 through Figure 4). As these technologies continue to develop, the profession will see the emergence of digital articulators that will allow mandibular movement and modification of condylar movement, as well as tools that will allow customization of the anterior and posterior tooth shapes for optimal esthetics and function.

Many in the dental profession currently regard computer-aided design/computer-aided manufacture (CAD/CAM) technology as just a machine that fabricates full-contour ceramic restorations or frameworks. Digital dentistry and the digital dental team represent a new way to diagnose, treatment plan, and create functional esthetic restorations for patients in a more productive and efficient manner. With the emergence of new technologies, CAD/CAM dentistry holds the promise of enhancing the dentist–assistant–technician relationship as they move together into this new era of patient care.