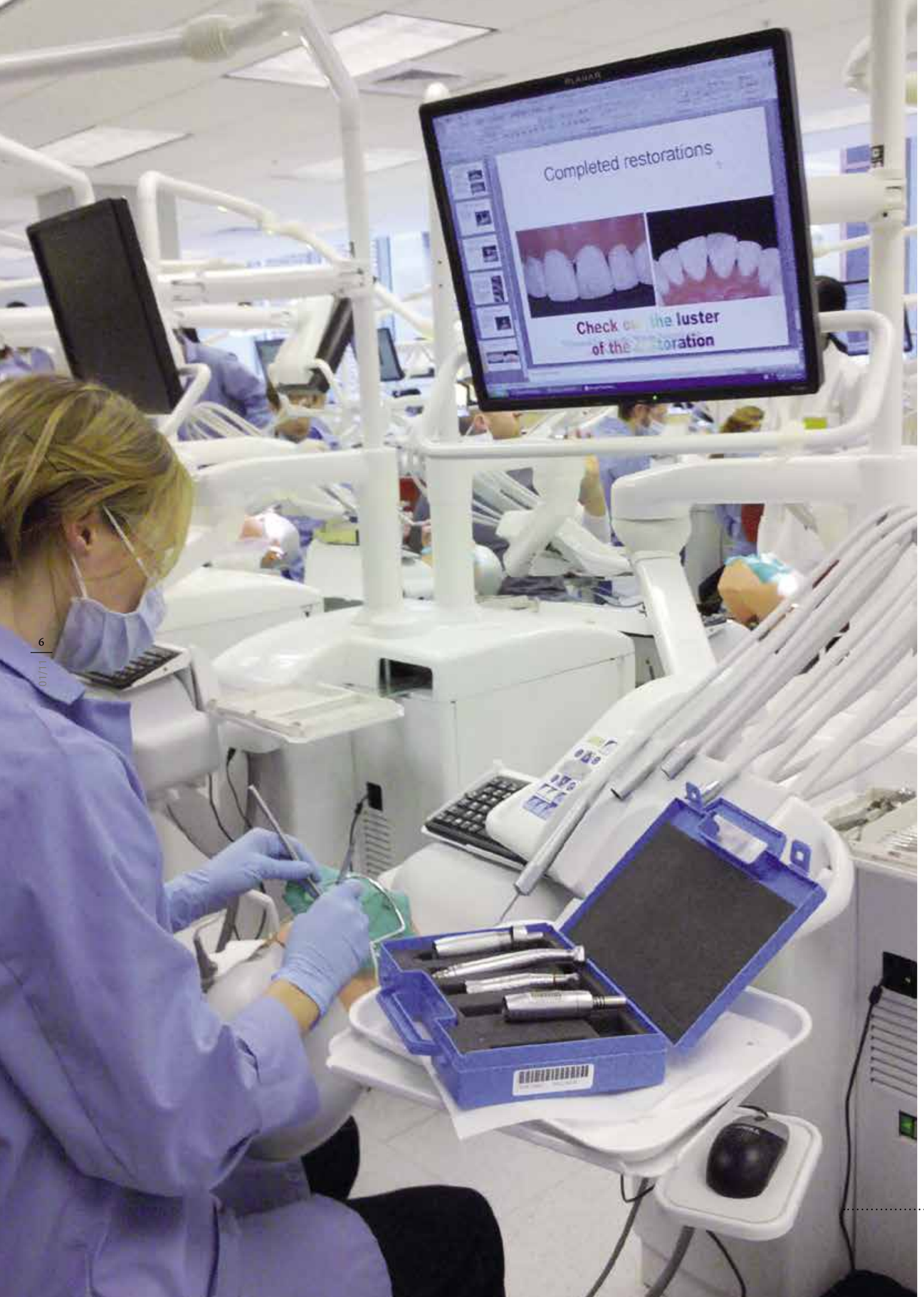
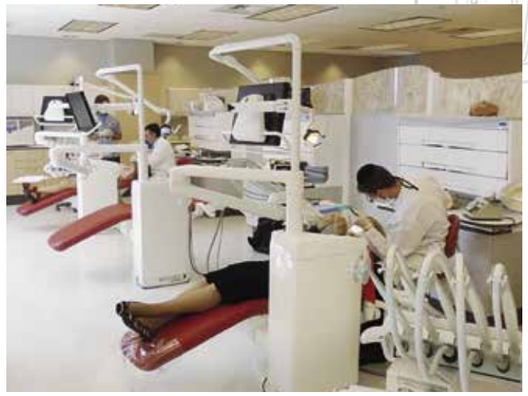
COPY **GARY HACK** IMAGES **GARY HACK**

NEW TEACHING CONCEPTS IN DENTAL UNIVERSITIES



Room D (Dream Room): a Senior Dental Student training two pre-clinical students on the proper use of the Planmeca Sovereign chair in preparation for their upcoming experience in Cecil County.



Room D (Dream Room) with clinical students performing CAD/CAM restorations on patients.

The world's first school of dentistry, the University of Maryland Dental School, was founded in Baltimore, Maryland, on March 6, 1840. Today, the Dental School remains a pioneer and is leading dentistry into the future.

"Our students represent a link, a conduit to the future, due to the school's innovations in teaching digital dentistry," explains **Gary D. Hack,** DDS, director of clinical simulation. Dr. Hack believes it is essential that dental students learn new treatment modalities to stay current, and that they continually keep abreast of the latest innovations and knowledge.

"I believe that the University of Maryland Dental School is one of the most high-tech, digitally-advanced dental schools in the world," says Dr. Hack. Many technological innovations have been implemented by **Dean Christians S. Stohler,** DMD, DrMedDent, since the new Dental School building was completed six years ago.

Dr. Stohler's vision is to teach students to use both existing techniques and cutting-edge technology. For example, all of the dental chairs and preclinical simulation units (over 500) are wired for monitoring from anywhere in the building. Instructors can monitor each student, each procedure and even each instrument that is being used. Every dental chair also sends e-mail warnings of impending malfunctions.

Room C (Clinical Simulation): year 1 dental students performing operative procedures on a simulated patient.

The Dental School is a widely-recognized leader in teaching computer-aided technologies for the design, analysis and production of dental restorations. The dental CAD/CAM system (computer-aided design and computer-aided manufacturing) designs, analyzes and mills tooth crowns. The entire procedure, from tooth preparation to delivery, can be accomplished in an hour.

This year, all 130 second-year dental students will have hands-on experience with chair-side CAD/CAM. They will acquire digital impressions, design their restorations on the computer and send this digital information to a milling machine.

The University of Maryland Dental School is the only dental school in the U.S. that exclusively uses digital radiography in its preclinical simulation programs. This allows students to seamlessly transition to working with live patients, since dental clinics also utilize digital radiography.

In September, 2006, the University of Maryland Dental School moved into its state-of-the-art building, which was designed with the most advanced dental technologies available. The facility features digital dental units, electric hand pieces, digital radiography, intra-oral cameras, rotary endodontics, implant simulation, virtual dental school environments, haptic technologies, CAD/CAM, virtual keyboards, virtual patients, electronic patient records and remote

Example of simulated "patient" being readied for a radiograph of a tooth having root canal therapy during the year 2 Endodontic Course.

Student working in room C (Clinical Simulation).

Room C (Clinical Simulation) ready for year 2 Fixed Prosthodontic Course.

learning capabilities. "The school has cooperated with the industry to push the envelope," says Dr. Hack. "Now we can provide high-technique technologies to better prepare our students for 21st-century dentistry, and to create a seamless transition for the students from the preclinical experience to the patient clinic."

World's first virtual dental school

Last year, the school also launched the world's first virtual dental school. Students log onto the virtual dental school to experience different aspects of dentistry, including lessons in dental hygiene best practices, infection control and skull anatomy. The software allows students to control a figure of themselves, called an avatar, by mouse and keyboard.

The school also opened a high-tech clinic in Perryville last year to help meet the dire need for better oral health care in that region. Dean Stohler envisioned the clinic as a way to ensure all local residents in rural areas would have access to the best care. The students, faculty and patients at the University of Maryland Dental School, Perryville, benefit from a fully-integrated system of electronic patient records. The records system is also a teaching tool and a functional model that is expected to be applied to the entire school in the near future. Moreover, the clinic utilizes 26 Planmeca Sovereign units, which are high-tech, digital dental units with incredible capabilities. "It is amazing to see the facility in Perryville today, and the dental students love their experience there", states Dr. Hack.

Simulation facility

The school's Simulation Facility is another example of high-tech teaching tools. The facility consists of four individual rooms.

The Ancillary Lab is a traditional plaster lab where students learn to work with plaster and stone models. The room was intentionally designed to be small, as students will eventually perform all the procedures digitally.

The Bench Simulation Room consists of 90 bench simulators and one teaching station with a ceiling-mounted microscope. This room is used for basic procedures that require a counter top, such as waxing or denture fabrication.

The Clinical Simulation Room is comprised of 80 advanced simulators and a teaching station. This room emulates the clinical environment and is used for advanced dental training, including Operative Dentistry and Endodontics courses.

The Dream Room consists of eight patient-ready digital dental units (one Planmeca Sovereign unit and seven Planmeca Compact units). This room is used to teach cutting-edge technologies, such as CAD/CAM and haptic devices.

> *"The clinic utilizes 26 Planmeca Sovereign dental units*

CV

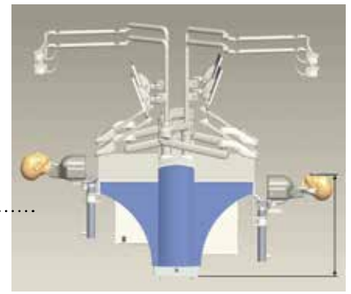
Dr. Gary D. Hack is the Director of Clinical Simulation at the University of Maryland Dental School, which is under the auspices of the Office of the Dean. Dr. Hack is also an associate professor in the Department of Endodontics, Prosthodontics and Operative Dentistry.

He has been a faculty member at the dental school for the past 25 years, and has been instrumental in helping to make the school a leader in cutting-edge technology.

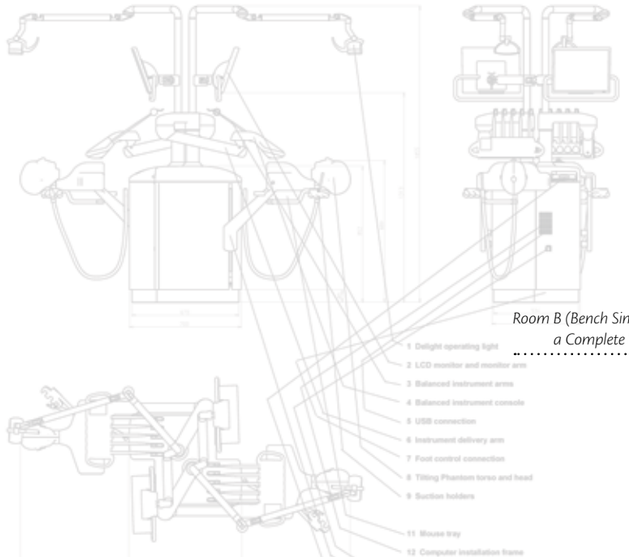
In addition to his activities with the schoolís Simulation Facility, Dr. Hack instructs dental students in several disciplines.

He is a prolific researcher and is a co-developer of NovaMin, which was recently purchased for $135 million by SmithKlineBeecham.

Room C (Clinical Simulation) before start of year1 Operative Course.



Mock-up of Simulation Room B during planning stage.



Room B (Bench Simulation) during a Complete Denture Course.