

EDITORIAL

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Digital stomatology: a new training approach in undergraduate education

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Modern stomatology demands professionals capable of integrating technology, clinical reasoning, and critical thinking from the earliest stages of their education. Given this scenario, the Faculty of Stomatology at Universidad Peruana Cayetano Heredia has taken the lead in incorporating digital dentistry in a structured manner throughout undergraduate preclinical and clinical training.

This effort is aligned with the Heredian mission of providing a scientific, ethical, and innovative education, oriented toward health services and the country's social development. It aims to promote a form of digital education that goes beyond technical skills, positioning students as the main actors in their learning process, while fostering safe practice, critical thinking, and a commitment to high-quality oral health care.

Since 2018, the university has incorporated clinical simulators, including haptic simulators, as key tools for preclinical teaching. These environments have enabled the development of fine motor skills, tactile perception, and clinical decision-making within safe learning scenarios. Beginning in 2025, this experience will be strengthened through the progressive incorporation of a complete digital workflow—from intraoral scanning to the design and fabrication of restorations—thereby integrating all clinical stages into a full pedagogical sequence.

This year, a pilot course will be launched with third-year students, who will use intraoral and extraoral scanners as diagnostic tools in pediatric patients with deciduous dentition. With the arrival of new equipment, students will experience the entire digital process: capturing clinical images, applying them in simulators, preparing teeth, designing restorations digitally, and fabricating them through 3D printing technology. This sequence will connect theoretical learning with clinical practice in a gradual and safe way.

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The educational proposal encompasses the entire clinical-technological circuit: diagnosis with intraoral scanners, use of digital models generated from real patients, haptic simulation, computer-aided design, and prosthesis fabrication. This approach will help students understand each stage of treatment and develop clinical judgment using tools that are already part of contemporary dental practice.

Simulation-based educational model is not unique to dentistry. Highly demanding professions such as commercial aviation, Formula 1 racing, neurosurgery, and space exploration require rigorous training in virtual environments before confronting real-world situations. These settings allow for repetition, error, anticipation, and the building of confidence. Similarly, digital stomatology offers a comprehensive educational experience—from diagnosis to final restoration—guided by technology and simulation, without compromising patient safety or learning quality.

One of the most notable benefits of digital stomatology is its impact on communication. Three-dimensional images and digital records patient understanding of diagnoses, enhance trust, and encourage active participation in decision-making. At the same time, collaboration among specialists is enhanced, allowing precise sharing of clinical information and joint procedure planning.

Furthermore, it is essential to promote research in this field. Studying how these technologies influence training and clinical outcomes makes it possible to improve students' learning and provide a better experience for patients. Promoting research projects in digital dentistry therefore enhances both educational quality and evidence-based clinical decision-making.

This commitment to educational quality is also reflected in the infrastructure that supports it. This transformation will be reinforced by the upcoming inauguration of the Interdisciplinary Center for Advanced Simulation at the La Molina campus of Universidad Peruana Cayetano Heredia, which will provide ideal conditions for clinical training prior to real patient care, integrating simulation, technology, and interdisciplinary scenarios.

Ultimately, it is essential to train professionals capable of critically evaluating technology. Many clinicians make decisions influenced by marketing rather than by scientific evidence, lacking sufficient criteria to assess the true value of technological innovations. This academic proposal seeks to educate critical students, guided by ethical values and a solid scientific foundation. Furthermore, it is acknowledged that the technology taught today will not necessarily be the same as that used in the future; therefore, fostering an analytical and flexible attitude is essential to adapt to the constant changes of professional practice. This new stage redefines how stomatology is taught and understood in Peru, preparing future dental surgeons for a modern, safe, and patient-centered clinical practice.