

EDITORIAL

Is “Virtual” a Misnomer? Reframing Digital Articulators in Prosthodontics

Ponsekar Abraham A ^a

Articulators have long been fundamental in prosthodontics, enabling clinicians to replicate mandibular movements for diagnosis, treatment planning, and prosthetic rehabilitation. With the advent of digital workflows, however, the terminology surrounding these devices has become blurred.¹ Terms such as *virtual articulator* and *digital articulator* are often used interchangeably—yet they represent fundamentally different concepts.

The *Glossary of Prosthodontic Terms, 10th Edition (2023)* provides much-needed clarity by deprecating the term *virtual articulator* and designating *digital articulator* as the accurate descriptor.² A digital articulator refers to a computational system that simulates static and dynamic jaw relationships using 3D scans and motion-tracking data. These simulations occur in a digital environment, not in an immersive or haptic *virtual reality*.

Misuse of the term *virtual* has practical and educational consequences. It risks misleading students, researchers, and clinicians into overestimating the capabilities of these systems, and may even compromise clinical interpretation and communication. Historically, the term “virtual articulator” gained traction in the early 2000s, when “virtual” was broadly applied to computer-generated processes. Its persistence today reflects habit and repetition in literature, software, and commercial platforms rather than accuracy.

According to GPT 10, 2023, digital articulators can be broadly classified into two categories: **Completely adjustable digital articulators**, which rely on algorithm-driven simulations without incorporating patient-specific motion recordings,² and **Mathematically simulated digital articulators**, which utilize patient-specific static or

dynamic jaw movement data to generate individualized and more precise models.³

A growing body of literature highlights both the promise and limitations of these systems.^{4,5} While digital articulators represent a paradigm shift in prosthodontics—offering workflow integration, enhanced precision, and patient-specific customization—they are not synonymous with virtual-reality-based platforms.

Going forward, three action points are crucial for reframing the discourse on digital articulators. **Educators** must incorporate precise terminology into curricula, enabling students to appreciate both the potential and the limitations of digital articulators. **Researchers** should standardize the use of the term digital articulator in their publications, in alignment with authoritative glossaries, to promote consistency and clarity. **Clinicians**, meanwhile, should ensure accuracy in communication, avoiding misleading connotations that could foster unrealistic expectations among patients.

It is also worth acknowledging why the term *virtual* persists: it was once intended to convey the shift from mechanical to computerized articulation. Moreover, with the rapid rise of Virtual Reality (VR) and Augmented Reality (AR) technologies, future systems may indeed justify the label *virtual articulator*. For now, however, *digital articulator* remains the precise and responsible term.

Language matters. Precision in terminology reflects precision in practice, and in prosthodontics—where accuracy is central to patient outcomes—both are indispensable. Thus, precision in today’s terminology should evolve hand in hand with tomorrow’s innovations, ensuring both scientific clarity and clinical progress.

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How to cite this article: Ponselkar Abraham A, Is “Virtual” a Misnomer? Reframing Digital Articulators in Prosthodontics . J Clin Prosth Impl 2024;7(2):76-77. <https://doi.org/10.55995/j-cpi2025e2>

Corresponding Author: Dr. Ponselkar Abraham A, Professor & Head, Department of Prosthodontics, Thai moogambigai dental college and hospital, Dr. M.G.R. Educational & Research Institute, Chennai -600107
E-mail: drponabe@gmail.com, Ph.No.: +919444200720

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