

Steps for Adapting Augmented Reality Learning Modules in Dental Education Utilizing the Microsoft HoloLens

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Background/Purpose: Over the past decade there has been a continuous debate over the needed change for dental education.¹ The question in dentistry is no longer, “Should we acquire new technologies,” but which ones are most beneficial to patient care.² The face of dentistry has changed outside the classroom, which calls for an equally impressive change within. One such change is the utilization of Augmented Reality (AR) to create an immersive learning environment through the utilization of the Microsoft's HoloLens. AR is a technology that superimposes a computer-generated image on a user's view of the real world. **Aims:** 1. Analyze the dental curriculum to establish where incorporation of AR is needed. 2. To establish an effective AR learning module in dental education. 3. Qualitatively compare AR learning modules to traditional learning modules and lecture styles. **Methods:** Curriculum analysis was performed and findings suggested a need for increased spatial identification and understanding within the fields of Gross Anatomy and Dental Anatomy and Occlusion. Thus, establishing the need for AR within the analyzed subject fields. The AR learning modules were created utilizing the Unity 3D platform and run via the Microsoft HoloLens. Modules created encompassed tooth identification, dental anatomy, and comparative anatomy. Qualitative analysis was completed by utilizing students and faculty who have completed/taught courses using the traditional lecture style. **Discussion/Conclusion:** The study investigates the correlation between learning outcomes and the utilization of AR and the Microsoft HoloLens in education. Learning outcomes are based on how the information is delivered and what learning styles are incorporated. Because of the holistic environment that the Microsoft HoloLens provides, all seven learning styles: Visual, Aural, Verbal, Physical, Logical, Social, and Solitary can be tied together; thus creating the most effective learning environment. The incorporation of Augmented Reality technology will not only move dental education to the forefront of mainstream education, but also promote a trend of enhanced quality of care.

Reference:

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