PowerPoint-Free in 2023: Pedagogy of Augmented Reality Integration in a Cadaver-Based Human Anatomy Curriculum

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PowerPoint-Free in 2023: Pedagogy of Augmented Reality Integration in a Cadaver-Based Human Anatomy Curriculum

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Abstract

Introduction: While human anatomy education via whole body cadaver donors remains the gold standard for anatomy pedagogy, many educators have integrated modern technology in their anatomy curricula to offset resource constraints and better serve tech-savvy students. However, developments in progressive pedagogies often resort to time-honored PowerPoint slides for didactic lecturing and notetaking. The objective of the present study was to develop and implement a pedagogical framework for incorporating augmented reality (AR) into a cadaver-based anatomy course that embraces PowerPoint-free didactic lectures and hybridized AR/cadaver laboratories. Methods: Human Anatomy Atlas 2023+ (Visible Body) was incorporated into UNMC's High School Alliance anatomy course in the Spring 2023. The curriculum consists of four content units, each containing PowerPoint-free AR model-based didactic lectures (paired with OneNote outlines for notetaking), dedicated AR laboratories, cadaver-based gross laboratories with AR incorporation, a review session utilizing all methods, and written and practical unit examinations proportionally reflecting the learning modalities. Emotional valence for learning was tracked during each learning session, and two elements of metacognition (pre-assessment confidence and post-response certainty) were collected alongside examination responses. Results: This study offers a framework for using AR as a fundamental pedagogy for teaching and learning cadaver-based anatomy with additional attention given to emotional and metacognitive assessment. Importantly, the framework exposes students to the course content in four distinct perspectives before their knowledge is formally assessed. Results will also include logistics for other critical framework components such as use of 3D printed models, examination structure, graduate teaching assistants, necessary devices (iPads), and pedagogy limitations. Conclusions: The pedagogical framework presented in this study demonstrates an effective and efficient method for incorporating augmented reality (AR) into a cadaver-based anatomy course that embraces PowerPoint-free didactic lectures and hybridized AR/cadaver laboratories. This report may help other educators develop and implement similar pedagogies in new or existing courses.

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