



# Evaluating Spatial Computing Platforms for Diagnostic Imaging: A Feasibility Study with the Apple Vision Pro

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## Introduction

The integration of augmented reality (AR) and virtual reality (VR) in diagnostic radiology has the potential to transform workflows by enhancing visualization and user experience. Spatial computing devices with advanced screen resolution, color contrast, and eye/finger-tracking features may improve educational and clinical applications.

## Hypothesis

The primary aim was to survey participating radiologists about the usage of the AR/VR device.

## Methods

This IRB-approved prospective study aims to include 25 radiology physicians and trainees at a large academic institution. Participants completed a preliminary survey assessing familiarity with AR/VR devices, followed by a guided experience using a AR/VR headset (Apple Vision Pro). This included a user interface demonstration, review of diagnostic medical images (Visage VP), and simulated electronic medical records (Epic). Additional metrics included time to competency (from donning the headset to PACS interaction) and total usage time recorded during the demo. Finally, a post-use survey was conducted which included binomial, 5-level scale, and open-ended prompts focused on ease of use, ergonomics, and workflow while using the headset. Summary statistics were then calculated.

## Results

Preliminary data from 12 participants showed an average time to competency of  $4.25 \pm 1.07$  minutes and total usage time of  $13.13 \pm 4.88$  minutes. Pre-use surveys revealed 58% were unfamiliar with AR technology, though 67% saw its educational potential, and 83% emphasized ease of use for integration. Post-use surveys indicated 75% rated usability highly, 87.5% found the device comfortable, and 62.5% cited efficiency and quality of care as key benefits. Drawbacks included ergonomics (71%) and haptics (28%). Most participants (75%) indicated interest in clinical use, and 87.5% would recommend the headset to colleagues. Favored features included 3D visualization, anatomy education, and pathology correlation.

## Conclusion

The Apple Vision Pro headset demonstrates significant potential for educational and clinical applications, offering advanced resolution and intuitive interaction. Ergonomic refinements remain necessary for broader adoption.

## Keywords

Clinical Workflow & Productivity; Educational Systems; Emerging Technologies; Provider Experience; Quality Improvement & Quality Assurance