Title
Comparing Traditional and AI-Assisted Training for Instructing Ultrasound Image Acquisition

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Objective
We aim to evaluate the efficacy of Butterfly's Scanlab as an alternative to traditional didactic methods in teaching essential point-of-care ultrasound (POCUS) techniques to new learners.

Methods
We conducted a randomized crossover educational study involving 30 adult undergraduate researchers with limited ultrasound experience. Participants were trained on acquiring selected cardiac US views: parasternal long axis view, parasternal short axis view, apical 4 chamber view, and subxiphoid/subcostal view. They were randomized to training on Butterfly's Scanlab application or the traditional US curriculum. After training, participants created an US video clip for each cardiac view with a standardized patient. Participants also completed a confidence survey prior to training and after each session. Participants were tested again 4 weeks later in a retention assessment. After another 4 weeks, the groups switched training modalities and repeated instruction, assessment, and retention reassessment. In total, participants completed 2 trainings and 4 assessments over 12 weeks.

Results
After initial instruction in session 1, image quality across both groups was not significantly different (Scanlab: $\bar{x}$=0.708, n=8; Traditional: $\bar{x}$=0.833, n=9; p=0.379). Session 2 followed similar trends (Scanlab: $\bar{x}$=0.725, n=10; Traditional: $\bar{x}$=0.823, n=8; p=0.575), suggesting both groups had similar scanning skills after training and in retention. There was no statistically significant difference in median confidence scores across the 12 assessments between the two groups after session 1 (Scanlab: $\bar{x}$=2.58, n=12; Traditional: $\bar{x}$=2.58, n=12; p=1.00) and session 2 (Scanlab: $\bar{x}$=2.71, n=12; Traditional: $\bar{x}$=2.54, n=12; p=0.220).

Conclusion
Novice learners receiving AI-guided or instructor-led training demonstrated similar observed short-term cardiac POCUS image-quality and confidence scores. This project demonstrates that Scanlab, or similar AI tools, can be effective methods for teaching ultrasound without instructors, expanding access to US education.