

Utilization of Apple iPads® in Student Clinical Rotations to Improve Safety and Streamline Information Access

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Introduction

- American Society for Microbiology, Guidelines for Biosafety in Teaching Laboratories (2012) state that educators must use best practices to minimize risk of biohazard contamination to students.
- Integrating mobile digital devices into Medical Laboratory Science (MLS) programs' clinical training is potentially one means of reducing this risk. Historically, student assignments and evaluations for clinical rotations were in paper format.
- The purpose of this pilot project was to ascertain attitudes from students and clinical educators on using mobile devices as a laboratory bench-side educational tool during clinical rotations.

Methods

- Prospective study conducted in the Hematology and Transfusion Medicine laboratories at Virginia Commonwealth University Health (VCUH) in fall 2018 (VCU IRB #HM20014115).
- Three senior level VCU MLS students and two VCUH clinical educators participated.
- Apple iPads® (Apple, Inc.; Cupertino, CA) and Google Drive™ (Google; Mountain View, CA) were utilized in lieu of paper clinical manuals during Hematology and Transfusion Medicine clinical rotations. Student participants used paper clinical manuals during their Chemistry and Microbiology rotations. The clinical educators used paper versions of clinical manuals during 4 of 5 student rotations.
- All participants were trained on usage and access of electronic material on the iPads® as well as proper cleaning of the devices with PDI Sani-Cloth® Plus wipes (PDI, Inc; Woodcliff Lake, NJ).
- Four point Likert scale pre-study surveys were used to assess attitudes towards mobile devices. Post-study focus groups for students and clinical educators, separately, were conducted after completion of the clinical rotations.

Results

- Advantages of employing mobile devices include:
 - Improvement of safety by eliminating transfer of paper worksheets from laboratory to the outside.
 - Ability to electronically monitor students' progress through clinical laboratory rotations.
 - Ease of accessibility to electronic references at the bench-side.

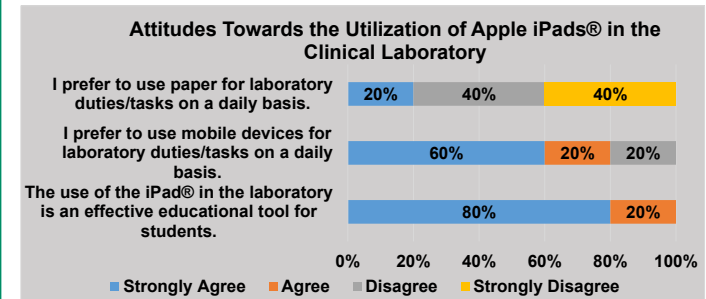
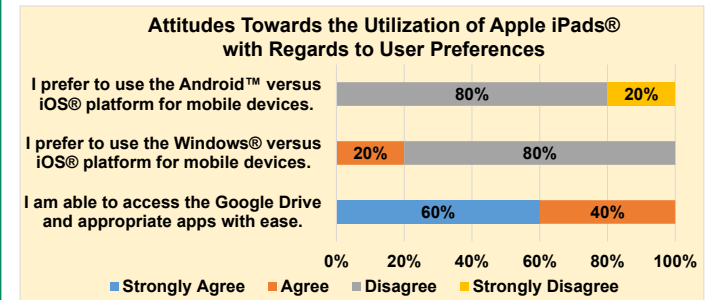
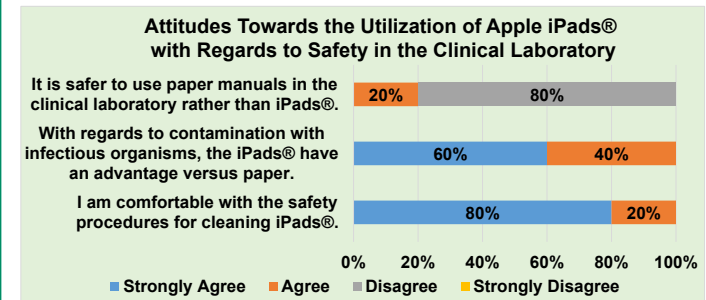
Future Study

- Moving forward, the study will expand to include additional disciplines (i.e., Clinical Microbiology was added in fall 2019) and students (i.e., 6 in fall 2019) as well as employment of styli and DocuSign® (DocuSign, Inc.; San Francisco, CA).
- The VCU Department of Clinical Laboratory Sciences plans to explore the development of a mobile device application for the purposes of handling all clinical rotation documents.



Advantages of employing mobile devices during clinical rotations in a Medical Laboratory Science program include:

- * improvement in laboratory safety
- * ability to electronically monitor students' progress
- * ease of accessibility to electronic references



Pros

(as reported by the study participants)

- iPads® were easy to clean and carry. Participants felt safe taking the cleaned devices in and out of the clinical lab.
- Clinical rotation documents were easier to access.
- Access to clinical laboratory related applications while on the bench (e.g., CellaVision® CellAtlas, Siemens UA Guide, scientific calculator).
- Student documentation completion progress could be electronically monitored in real-time.

Cons

(as reported by the study participants)

- Potential abuse of the iPad® camera with respect to patient confidentiality.
- Need to make sure the mobile device is charged regularly (paper manuals do not require charging).

Participants' General Comments

- The clinical educators reported that iPads® were not a distraction within the laboratory.
- Utilizing a stylus and/or external keyboard may make the experience more friendly for some users.
- The clinical educators foresee the use of mobile devices in concert with electronic training records as a tool to help monitor laboratory personnel training.
- After the study, both clinical educators and students reported that they prefer the mobile device format over paper format of the clinical manual.