What is Augmented Reality (AR)?

AR identifies physical objects in the world through the lens of a smartphone or mobile computing device (Wagner & Schmalstieg, 2003). The merging of information from 3D space produces a new experience of the world, sometimes referred to as “blended reality,” and enables new possibilities regarding access to information, and new opportunities for learning. Using new, secure, easy, and user-centered augmentation, technologies such as lab equipment can be tagged as a point of interest (POI) using other augmentation tags by identification of the visual features of the object, or by using embedded smart codes (e.g., barcodes or QR Codes). Dependent data about the object the student is viewing can be superimposed and displayed to them in the lab environment.

We created a range of AR tagged resources for lab and clinical equipment so that students can view these objects using the equipment itself and learn from them. We hope to use this technology to explore the potential of new AR technologies in mobile implementations to enhance education.

Rationale

The advent of pervasive computing and clinical simulation has resulted in many new opportunities in lab-based clinical skills teaching and learning. But the techniques used to familiarize students with new equipment and procedures have remained fundamentally unchanged for the last 30 years or so. Schmalstieg and Johnson (2011) point out that labs are an emerging technology, and mobile technologies can be used to enhance learning.

Development & Evaluation

We have created:

1. Twenty sets of clinical AR resources tagged to 20 different pieces of equipment and
2. Two AR augmented clinical simulation scenarios.

Four aspects of evaluation are considered and incorporated into this project as follows.

1. Teacher performance in using the tools to successfully achieve their learning objectives.
2. The participants’ satisfaction with the tools and methods used in meeting their learning needs in lab-based skills and clinical simulated practice for their clinical education.
3. Teachers’ satisfaction with use of the tools as an augmentation to teaching practical clinical skills and clinical simulated practice for their clinical education.
4. Technical feasibility, reliability and cost-effectiveness of the tools in supporting practical clinical skills and clinical simulated practice education.

A mixed methods evaluation strategy is being employed. Following ethical (UBC BREB) we have recruited volunteer students and are undertaking:

1. A review of clinical lab skills performance and clinical simulations as outcomes for students using these tools.
2. A professional analysis of pedagogical dimensions of the tools developed by faculty in the School of Nursing using educational technology pedagogic dimensional mapping (Reeves & Laffey, 1999).
3. A faculty and student focus group to further explore perceptions of the tools, their cost-effectiveness and if they facilitate learning.
4. A faculty and student focus group to further explore perceptions of the value of AR technologies to support learning if the technology is easy to use, its cost-effectiveness, and if it facilitates learning and contributes positively to the lab learning experience.

Try AR for Yourself Now!

Download the Layar App and install it on your smartphone or tablet (Android or Apple). You can find it at www.layar.com. Then find and scan the AR images and QR Codes on this poster, or this whole poster (you must get the whole image in the Layar frame) to try AR in action.

References


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Further information

More information on this and related projects can be obtained by contacting Dr. Bernie Garrett at bernie.garrett@ubc.ca.