Interactive, Personalized and Flipped Classroom Simulation Experiences Utilizing Hemodynamic Monitoring for Medical Education

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BACKGROUND

- Active learning and simulation are established methods of medical education.
- An interactive learning environment allows participants to realize gaps in knowledge, reflect on past knowledge, and ask questions concerning the assimilation of new knowledge.
- A personalized interactive learning experience provides more meaning to the reflection of ideas and thought processes involved in the learning process by using participants' own personal physiologic data along with that of their colleagues.

PURPOSE

- To engage in problem-based learning and discovery with a concomitant reduction in lecture hours and an emphasis on self-directed learning.

Figure 1. Insert description

Figure 2. Insert description

SELF-SIMULATION FOR PHYSIOLOGY EDUCATION

Figure 3. Insert description

Figure 4. Insert description

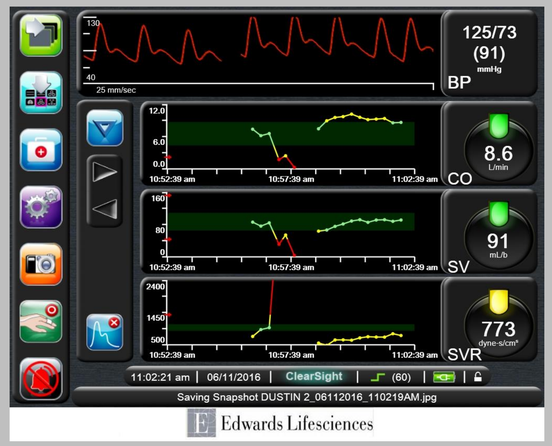

Figure 5. Insert description

EXPERIENCE OVERVIEW

- This award used hemodynamic monitoring in two different learning scenarios:
  1. **Noninvasive Hemodyamic Self-Simulation**
     - A novel use of a noninvasive hemodynamic monitor on the learners themselves.
  2. **Pulmonary Artery Catheter In-vivo Experience**
     - An observation with numerical and waveform discussion in an intensive care unit patient focusing on real-life and real-time physiology.
- These educational experiences utilized the educational model known as the flipped classroom [3].
- Prior to the experiences, participants studied concepts by reading suggested literature.
  - Discussions during the experiences focused on furthering concepts already introduced.

SUMMARY

- Information gleaned seemed to be more meaningful than viewing physiologic data generated in a classroom discussion or a computerized model.
- Personalized data acquisition seemed to provide an extra value for the individuals attempting to learn and solidify complex physiologic concepts.