

# **CPCE Health Conference 2016**

## **AGING, HEALTH AND LONG TERM CARE – Integrity, Innovation and Sustainability**

# **Innovations in Health Education - M-Learning Facilitated Multimodal Learning using Clickable Images and Virtual Patients**

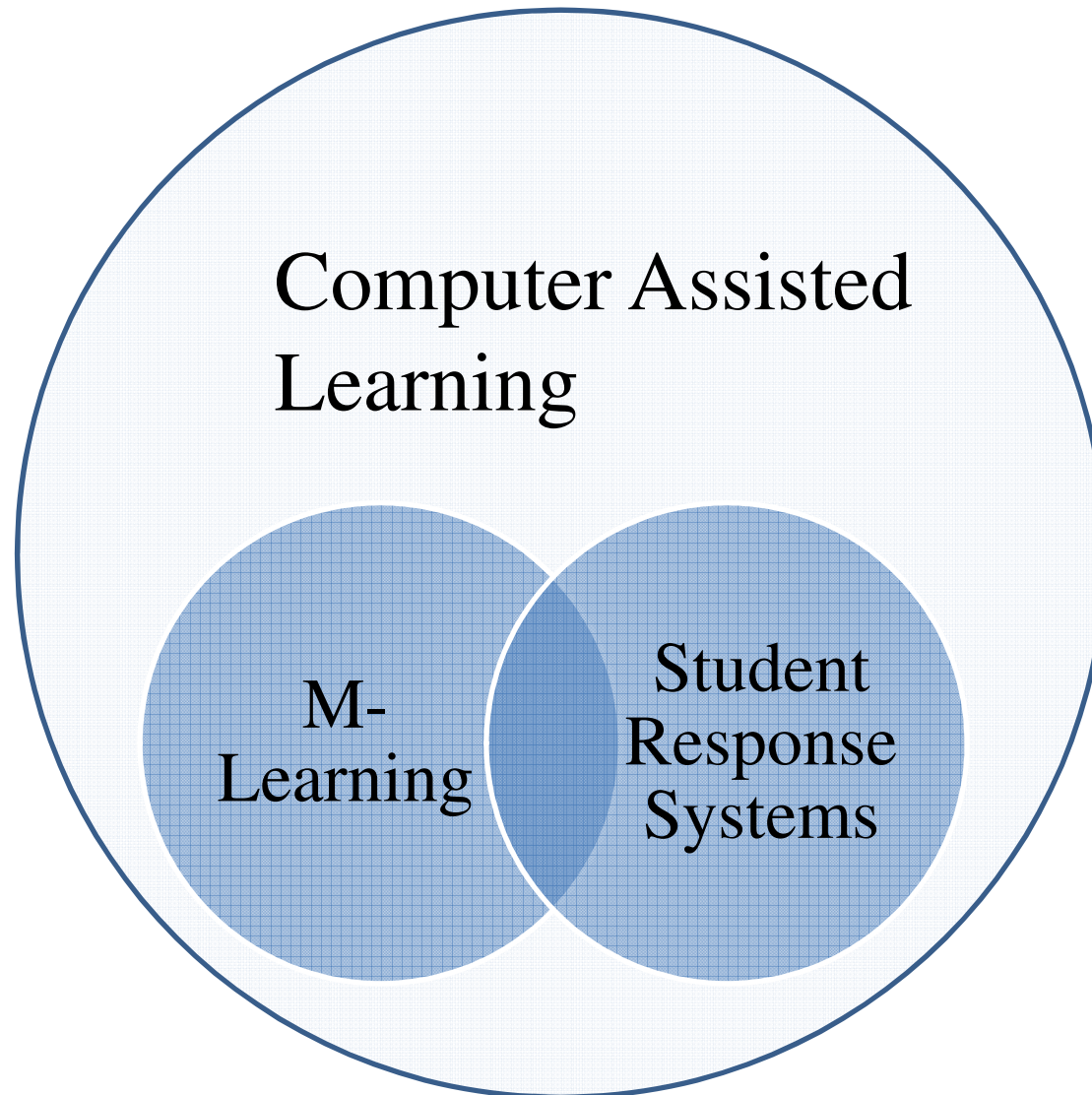
Adam Wong

11th January 2016

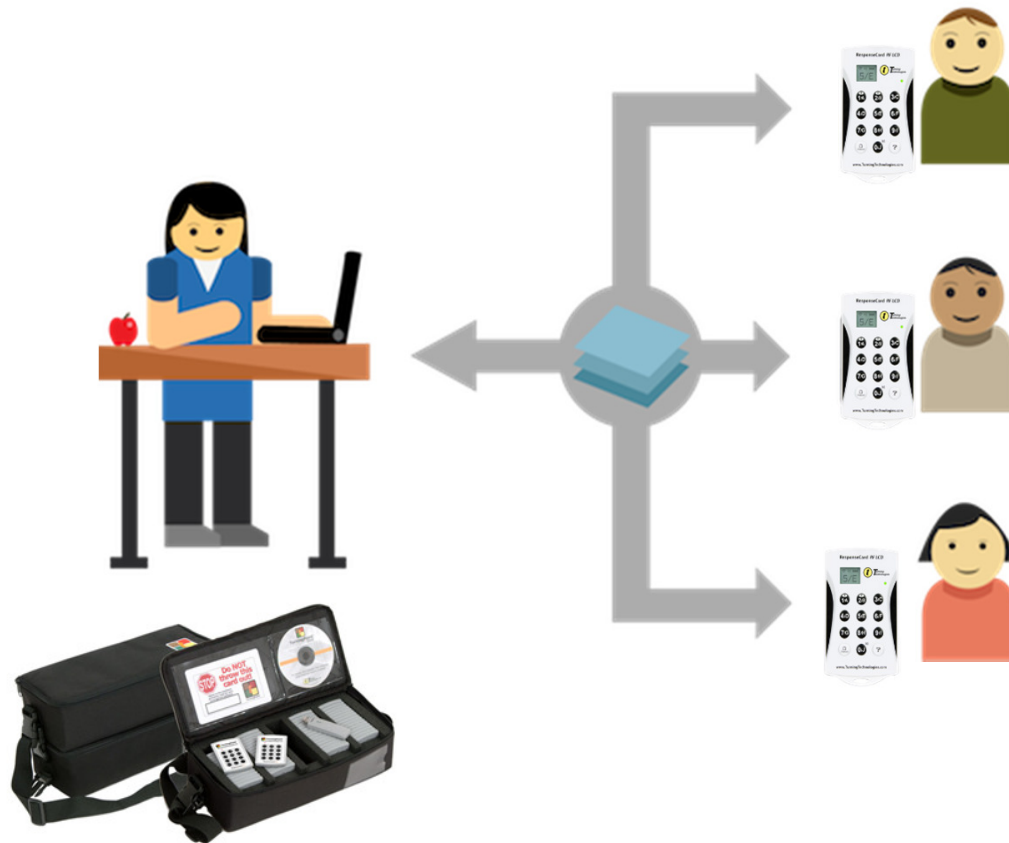
# Outline

- M-Learning and SRS (Student Response Systems)
  - Benefits, Mechanisms
- Multimodal learning - visual and kinaesthetic
  - Clickable images and virtual patients
- Future - educating health professionals to become mobile application content providers.

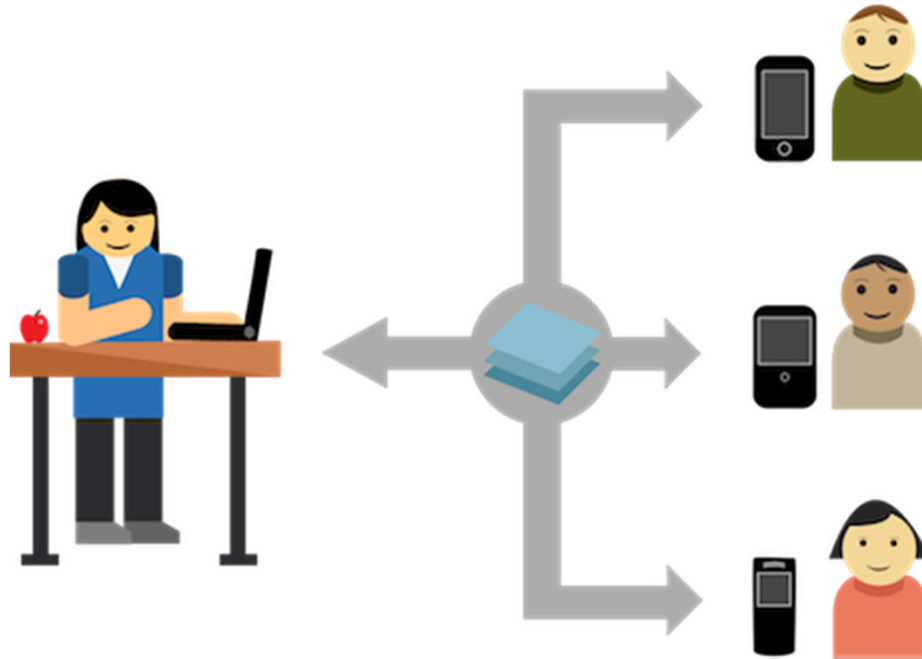
# Mobile-Learning and SRS



# Clicker-Based SRS



# Mobile Phone-Based SRS



# Delivery Mechanisms of SRS

Figure 1. The mechanism of the clicker-based SRS

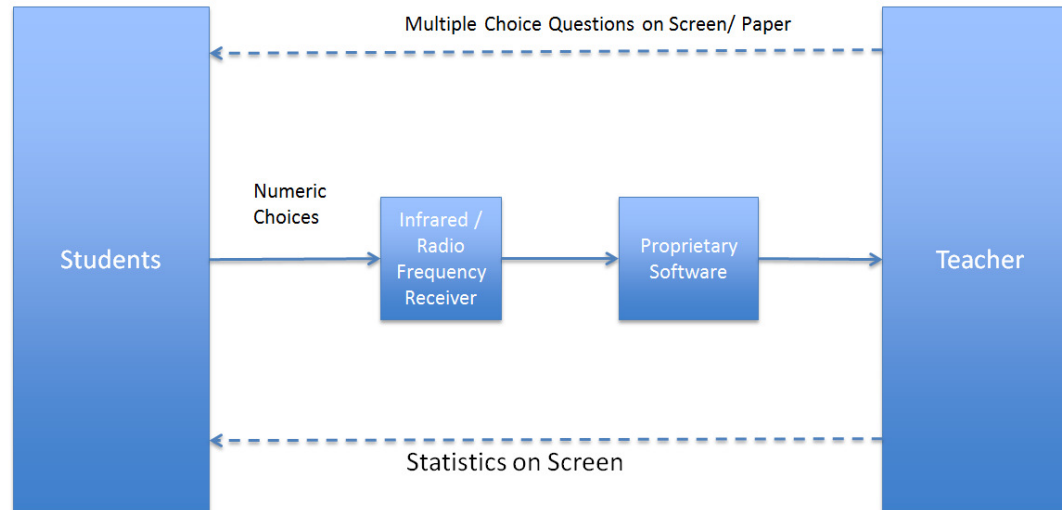
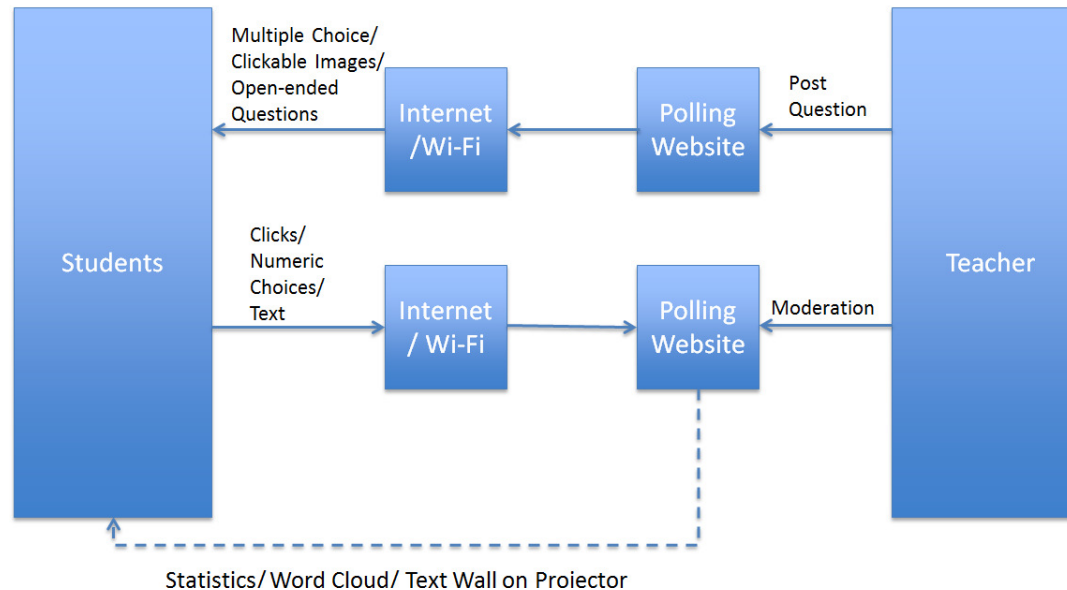
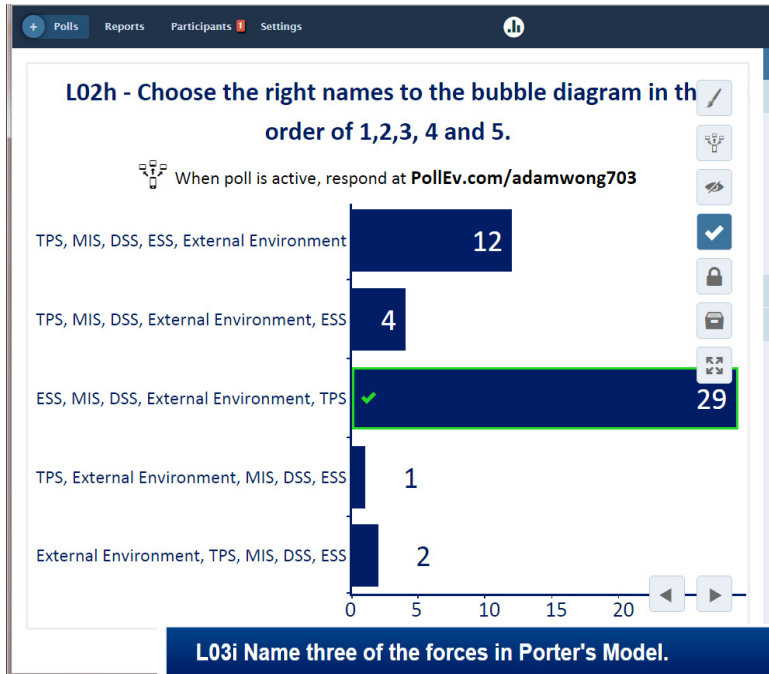


Figure 2. The mechanism of the mobile phone - based SRS



# Examples of Student Responses



# Benefits of SRS

- Students are too shy to give verbal answers in front of their classmates ([Wang et al., 2009](#))
- Easy to measure response quantitatively and qualitatively without the "band-wagon effect" ([Withey, 2010](#)).
- Keep track of individual progress ([Bae & Kim, 2014](#); [Cheung, 2008](#)).
- Better Attendance ([Kay & LeSage, 2009](#))
- Encourage critical thinking, resolve misconceptions ([Kay & LeSage, 2009](#))
- Facilitates teacher collaboration



# Visual & Kinesthetic Learning Modes

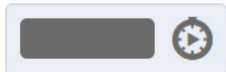
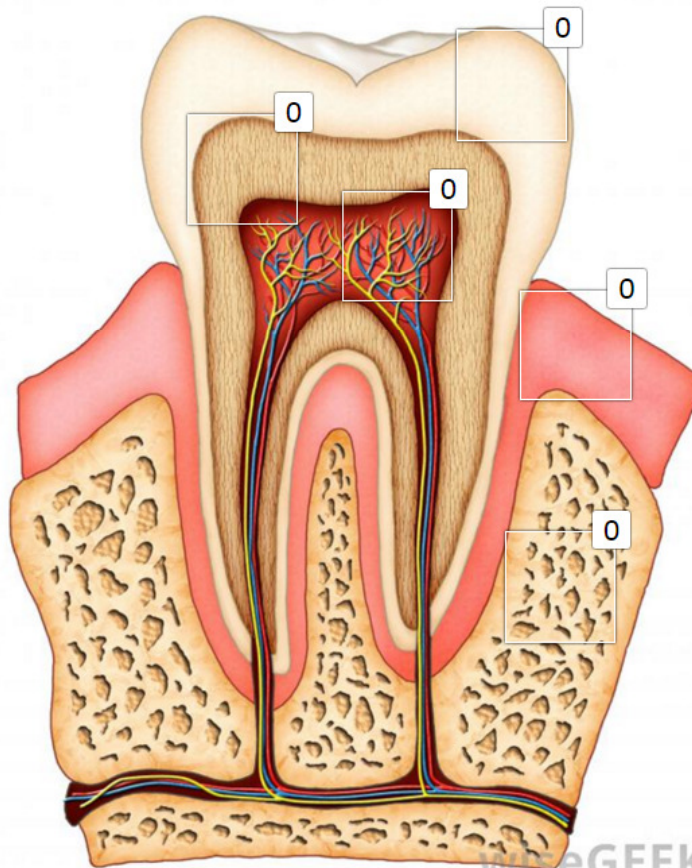
(Fleming, 1995)

- Visual
  - Charts, Symbols, Diagrams, Images
- Kinesthetic
  - Concrete personal experiences, examples, practice or simulation
  - The key is the reality or concrete nature of the example

# Visual - Clickable Images

Which part(s) of the tooth is affected by dentin decay?

When poll is active, respond at [PollEv.com/adamwong703](https://www.pollEv.com/adamwong703)



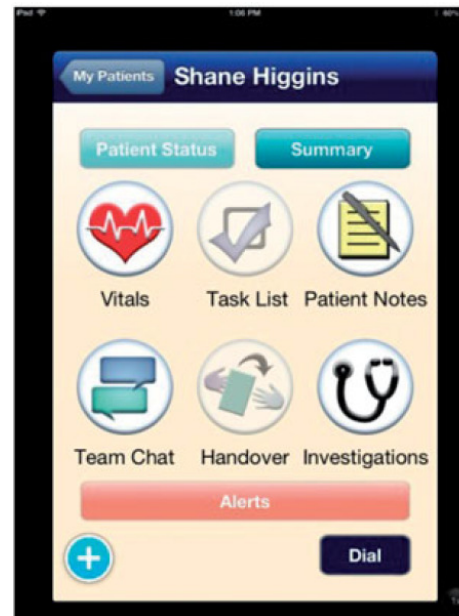
wiseGEEK

# Kinesthetic - Virtual Patient

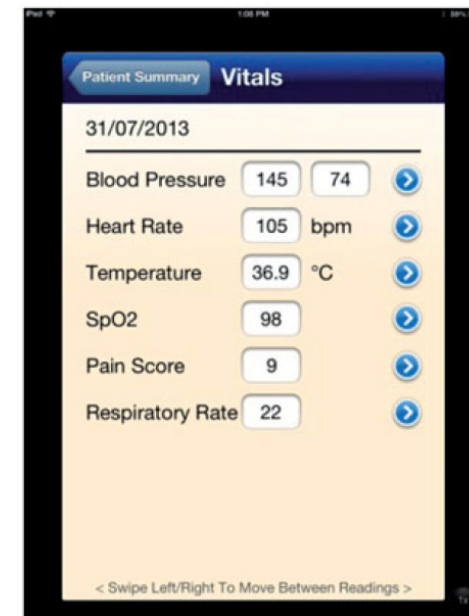
(McLean, Brazil, & Johnson, 2014)



Videos of simulated patients role-played case scenarios embedded into the mobile application



Main menu for a patient



Vitals for the patient

# Student Tasks

(McLean, Brazil, & Johnson, 2014)

- Ordering investigations
- Questioned about their clinical reasoning by a virtual “registered nurse” or “physician”
- Writing discharge notes
- “Manage” several patients each week
  - Need to prioritise patients and tasks
- Patients remained in hospital for several weeks

# Future

(Masters, 2014)

- Health professionals as mobile content creators for m-Health applications
- Exploratory study at Sultan Qaboos University
  - 166 student participated
  - learnt iBuildApp, an app development tool
- Findings
  - 64.5% completed the survey
  - 77.6% of the students had positive perceptions of the project, and wanted more sophisticated development environments in spite of their apparent struggles
  - programming experience was the strongest influencer of a positive experience

# Recommendations

- Encourage teachers to adopt m-learning in the classroom
  - Training
  - Funding (mobile devices, subscription to polling websites)
- Include digital literacy as a subject in the first year of higher education

# References

1. Bae, J.-H., & Kim, S.-K. (2014). Research on Educational Use of Smart-Phone Applications with Smart Clicker Technique *Advances in Computer Science and its Applications* (pp. 597-602): Springer.
2. Cain, J., Black, E. P., & Rohr, J. (2009). An audience response system strategy to improve student motivation, attention, and feedback. *American Journal of Pharmaceutical Education*, 73(2).
3. Cheung, S. L. (2008). Using mobile phone messaging as a response medium in classroom experiments. *The Journal of Economic Education*, 39(1), 51-67.
4. Fleming, N. D. (1995, July). I'm different; not dumb. Modes of presentation (VARK) in the tertiary classroom. In Research and Development in Higher Education, *Proceedings of the 1995 Annual Conference of the Higher Education and Research Development Society of Australasia (HERDSA)*, HERDSA (Vol. 18, pp. 308-313).
5. Masters, Ken. (2014). Health professionals as mobile content creators: Teaching medical students to develop mHealth applications. *Medical Teacher*, 36(10), 883-889. doi: 10.3109/0142159X.2014.916783
6. McLean, Michelle, Brazil, Victoria, & Johnson, Patricia. (2014). How we 'breathed life' into problem-based learning cases using a mobile application. *Medical Teacher*, 36(10), 849-852. doi: 10.3109/0142159X.2014.886771
7. Wang, M., Shen, R., Novak, D., & Pan, X. (2009). The impact of mobile learning on students' learning behaviours and performance: Report from a large blended classroom. *British Journal of Educational Technology*, 40(4), 673-695. doi:10.1111/j.1467-8535.2008.00846.x
8. Withey, C. (2010). Engaging students through electronic voting-clickers and mobile phone systems: PollEverywhere, *Engaging Students Through In-class Technologies*, Available at <https://colligo.wordpress.com/2010/05/06/estict-event-2-%E2%80%93-university-of-edinburgh/>
9. Turning Technologies (2016). Higher Education, <https://www.turningtechnologies.com>