Integrating Educational Technology into Health Professions Education

Process versus Product

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Objectives

1. Discuss how educational technologies relate to metacognition in medical education
2. Discuss the process of integrating technology into medical education
3. List common barriers to integrating technology and ways to overcome them
4. Understand the importance of creating an online “bank” of materials
5. List at least one method to integrate technology into large or small group teaching
“…essential to foster deep and durable learning.”

Interactive teaching styles that facilitate reflection, self-assessment, and perspective-taking  
“Digital native”

THE EVOLUTION OF MAN
Understanding the data deluge: comparison of scale with physical objects

1 megabyte
(A large novel)

1 gigabyte
(Information in the human genome)

1 terabyte
(Annual world literature production)

1 petabyte
(All US academic research libraries)

1 exabyte
(Two thirds of annual production of information)

A tiny ant

Height of a short person

Length of the Auckland Harbour Bridge

Length of New Zealand

Diameter of the Sun

www.saradigm.co.nz
“Today’s students are no longer the people our educational system was designed to teach.”

-Marc Prensky, *Digital Natives, Digital Immigrants*
Education in the Digital Age
I never teach my pupils; I only attempt to provide the conditions in which they can learn.
Educational design is the creation of curriculum and instruction which optimizes an immersive learning environment

-Me
KEEP CALM.
THERE'S AN APP FOR THAT
Organize and anchor Process
Educational technology

“...a process--oriented and systems--based pedagogical approach for facilitating learning and improving performance in patient care by the integrated mode of creating, using, and managing technological process and resources.”

Han, et.al. Teach and Learn in Med. 2013;25(S1):S39-43
The importance of educational theories for facilitating learning when using technology in medical education.
Educational technology
Evolution of ET

Use  Delivery
Exposure  Mastery
Facts  Concepts
1. Problem identification and general needs assessment

2. Targeted needs assessment

3. Goals and objectives

4. Educational strategies

5. Implementation/delivery

6. Evaluation and Feedback

Kern, et. al. 2009
Figure 1: Depiction of cognitive theory of multimedia learning

- Multimedia Res-Ta-on
- Sensory Memory
  - Words
  - Pictures
- Ears
  - Selecting words
- Eyes
  - Selecting images
- Sounds
  - 11
- Verbal Memory
- Prior Knowledge
  - Integrating
1. Problem identification and general needs assessment

2. Targeted needs assessment

3. Goals and objectives

4. Educational strategies

5. Implementation/delivery

6. Evaluation and Feedback

Multimedia Learning Education Principles

Kern, et. al. 2009
Integrating Educational Technology

1. Understand and embrace the technology
2. Add to an existing educational framework
3. Start slow and build slowly
4. Don’t be afraid to experiment and innovate
Embrace Technology
Establish a framework

Add the technology into an existing framework to enhance delivery or retention of information
SAMR Model

Substitution
Augmentation
Modification
Redefinition
SAMR and Bloom’s

- Redefinition
- Modification
- Augmentation
- Substitution
The SAMR Model for Technology Integration

**SAMR**

- **NO TECH**
  - Substitution: Tech acts as a direct tool substitute, with no functional change.

- **ENHANCEMENT**
  - Augmentation: Tech acts as a direct tool substitute, with functional improvement.

- **TRANSFORMATION**
  - Modification: Tech allows for significant task redesign.

- **REDEFINITION**
  - Tech allows for the creation of new tasks, previously inconceivable.
Substitution
Augmentation
Modification

“THE FLIPPED CLASSROOM”

Student watches video at home.

Team based learning exercise in classroom instead of didactic instruction.
Redefinition

Tech allows for creation of new tasks previously inconceivable.
Take your time...
Experiment and innovate
Adopt the beginner’s mind
Foster communication
...but recognize that it is just a tool
Simplicity
Time to Dive in
Apple
Baiboard
Android
GroupBoard
Create a bank
Cloud Storage
Become a hoarder
Copyright and PHI
Collaborative Board Demonstration
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