Evidence vs Hype

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Technology: materials and devices created or adapted to solve practical problems

Myth 1. The effectiveness of EdTech is in doubt

Does it work? EdTech vs no intervention

Which is better? Computer vs non-computer

Which is better? Simulation vs non-sim

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Myth 2. Online learning is cheap and easy

• Online learning will save money right?
  • ➔ Show me the evidence!

• Almost no data
• Sparse evidence that exists ➔
  • More time & greater overall cost to develop & implement (Rumble 2001; Spector 2005; Stotzer et al. 2013; Huang et al. 2007; Delgaty 2013)

How did this myth arise?

• Enthusiastic educators discount their time
  • If ignore instructor time, it’s very cheap!

  • But that’s not sustainable

What about MOOCs?

• More learners with fixed cost ➔ lower per-learner cost = economical … right?

  • Reality #1: most courses lack enough growth potential

  • Reality #2: costs are rarely fixed

Myth 3. Online learning is more efficient

Time outcomes

But what about adaptive instruction?

• Tailored instruction … personalized learning
  • User-guided (self-paced, self-navigation) – OK
  • Computer-guided – Really really hard!
  • Few working examples (e.g., Cook 2008)
Myth 4. The Net Generation wants online learning

- **Truth**
  - Age cohort predicts little
  - Most students prefer less e-learning
  - Net generation is digitally illiterate
  - **Changing** approach to accommodate “generations” does **not** matter
  - **Changing instruction to accommodate topics, context, best practices DOES**

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The Truth about the Net Gen

“Young Americans today are no more knowledgeable, fluent, up-to-date, or inquisitive, except in the materials of youth culture. They don’t know history or civics, economics or science, literature or current events. They read less on their own … In fact, their technology skills fall well short of the common claim, especially when they must apply them to research and workplace tasks.” - Bauerlein (2008)

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Net Generation? Three rigorous reviews

- “The rhetoric that university students are Digital Natives and university staff are Digital Immigrants is not supported.” (Kennedy 2009)
- “Students do not naturally make extensive use of many of the most discussed new technologies. … There is not a natural demand that staff should feel obliged to satisfy.” (Jones 2011)
- “Is generational difference a variable important enough to be considered during the design of instruction or the use of different educational technologies? At this time, the weight of the evidence is negative.” (Reeves 2008)

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Myth 5. EdTech will transform education

- **Great at using social media and Word**
- **Digitally illiterate in**
  - Framing a research question
  - Judging quality of online information
  - Integrating technology into academics
  - Working in online teams
- “Digital narcissism”
- **“Academic moral panic”**
Technologies are prostheses

- Allow us “to do things faster, more accurately, and in more places simultaneously”
  - Vinyl → tape → CD → mp3
  - Filmstrip → VHS → DVD → YouTube
  - Real patient → human SP or written case → virtual patient

Not the technology … the *activity*

Flipped classrooms

- Have been around for 1000s of years!
  - (It's called “homework”)

- What has changed?
  - Fun delivery approaches
  - *We can track it!*

Not the technology … the *activity*

Emerging Concepts:
A Focus on Value

- Expensive
- But useful
- In select cases

➡️ Who are the patients that benefit from MRI?
Educational Technologies

• Expensive
• But useful
• In select cases

→ Who are the learners that benefit from ed tech?
• What objectives, courses, contexts?

1. Reduce Cost
Optimize Return on Investment

Disruptive Innovations

1. Reduce Cost
Disruptive Innovations

Disruptive innovations are inferior

Bower & Christiansen 1995

1. Reduce Cost
Templates, Tools, Re-use, Share

1. Reduce Cost
Disruptive Innovations

• Low budget online learning
• Low fidelity simulation
• Less interactive virtual patients
• Free & open source tools

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2. Maximize Benefit
Right tool, learner, objective, dose, & timing

- **Flexibility**: location, timing, and pace of instruction
- **Control**: instructional content and delivery
- **Learning analytics**: continuous improvement, adaptation

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**2. Maximize Benefit**

**Blending**

- Patient w/ back pain
  - History
  - Exam
  - ? X-ray
  - ? MRI

- Medical student
  - Lecture
  - Small group
  - Online module
  - ? Virtual patient
  - ? Simulation

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**2. Maximize Benefit**

**Blurring**

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**Summary – Reality check**

- EdTech works!
- Not cheap, not easy
- Not necessarily more efficient
- Generation doesn’t matter
- Not a magic bullet to transform education

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**Finding a niche**: Value

- Lower cost
- Disruption
- Templates, sharing
- Maximize benefit
- Flexibility
- Control
- Analytics
- Blend and blur
- Right tool, right time

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