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e-learning. Is it teaching's 'magic bullet'?

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Outline

- IT in teaching - A magic bullet?
- Evidence that e-learning works
- Poor quality of this evidence
- Other reasons to use IT
- IT not a quick fix - the real focus - good teaching and good learning.



Spending on technology


- **£12.4 billion** - NHS IT modernisation 2004-14
- **£8.3 billion** - NHS UK total drugs spending in 2005
- **€8 billion/year** - estimated worth of the worldwide e-learning industry
- **€9.5 billion** - European Union eLearning Action Plan
- **£33 million** = 2005-06 Hefce spent on e-learning
- **£62m** - spent on the UK's e-learning university - scrapped in 2004

Progress in medicine

- New drugs and new technology seen as progress
- Magic bullet: Or, sometimes, silver bullet.
 1. **The perfect drug to cure a disease with no danger of side effects.** The term magic bullet was first used in this sense by the German scientist Paul Ehrlich to describe antibody and, later, the drug salvarsan that he created to treat syphilis.
 2. In general, a magical solution to any vexing problem.



Medical system to ensure this

- We have a system to ensure money is spent on what works, i.e. what makes us better.
- NICE etc. 

NHS
*National Institute for
Health and Clinical Excellence*
- What's the situation in Education?

Technology seen as a way to improve teaching

- Advertises for technology.
- Seen as education's magic bullet



The screenshot shows the Pearson eCollege website. At the top left is the eCollege logo with the tagline 'A Pearson Company'. To the right, a headline reads: 'Pearson eCollege provides a comprehensive, on-demand eLearning solution to power the effective management and profitable growth of online education programs.' Below this is a navigation bar with links for 'eLEARNING SOLUTIONS', 'eLEARNING EVERYWHERE', 'COMPANY', and 'CONTACT US'. A secondary navigation bar contains 'OVERVIEW'. The main content area features a large yellow banner with the text: 'New Learning Styles *Require* New Education Content *and* Technology'. Below the banner is a blue bar with the text 'Learn More.'. On the right side, there is a vertical menu with links: 'Contact Us', 'Sign Up for eNewsletter', 'Meet Pearson eCollege', and 'Media Center'.

eCollege®
A Pearson Company

Pearson eCollege provides a comprehensive, on-demand eLearning solution to power the effective management and profitable growth of online education programs.

OVERVIEW

eLEARNING SOLUTIONS eLEARNING EVERYWHERE COMPANY CONTACT US

New Learning Styles *Require* New Education Content *and* Technology

Learn More.

Contact Us
Sign Up for eNewsletter
Meet Pearson eCollege
Media Center



Blackboard

Teaching & Learning

Commerce & Security

Alert & Notification

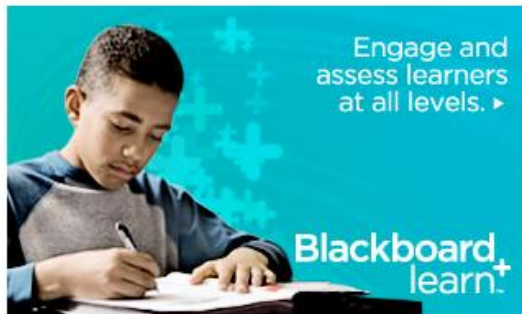
Solutions by Market

Support

Communities

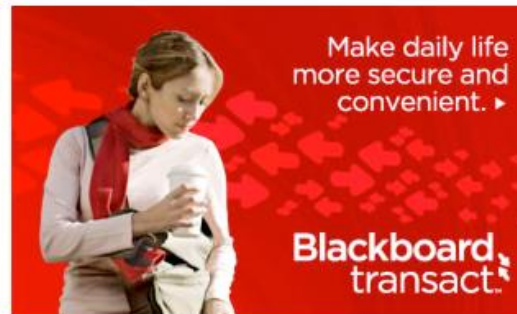
Company

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Reach your entire community with your most important information. ▶

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- Customisable – primary and secondary interfaces for your students

www.ActivInspire.co.uk

ActivInspire part of
The ActivClassroom by PROMETHEAN

The advertisement features a man and a woman interacting with a large digital whiteboard. The whiteboard displays a colorful circular chart with segments in yellow, green, blue, and purple. To the right of the chart is a vertical menu with several green buttons. The background of the advertisement is a textured, light brown color with faint, illegible text. At the bottom, there is a decorative border with various icons representing different subjects and activities.

Next Generation Learning

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Or visit: www.nextgenerationlearning.org.uk

NEXT GENERATION LEARNING

A Government-backed programme, initiated by Becta
*All texts will be charged at your standard network rate

Claims for benefits of e-learning

http://www.e-learningguru.com/articles/art1_3.htm

Advantages of e-Learning to the Trainer or Organization

Some of the most outstanding advantages to the trainer or organization are:

- **Reduced overall cost** is the single most influential factor in adopting e-learning. The elimination of costs associated with instructor's salaries, meeting room rentals, and student travel, lodging, and meals are directly quantifiable. The reduction of time spent away from the job by employees may be the most positive offshoot.
- **Learning times reduced**, an average of 40 to 60 percent, as found by Brandon Hall (*Web-based Training Cookbook*, 1997, p. 108).
- **Increased retention** and application to the job averages an increase of 25 percent over traditional methods, according to an independent study by J.D. Fletcher (*Multimedia Review*, Spring 1991, pp.33-42).

Is technology working?

- Is it improving learning?
- No education equivalent of NICE
- We rely on academic journals

Academic journals



Academic journals

- Written and run by academics and researchers - not by industry
- Publish the results of studies and experiments about use of new technology
- Double blind **peer reviewed**
- At least 2 referees
 - Referees don't know who author is
 - Author doesn't know who referees are
- So should show what works and what doesn't.

Evidence 1

No significant difference

- Book and website by Thomas L. Russell
 - <http://nosignificantdifference.wcet.info/>



- Compares face to face and distance learning (& more recently e-learning)
- Looks at academic publications
- Studies which gives better learning.
- Most early results show no significant difference.

No significant difference results

	Not sig (no difference)	Distance / e-learning better	Class-room better	Mixed
1928-1985	45	1	-	-
1986-2008	87	46	3	6

Evidence 2

My work with Nadia Ali

- Examined 2006 & 7 publications in 4 key journals
 - ALT-J
 - Journal of Computer Assisted Learning
 - British Journal of Educational Technology
 - Journal of Research on Technology in Education
- Shows some evidence that e-learning is better than traditional and non technology approaches

E-learning research papers 2006-7

Total number of articles	270
Empirical (not theoretical or policy)	142
Good evidence re e-learning	35
Of which, e-learning better	20

BUT...

- Measured wrong things
 - about half measure student satisfaction
- Used poor research design
 - only 34 use ‘before and after’ measures, only 44 experiments, only 3 surveys used random sampling
- Hawthorne effect and other threats to validity
- Publication bias.

But 1...

Measure what is easy to measure

- “Student satisfaction” or “self assessment”
not
- “Improved learning”
- The ‘Myron L Fox’ study
 - Donald H. Naftulin, John E. Ware, Jr., and Frank A. Donnelly, "The Doctor Fox Lecture: A Paradigm of Educational Seduction", *Journal of Medical Education* 48 (1973): 630-635
 - Vacuous content but lively and entertaining
 - Academic audience thought highly of presentation

But 2...

Poor research designs

- Samples small, not random
- No control groups or No before and after
- Not generalisable
- Researchers are the teachers too
 - Experimenter bias
 - Researcher's expectations about the outcome of the study can be subtly communicated to participants
 - Compensatory rivalry. an effect on the participants themselves. The 'John Henry' effects

But 3...

Hawthorne effect etc

- In medicine we use double blind testing if we can.
- This not possible with teaching.
- Students know they are being taught & researched.
- Hawthorne car factory in US in 1930s - Elton Mayo
- Partly explains the Placebo effect in medicine.
 - White coats, technology, paying for it, pink pills
 - Do the same in teaching?

But 4...

Publication bias

- Look at No significant difference figures
- 1986 when e-learning started

	Not sig	Distance / e-learning better	Class-room better	Mixed
1928-1985	45	1	-	-
1986-2008	87	46	3	6

Publication bias

- Tendency to publish only positive results
- Journals like positive results
- Justifies grants and capital costs
- Good for researcher's own career
- Negative results or no sig. dif. are not interesting.

Conclusion part 1

- No good evidence that e-learning is better than face to face or any other approach
- So why is so much spent on technology?

Other reasons for using technology in teaching

- To support learning (Blackboard as a document repository)
- Students expect it
- Supports transferable & professional skills
- More efficient use of resources - mass education.

IT in teaching not like technology in medicine

- E-learning not a magic bullet
 - Teaching not like giving a drug.
- Learning is intentional - learners must want to learn
 - Motivation is important
 - And - engagement, enthusiasm, inspiration, persuasion and explication
 - I.e. what the good teacher brings.

Conclusions - Final

- E-learning is not a magic bullet
 - No learning without motivation, enthusiasm, engagement, inspiration etc.
- But we need evidence too.
We need
 - Long term, multi-site studies, with controls
 - Proper meta analysis.



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Thank you