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Original Citation

Gibbs, Graham R. (2006) e-Learning. Is it teaching's 'magic bullet'? In: Dept of Behavioural and Social Sciences Public Lecture, 27th May 2009, University of Huddersfield. (Unpublished)

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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.
-
-
- What's the situation in Education?
-



Technology seen as a way to improve teaching

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



eCollege



Blackboard



Blackboard



ActivClassroom - interactive whiteboard



Next Generation Learning



Claims for benefits of e-learning

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



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.

15  **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.

16  **No significant difference results**

17  **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

18  **E-learning research papers 2006-7**

19  **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.

20  **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

21  **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

22  **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?


23  **But 4...**

Publication bias

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

24  **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.

25  **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?

26  **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.

27  **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.

28  **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.

29  Thank you