The New Millennium Learners

What Do We Know About The Effectiveness of ICT in Education And What We Don’t

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Contents

• What the evidence is telling us:
  – PISA (2006) insights
• What we don’t know yet:
  – The technology effect
What the evidence is telling us

- Two ways of addressing ICT effectiveness:
  - Empirical experiments
  - Correlational studies
Empirical experiments

• Two strands:
  – E-learning vs. traditional education:
    • The “no significant difference” phenomenon
  – School education (school subjects):
    • Inconclusive evidence in general, but…
    • Effectiveness depends on the role assigned to ICT:
      – Practice improves performance
  – But what about the pedagogy?
    • Pasta or fish?
Correlational studies

Again, inconsistency... which reflects complexity!

Not pasta or fish, but wine

With some useful insights (PISA, 2006):
- School and home access to ICT
- Frequency of use
- Past experience

Access at schools counts

1. At Level 3 students can reason from different information sources and provide short answers with results and reasoning, as well as use simple problem-solving strategies. At Level 2 students can take information from one source and interpret it literally, as well as use basic formulae.
Correlational studies

• Again, inconsistency…
• … which reflects complexity!
• With positive indications (PISA, 2006)

Frequency of school use also counts, although more is not better

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1. At Level 3 students can reason from different information sources and provide short answers with results and reasoning, as well as use simple problem-solving strategies. At Level 2 students can take information from one source and interpret it literally, as well as use basic formulae.
### OECD average scores in mathematics according to:

<table>
<thead>
<tr>
<th>PISA proficiency level</th>
<th>a) Whether students have access to computers</th>
<th>b) For how long students have been using computers</th>
<th>c) How frequently students use computers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 4</td>
<td>i) at home</td>
<td>37% of students using more than 5 years</td>
<td>i) at home</td>
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<tr>
<td></td>
<td></td>
<td>score 532 pts</td>
<td></td>
</tr>
<tr>
<td></td>
<td>i) at school</td>
<td>27% of students using 3-5 years score 513 pts</td>
<td>i) at school</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>i) at home</td>
<td>26% of students using 1-3 years score 479 pts</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>i) at home</td>
<td>10% of students using less than 1 year score 433 pts</td>
<td></td>
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</tbody>
</table>

Experience counts even more

1. At Level 3 students can reason from different information sources and provide short answers with results and reasoning, as well as use simple problem-solving strategies. At Level 2 students can take information from one source and interpret it literally, as well as use basic formulae.
Correlational studies

- Again, inconsistency...
- ...which reflects complexity!
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But home access and frequency of home use are critical

1. At Level 3 students can reason from different information sources and provide short answers with results and reasoning, as well as use simple problem-solving strategies. At Level 2 students can take information from one source and interpret it literally, as well as use basic formulae.
What’s more important?

In studying foreign systems of Education we should not forget that the things outside the schools matter even more than the things inside the schools, and govern and interpret the things inside.
Students frequently using a computer at home or at school
Based on students’ self-reports

Percentage of students using a computer at least a few times each week:

1. Response rate too low to ensure comparability.
Source: OECD PISA 2003 database, Table 3.1.
“There aren’t any icons to click. It’s a chalk board.”
The emergence of NML

Emergence of NML

Possibilities offered by technologies

Availability of devices and services (national market)

Societal attitudes towards technologies

Generational attitudes

Attitudinal strand

Infrastructural requirement

OECD

CERI
Range of devices/services

SES

gender

age
OECD country disparities in home access and use

Having used computers in past 5 years

Internet connection at home


Time and main uses

SMS | Total | Higher SES | Medium SES | Lower SES
--- | --- | --- | --- | ---
Never | 41 | | | 30
Sometimes | 29.5 | | | 31
Frequently | 18 | | | 27

Communication

Source: Pasquier (2005)


Optimization

Are they really challenging education?

Millennial profiles

Cognitive skills

School practices

Cultural patterns, lifestyles, values

Educational expectations

Short term effects: academic, social

Long term effects

"You have to solve this problem by yourself. You can’t call tech support."
My summer holidays were a complete waste of time. Before, we used to go to New York to see my brother, his girlfriend and their three screaming kids face to face. I love New York. It's a great place.

Taken from: Daily Telegraph, Sun Mar 2, 2003, British Girl Baffles Teacher with SMS Essay.
The ‘edutainers’ merit a failing grade

Y es, the internet is wonderful. Yes, children are our future. Yes, state-run school systems require fundamental reform. Nevertheless, the shrewdest policy to improve public education while saving billions in government spending demands abstinence. Keep computers out of the classroom.

The “edutainer” belief that computers should be essential ingredients of classroom curricula is delusional. A quality education has virtually nothing to do with the technological endowment of the school. To the contrary, history confirms that schools are shockingly poor at successfully assimilating new technologies.

In America, the 1970s proliferation of “language labs” designed to make secondary students multilingual proved expensive exercises in futility. Global diffusion of cheap calculators has improved neither test scores nor understanding of math concepts. Educational television and then VCRs also promised to transform classroom learning. The results merit a failing grade.

Yet today’s champions of digital education swear that this time it will be different. They are right. It will be worse. Why? Unrealistic expectations. This dismissal of failed educational technologies past recalls H.L. Mencken’s wicked line about second marriages as “the triumph of hope over experience.” Good teachers know this. That is why so many are cynical about computerizing their classrooms.

To be sure, the UK’s Open University and America’s for-profit University of Phoenix offer intriguing models of how educational institutions can successfully integrate innovative technologies into core curricula. However, their students are typically far more mature and self-motivated. More important, these schools made innovative technology adoption inherent to their mission. That commitment remains enforced by any government school system.

That is not and “edutainer.” Imagine the denunciations and the educational evangelists of today successfully persuaded the schools to acquire the nascent personal computing technologies of the pre-internet 1980s or the pre-WiFi/open source 1990s. Early adoption would have resulted in a costly fiasco of obsolescence. Mindless technological evolution makes it hard for even sophisticated educators to benchmark mediocre classroom technology success, let alone best. Educational television and then VCRs also promised to transform classroom learning. The results merit a failing grade.

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Final remarks

• The technology effect
• Shift to the learner
• Importance for:
  – futures thinking in education
  – ICT and education: need for new pedagogic arrangements
• Methodological challenges:
  – Lack of empirical and comparative data
  – Need for designing new research methodologies
  – Data contradict our expectations
Comments welcome

... even by SMS

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