

# Growing advances in digital electronics

Much of the discussion about 'computers' or 'technology' in education has a narrow vision of this as "an additional tool for the teacher", or as important only for the administration and management of the classroom, school or district.

So far as it does involve students the notion often is that 'technology' is for workbooks, or for programmed courses -- or as an electronic replacement for the heavy, bulky textbook.

Our discussion about digital electronics has not yet really begun to think about the web as a whole world for young people to explore; in which they can see things and get information and do research -- and meet people. And: in which they can do this individually; customizing their learning, fitting it to their own needs and interests and aptitudes in ways that would be far more motivating for their work in school.

Most of the things being written currently about 'technology' look at fields like entertainment. Take The Long Tail as an example; Chris Anderson's report on the way the web is impacting video, books, magazines, newspapers, movies (think about Netflix), music and retailing generally (think eBay). Turn to its index and you will not find an entry for education, or for school, or for learning.

To get a sense for the potential today, consider these statistics. for the report from ITIF (Information Technology and Innovation Foundation).

- Moore's Law continues to hold. The computing power of a chip has doubled every 18 months for 40 years.
- The price of processing power has fallen steadily:
  - \$480 per MIP (million instructions per second) for the Intel 086 in 1978
  - \$ 50 per MIP for the Intel 386 in 1985
  - \$ 4 per MIP for the Pentium Pro in 1995
  - \$ 2 per MIP for the Itanium 2 in 2003
- The real price of servers fell about 30 per cent per year between 1996 and 2001.
- Hard drive storage capacity has doubled every 19 months and the cost of a stored megabyte of data has fallen 50 per cent per year. So the cost of storing one megabyte of information fell:
  - \$5,257 in 1975
  - 17 cents in 1999
  - half a cent in 2002

- 1/10th of a cent in 2007
- There are today about 100 million websites, adding content and becoming increasingly user-friendly.
- All this permits Hewlett-Packard to sell its Media Vault, storing 300 gigabytes (150 movies) for \$380 and for Google to provide 2.7 gigabytes of storage for a user of its Gmail service, free.

-- Ted Kolderie

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the quite radical changes now appearing in K-12 education. But, be  
aware that its perspectives do depart somewhat from conventional thinking.