

National Directors Forum

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**Restructuring Educational Systems for
the Digital Age: A review of current
thinking from the latest EDUsummIT
Expert Meeting at UNESCO,
Paris, 8-10 June 2011.**

How should schools educate for the (unknown, uncertain) future?

“Making predictions is difficult, especially about the future.”

Niels Bohr.

**“...so many centuries after the Creation it is unlikely that
anyone could find... unknown lands of any value...”**

Committee advising King Ferdinand and Queen Isabella of
Spain regarding a proposal by Christopher Columbus, 1486.

Academics meet every few years to discuss why technology has not revolutionised education.

- **GPS has changed logistics, warfare and tourism but largely bypassed schools.**
- **Social networks are changing marketing, advertising and human bonding but have not find a productive place in schools yet.**
- **Mobile and smartphones have become indispensable for billions of people even at the "bottom of the pyramid" but are prohibited in my children's school.**
- **Computer gaming has displaced TV in children's time but is mostly used clandestinely in schools**

¿Can you spot any changes?



1914



2010

¿Can you spot any changes?

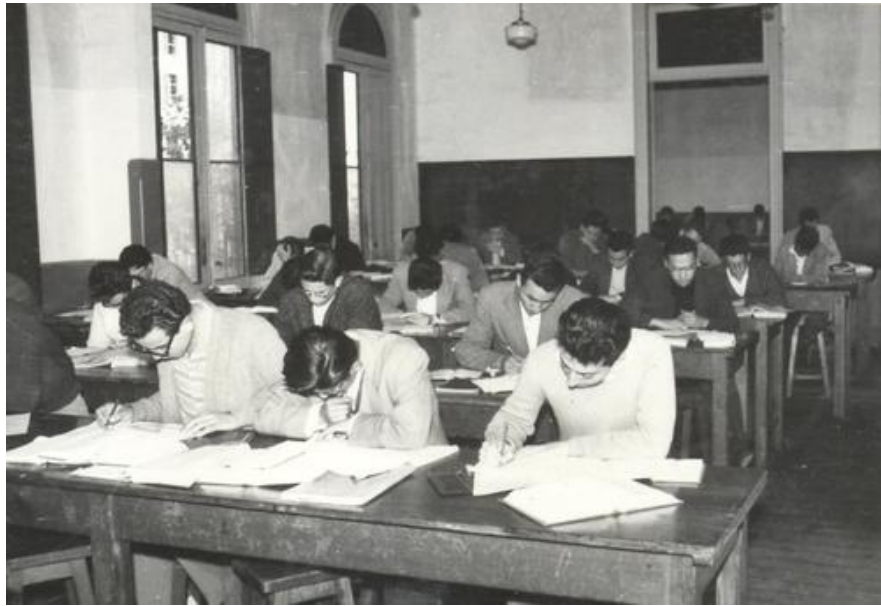


1812



2009

Has it changed much?



1945



2009

Big question: how to use ICT productively in schools? (I)

Many ICT academics look like people walking around with a hammer for whom everything look dangerously like a nail.



Big question: how to use ICT productively in schools? (II)

- **"How to use ICT in education" is not a coherent research question: this why it cannot be answered.**
- **The vital question is one of *change* not of technology as Darwin taught us. ICT use should be a *consequence* of educational reform not a cause.**
- **The right questions should look like: What are my learning (or access, or cost reduction) goals? Which restrictions I must overcome for reaching these goals? Which new educational services I need to provide? Which new teaching strategies I need to implement?
ICT may then arise as part of the solution.**

Big question: is ICT an innovation relevant for schools? (I)

- **The nature of the innovation.**

Is ICT for education the catalytic converter or the internal combustion engine? Is it a “disruptive innovation” (such as the printing press or mobile telephony) or one that reinforces current teaching approaches (such as videoconferencing or electronic blackboards).
- **The stage of the innovation.**
 - **Two-stages innovations first mimic established practices then support sweeping changes (think of motion pictures and theater).**
 - **Immediate impact innovations such as fire.**

Teaching is shaped by media available (such as books or blackboards)
Student's imagination has to fill the gap

Good teachers are essentially raconteurs



Big question: is ICT an innovation relevant for schools? (II)

- **Student's access to knowledge has historically been mediated by the teacher and the consideration of alternative viewpoints difficult to reconcile with the one-to-many structural design of classroom teaching.**
- **ICT may amplify student's autonomy to know the world, exchange with other people, collaborate with each other and get information without adult mediation. Virtual experiential learning, collaboration and access to external sources can become the norm.**

Big question: why restructure educational systems?

- **There has to be a moral purpose to reforms**
- **The moral imperative is raising the bar (for all students) and closing the gap (for lower performing groups) so as to provide citizens and societies the chance to comprehend and prosper in the knowledge society.**

**From a political economy perspective,
education is facing its biggest challenge
since the industrial revolution.**

**Industrial
Paradigm**

standardized,
low variance,
literacy and
numeracy to
large numbers
of people.



**Knowledge
Economy**

cognitive abilities
of citizens
developed to their
fullest potential
and in flexible
paths.

Big question: why has ICT failed to transform education to the same extent than most other human activities?

- **Historically, schools have been fit to purpose and cost effective.**
- **K-12 education has traditionally been conceived as a “sacred right” rather than a public service and therefore shielded from competition and public scrutiny. As a result it spends little in research and pays no attention to user satisfaction and invests few resources in technology.**
- **Teaching is an artisanal service with industrialised delivery where the impact of ICT on productivity is limited (think of concert live music, competitive sports, physiotherapy or software programming).**
- **Systems can be classified according to their opportunity costs and their “failure costs”. In “high costs” systems such as the military, health, or corporate training, technology is widely used. Slow change in k-12 education might be explained by the low opportunity cost of students, low cost of failures, differed gains and unattributability of outcomes.**

Big question: where do we go from here?

- **We have now better data and better analyses of how different strategies work across countries**
 - **OECD's Programme for International Student Assessment (PISA).**
 - **Mourshed, M, Chinezi, C and Barber, M (2010) How the World's Most Improved School Systems Keep Getting Better, McKinsey and Company.**
 - **In both reports the top five countries in literacy, science and mathematics are Korea, Finland, Hong Kong, Singapore and Canada.**
- **Technology provision is not the solution. As Alan Kay said: "You can put a piano in every classroom, but that won't give you a developed music culture, because the music is in the teacher, not the piano".**

- **Human capital refers to the teacher's cumulative abilities, knowledge, and skills developed through formal education and on-the-job experience.**
- **Social capital resides in the relationships among teachers and between teachers and principals (how supportive, open, intensive and focused on teaching they are).**
- **Teachers of higher ability (high human capital), and with stronger ties with their peers (high social capital) had the best results. Low-ability teachers perform as well as teachers of average ability 'if they have strong social capital' in their school.**
- **High social capital is a powerful strategy to leverage human capital.**

Public or institutional policies for olpc (one laptop per child) projects

- **Project budgets reflect strategy: hardware should not exceed 30% of total investment.**
- **Investment in public knowledge infrastructure rather than in terminals is the main trend.**
 - **Connectivity: broadband networks specially mobile, cloud access.**
 - **OER libraries.**
 - **Collaboration platforms for students and teachers.**
- **The dark side of OLPC is student's access to hate, erroneous or ideological content without the counterbalance of family books and cultured parents.**

Drivers for successful school reform.

(Fullan, M., 2011)

Wrong	Right
Accountability	Capacity Building
Individual Teacher	Collective Performance
Technology	Instruction
Fragmented Strategies	Systemic Strategies

Why are the “right drivers” effective?

- **The right drivers are effective because they work directly on changing the culture of schools (values, norms, skills, practices, relationships).**
- **The wrong drivers alter structure, procedures and other formal attributes of the system leaving their substance unchanged.**

Main "wrong drivers" for reform according to Fullan

- 1. Accountability: using test results and teacher appraisal, to reward or punish teachers and schools (vs. capacity building);**
- 2. promoting individual teacher quality (vs. collective performance);**
- 3. assuming that technology will be used productively by its own presence;**
- 4. fragmented strategies vs systemic strategies.**