A World Leader in applications of ICT
Computers in Education: Dreams, Disappointment and Disruption

Sir John Daniel, KNOU Fellow
PLAN

• The Dream: Computers in Education
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• The Dream: Computers in Education

• Disappointment: Schools
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• The Dream: Computers in Education
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• Disruption: Higher Education
PLAN

• The Dream: Computers in Education
• Disappointment: Schools
• Disruption: Higher Education
• Achieving the Dream
WHY

do

ICT

inspire dreams

of

transforming education

???
Teaching and Learning

= Manipulation of symbols (Words, Numbers, Formulae, Images...)

The Practice of Education

“the Internet is an extraordinary vehicle for the wide distribution of information, knowledge and educational material at low cost.”
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The OLPC XO-1 laptop

One Laptop Per Child
“he wanted children in the developing world to ‘learn learning’ through a methodology called constructivism”
The OLPC XO-1 laptop

A FAILURE?
4 PROBLEMS

• No clear aims
• Little educational software
• No Teacher Training
• Poor logistics
Education in Peru

Error message

A disappointing return from an investment in computing

Apr 7th 2012 | LIMA | from the print edition
HOLE IN THE WALL
Sugata Mitra

The Slumdog Professor

SLUMDOG MILLIONAIRE
Findings:

- Learning happens in groups
Minimally invasive education
Findings:

• Learning occurs in groups
• Getting started a challenge
Findings:

• Group membership changes constantly
• Everyone an expert
Findings:

• Develops intellectual maturity
• Does not help rote learning
• Parents & communities like it
CONCLUSIONS

• OLPC in classroom but no teacher training

• HITW in playgrounds
CONCLUSIONS

• OLPC in classroom but no teacher training

• HITW in playgrounds

Therefore:

Embed programmes in school systems
What about Secondary?
Surging to Secondary

200 to 400 million youth
Develop and expand OPEN SCHOOLING and INTEGRATE IT with other approaches
‘there are no technology shortcuts to good education. For primary and secondary schools that are underperforming... efforts to improve education should focus... on better teachers and stronger administrations.

Technology has a huge opportunity cost (compared to) more effective non-technology interventions.’

Toyama (2011)
What about Higher?
WCHE New Dynamics

- Rising demand (massification)
- Diversification (providers & methods)
- Private provision
- Distance education
- Cross-border education
- Quality assurance
- Teacher education
United States

Enrolments in eLearning courses increased by 21% between 2009 and 2010 compared to 2% for campus enrolments.
United States

2014
80% of students online

2009
44% of students online
the for-profit sector has a much higher proportion of the total online market (32%) compared to its share of the overall higher education market (7%).
BUT...

- goals for eLearning are unambitious
- costs are rising
- no evidence of better learning outcomes
- failure to meet quality standards
Better to work in teams!
Higher Education: a Great Divide?

Teaching

Research
Higher Education: a Great Divide?

Teaching
Private

Research
Public
Open Educational Resources

‘educational resources that are freely available for use by educators and learners, without an accompanying need to pay royalties or license fees’
450,000 downloads of the UKOU’s materials per week account for 10% of all iTunesU traffic
“the task of universities today is to provide paths from their informal cloud of learning towards formal study for those who wish to take them”
The OER university concept. Adapted from Taylor (2007)
Defining Technology

Technology is the application of scientific and other organized knowledge to practical tasks by organizations consisting of people and machines…
Principles of Technology

• Division of labour
• Specialisation
• Economies of scale
• Machines and ICTs
The Central Challenge

• ACCESS (wider)

• QUALITY (higher)

• COST (lower)
The Iron Triangle

ACCESS

QUALITY

COST
The Iron Triangle
The Iron Triangle
The Iron Triangle
The Digital Divide

Is now

a wealth gap

within countries
UNESCO HQ Paris

2002 Forum on the Impact of Open CourseWare for Higher Education in Developing Countries
World Congress on
Open Educational Resources
Paris – June 20-22 – 2012

The Paris Declaration
World Congress on Open Educational Resources
Paris – June 20-22 – 2012

‘that educational materials developed with public funds be made available under open licenses’

The Paris Declaration
‘The growing availability of OER will dramatically increase the potential of ICT in education’
Key Questions for the use of ICTs:
5 Key Questions for the use of ICTs:

1. WHY?
   What are the objectives?
   Planning and policy
5 Key Questions for the use of ICTs:

2. WHAT?
   Introduced into what system?
   Planning
5 Key Questions for the use of ICTs:

3. BETTER LEARNING OUTCOMES? Existing curriculum or new curriculum? (reform a major task!)
Key Questions for the use of ICTs:

4. MORE COST-EFFECTIVE?
Planning
Substitute capital for labour
5 Key Questions for the use of ICTs:

5. EXIT STRATEGY?
   Avoid lock-in by hardware or software
SYSTEMATIC APPROACH

Take a systematic approach that addresses these issues
THREE VITAL PRELIMINARY STEPS

- Objectives: to achieve what?

Bangkok
SYSTEMATIC APPROACH

4 elements need attention:

• Training teachers
• Curriculum materials
• Organisation
• Computer network
PRELIMINARY STEPS

- Objectives: to achieve what?
- Trained teachers

ICT Competency Framework for Teachers

Commonwealth Certificate for Teacher ICT Integration
PRELIMINARY STEPS

• Objectives: to achieve what?

• Trained teachers

• ICT-rich Learning Material

Open Educational Resources
Collaborative Development of OER

COL & Hewlett Foundation

20 sets of self-instructional materials in the secondary curriculum (each is a complete syllabus for one grade 10 or 12 subject)
ORGANISATION

“Technology involves organised ways of doing things”
Develop and expand OPEN SCHOOLS and INTEGRATE THEM with the system

National Institute of Open Schooling
(The Largest Open Schooling System in the World)
COMPUTER NETWORK

“Independent professional advice”
The Potential of ICT

- ACCESS (wider)
- QUALITY (higher)
- COST (lower)

ALL AT THE SAME TIME!
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SYSTEMATIC APPROACH

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