ICT Capacity Building: Game Changers on the Horizon?

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September 2012
Commonwealth of Learning COL

- Inter-governmental organization (1987)
- 54 member countries

- Focus on helping member governments improve
  
  **Scale**  **Efficiency**  **Quality of Learning**

- Appropriate Tech, Open and Distance Learning
Rapid, Mass Capacity Building in ICT

- A felt need in many developing countries
  - Especially in large developing countries

- Industrial Training and Conventional Higher Education CANNOT meet this need by themselves
Because there is an Insidious Assumption...

“Open education broke open the iron triangle of access, cost and quality that had constrained education throughout history and had created the insidious assumption, still prevalent today, that in education you cannot have quality without exclusivity”

Sir John Daniel
Two Key Developments

#1 Open Educational Resources - OER
Open Educational Resources

- Economic Rationale: not proven
  - Until recently, that is

- Contextualization Expensive
  - From the teacher-administrator perspective

- Level of complexity does not suit learners
  - Yes, in typical classroom
  - Not in a Flipped Classroom
Commonwealth Universities
Full Course Material
Undergraduate Level
Openly Accessible

1408 courses catalogued
Who are the Major Publishers...

- National Open University of Nigeria
- UK Open University
- NPTEL-India
- Indira Gandhi National Open University-India
- African Virtual University
- University of Cape Town
Publishers with more than 60 courses each

<table>
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<tr>
<th>Rank</th>
<th>Publisher</th>
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<tr>
<td>1</td>
<td>African Virtual University</td>
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<td>University of Southern Queensland</td>
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<td>23</td>
<td>Virtual University for Small States of the Commonwealth; Commonwealth of Learning</td>
<td>7</td>
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</table>

Total: 1408
Computing gets covered in a big way....
Meta Data for Each OER

Title: Data Structures And Algorithms
Authors: Garg, Naveen
Indian Institute of Technology (IIT) Delhi
Keywords: Data structures (Computer science)
Pattern recognition systems
EduTags: Undergraduate
Video Lecture
Issue Date: 2008
Publisher: National Programme on Technology Enhanced Learning
Abstract: 1 - Introduction to Data Structures and Algorithms (53:31) 2 - Stacks (01:04:09)
7 - Tree Walks / Traversals (51:10) 8 - Ordered Dictionaries (56:17) 9 - Deletions
Red Black Trees (01:04:33) 15 - Insertion in Red Black Trees (48:34) 16 - Disk I
- Data Compression (45:46) 20 - Priority Queues (49:46) 21 - Binary Heaps (41:18)
Graphs (57:48) 26 - Two Applications of Breadth First Search (53:24) 27 - Depth
Applications of DFS in Directed Graphs (38:45) 31 - Minimum Spanning Trees (5
Source Shortest Paths (58:58) 35 - Correctness of Dijkstra's Algorithm (55:59) 3
Original Source: http://nptel.iitm.ac.in/video.php?subjectId=106102064
Appears in Collections: Computer architectures & operating systems
Typical OER- NPTEL, India
Today, i.e. on 08.09.2012 the following MCA subjects will be discussed on Gyandarshan-II channel as part of a tele-counselling programme. Please log into our forum (http://www.santanu.in/forums) at the following time to join the tele-coun...See More

MCSE-004: Newton-Raphson Method

Newton-Raphson Method

Example

\[ x^3 = 20 \]

\[ x_0 = 3.0 \]

Conduct three iterations
OER’s in ODL in developing countries

- No Incentives for faculty to create or use
  - Limited capacity, awareness
  - Research by OER Asia (2012)

- Much wider use among Learners in ICT areas

- Good proportion of OER devoted to ICT topics
Key Development #2
Rapid Emergence of MOOC’s

- Massive Open Online Courses (MOOC)
- Registrants number in one exceeded 150,000
- Low completion rates: 8-15% generally
  - Still as many as would go through in 40 years if offered only in a classroom
MOOC’s and OER

- Several MOOC’s offer OER’s

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- OER’s are used in many....
MOOCs and ODL

- Distinct:
  - Online Learning and ODL/Distance Education
  - Unsteady, slow convergence...

- Not any more

- Key tech constraints in Online Ed resolved in MOOC:
  - Mass registration
  - Mass tracking of progress

- New advantages to MOOC in mass education
MOOC’s are Disruptive...

- Blends of Online and Contact-Centered Learning
  - Udacity, EdX: proctored testing

- Novel e-Portfolio
  - Udacity creates non-alterable portfolio of a learner
  - Can share it across institutional (thus, national) boundaries

- If standards evolved, new academic credit banking is feasible
MOOC+ e-Portfolio with OER: truly disruptive

- Contours of a new paradigm in mass training and education in ICT
- More affordable, more accessible
- Highly modular
  - More suitable for on-the-job, pre-employment training
  - More amenable for continuing education
- Delink certification and completion of whole courses
MOOC+OER in Developing Countries

- Grand new opportunities for ICT Capacity Building
  - Mass Scale
  - No Exclusivity
  - Quality Assured
  - Modular
  - Affordable
  - Relevant to Employers and Entrepreneurs

- Analogy: Car Phones of 1970’s and mass-marketed cell phones of today