From Ideas to Practice: Actualising ICT Policies for Teaching & Learning

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Outline

• ICT Masterplan Journey – Philosophy & Context

• Case Study – Key policy elements of mp3
  – Support Structure for Scaling

• Concluding Remarks – Some Thoughts
ICT in Education Masterplans

• Why?
  – Part of overall IT plans for Singapore
  – Strengthen human and physical infrastructure

• Key principles
  – Pedagogy-led developments
  – Whole-of-system transformation (Policy makers, school leaders, teachers & researchers)
  – Alignment of economics, manpower & education policies
  – Masterplans as continuum and coherent progression
Teaching & Learning Interactions

• Shifts in nature of ICT use for T&L (mixture of 3)

• Efficiency use
  – No change in T&L interactions
  – Gain in productivity & initial learner engagement

• Transformative use
  – Change T&L interactions
  – Potentially enhanced & deepen understanding

• ‘Connectedness’ use
  – Deep but could be narrow
  – Loss of control of learning outcomes

• Main T&L processes: ‘Transfer’ & ‘Deepening’
ICT in Education Masterplans

- Coherent Continuum

Building the Foundation

Seeding Innovation

Strengthening & Scaling
3rd ICT Masterplan for Education: Guidance

- Build on mp1 & mp2
- Integrate within curriculum framework (Strong Fundamentals, Future Learnings)
- Deepen ground expertise – culture building
- Incorporation of 21st Century Competencies
- Tracking of progress – evaluation studies
Key mp3 Elements: From Theory to Practice

- What is considered meaningful use of ICT?
  - What one really wants to do but cannot do without ICT
  - More mundane but important, eg. Efficiency gains
From Ideas to Practice

1. **Ideas Generation**: From teachers, researchers, HQ & industry
2. **Proof-of-Concept**
3. **Translation Research**
   - Lesson packages
   - Design principles
   - Pedagogical principles
   - Implementation strategies
   - ICT tools / applications

4. **Ready for Scaling**: YES or NO
5. **Scaling to Practice**
6. **Review Efficacy**
From Ideas to Practice

IHL Research

eduLab

FutureSchools

Propel-T
Spreading of Innovations

1. Ideas Generation
2. Proof-of-Concept
3. Translation Research
4. Ready for Scaling
5. Scaling to Practice
6. Review Efficacy

- YES
- NO
Framework for Scaling

**Organic Diffusion**

- FutureSchools
  - Vibrant and pervasive ICT culture
- COEs (ICT) / Niche (ICT) / eduLab schools
  - Use of ICT for at least one subject across one educational level

**Top-Down Diffusion**

- All Schools
  - Embedding into the curriculum (CPDD)
  - Facilitating procurement (IDA/ITB)
  - R&D Collaborations
  - eduLab Projects
  - FS initiated platforms
  - Sharing Lesson packages*

*Sharing Lesson packages*
Case Study: Support Structure for Scaling

- **EduMall**
  - ICT Connection
  - Curriculum, Pedagogy & Assessment

- **ICT in Syllabus**
  - Consultancy & Partnership
  - Cyberwellness

- **Infrastructure Support**
  - ICT Grant
  - Internet Access & Hardware

- **ICT PD Framework**
  - ICT Mentor Programme
  - Professional Development

- **School Leaders Programme**
  - Leadership

- **Personnel & Tech Support**
  - Teachers

- **Learning Communities**
  - Teachers
  - Learning Communities

- **Consultancy & Partnership**
  - Cyberwellness
  - Teachers
What does a typical school look like?

- Strong leadership for ICT implementation in curriculum
- Systematic, customised and differentiated PD structures & processes
- Pervasive use of ICT for SDL & CoL
- Teacher collaboration on ICT platforms
- Some Emerging Practices in Classroom:
  - Digital textbook for Science (not just digitised textbook)
  - Digital learning trail (eg. augmented reality)
  - Game-based learning
  - Digital storytelling; Poetry On-the-Go
  - Automated marking for English
Concluding Remarks

- Transforming culture & classroom practices crucial
  - Teacher capacity (100hrs paid PD/yr, structured mentoring, white spaces): Reflective Practitioner
  - School leaders
  - Pedagogy-led transformation (including infrastructure, resources)

- Consolidate & Deepen

- Curriculum-ICT Nexus

- Assessment of 21st Century Skills
  - Not new, but attempt to automate is
  - Incorporate into pedagogical practices
  - Measurement of learning outcomes
Concluding Remarks: Trends & Implications (?)

- ICT in ‘transfer’ and ‘deepening’ processes
  - Traditional: teacher as main conduit for ‘transfer’; ‘drill & practice’ (including homework) as ‘deepening’.
  - Now? ICT increasingly taking over ‘transfer’; shift of balance in teacher role towards ‘deepening’

- Very structured to be unstructured

- Coursera and MOOC:
  - Perhaps still traditional in context
    • Work-based, portfolio-based accreditation?
  - From 1 learning institution to many
  - Certification
Parallel development in Education, Manpower & Economic Policies

- Bi-lingual policy
- Science & Math in English, common curriculum, technical education
- Induction of streaming
- Lifelong learning, creativity & broad-based education
- TSLN, IT Masterplan 1
- Innovation & enterprise, compulsory education, IT Masterplan 2
- National CET System
- Values-Drive, Student-Centric Education
- Life Sciences, Biotech & Nanotech
- A* Star
- Position as Education Hub
- IDM
- NRF
- iN2015
- IT Masterplan 3
- Values-Drive, Student-Centric Education
- National CET System
21st Century Skills Framework for Education
IHL Research

• Funding targeted at promoting innovations in leveraging ICT for teaching and learning
  – Developing/Customising technologies
  – Effective use of existing technologies

• Selected research areas
  – Game Based Learning
  – Knowledge Building
  – Digital Story-Telling
  – Mobile Learning
  – Generative Activities
  – Augmented Realities
  – Learning Analytics
EduLab: Capturing Ground Practice

- Network of conduits for ground-led projects aimed at extending context of tested ideas which have the potential for scaling.

- Some characteristics:
  - 2-yrs, small scale trials
  - Up to 5 schools per idea
  - Collaboration with IHLs & Industries where applicable

- Outcomes:
  - Pedagogical principles for scaling
  - Lesson packages
  - Applications & tools where possible
Future Schools Programme

- HQ guided school-based innovations.
- School-IHL-Industry collaboration supported by HQ.
- Typical project duration – 5 years.
- Some learning points:
  - Ensure partners have complementary pedagogical strengths
  - Focus on pedagogical practices, not technologies
  - Upfront scaling and sustainability considerations useful
Propel-T

• Small, HQ-led experimentation based on emerging & anticipated trends.
  – Complement school-based efforts.
  – Setting direction at system level.

• 3 focal areas:
  – **1:1 computing**: social-constructivist approach to co-design lessons within 1:1 computing environment.
  – **AfL**: Use Assessment for Learning principles in using automated marking tools.
  – **CSCL**: Use of Wiki and Knowledge Forum (KF) for T&L.
ICT Mentor Programme

4 Mentors: 1 School

ICT Mentor Basic Course

- Design ICT facilitated SDL & CoL Lesson
- Coaching

ICT Mentor Subject Based Communities

- Deepen ICT-pedagogy in subject disciplines
School Leaders’ Programme

Lectures by thought leaders

Learning Journeys

Online Courses and discussion

SLs as facilitators and collaborators

SLs sharing reflection online and participating in social media
ICT Connection

• Channel of communications for mp3 details

• Facilitate dialogue on mp3’s strategic intent

• Illustrate meaningful use of ICT for SDL & CoL

• Co-creation of ‘lesson packages’

• Sharing & adaptation of ‘lesson packages’
Thank You!