Singapore's ICT Master Plans and implications for teaching and learning in IHL

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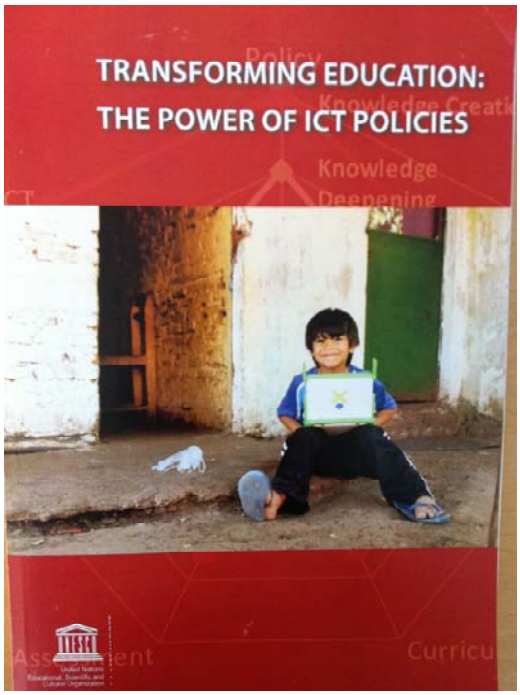
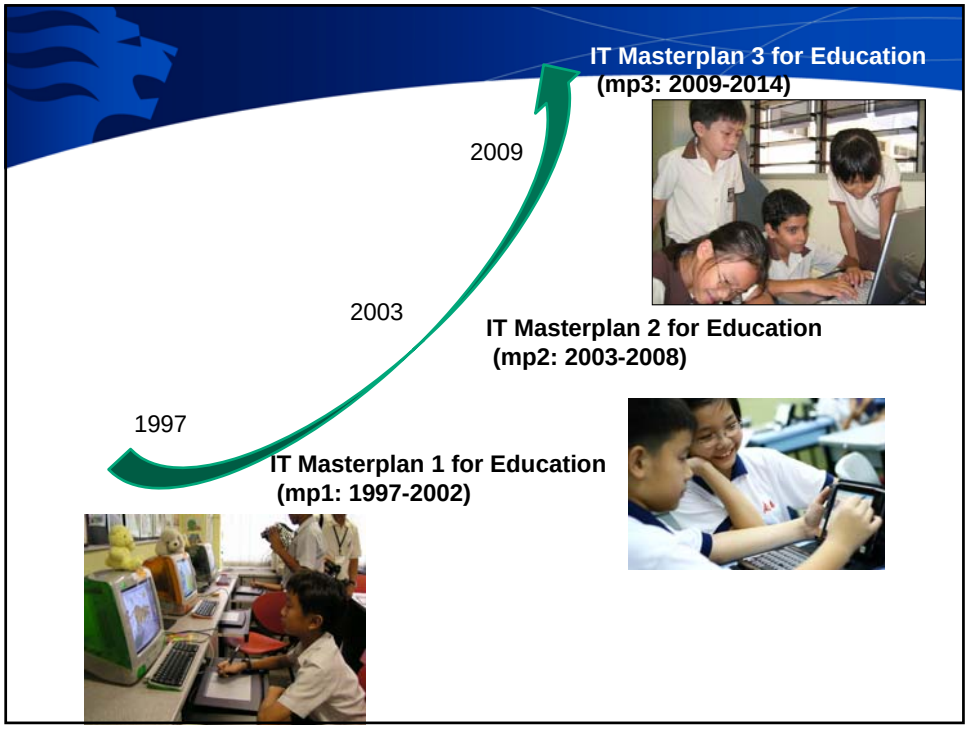
Agenda

- Singapore's three ICT in education Master Plans – rationale, features and impact
- Some examples of innovative ICT-based pedagogies
- Implications for teaching in higher institutions



Vision for education

- “Thinking Schools, Learning Nation”
- Launched in 1997 by the Singapore’s Prime Minister
- A vision for life long learning and a shift for schools to help students acquire and develop good thinking skills



First ICT in Education Master Plan - 1997

- First ICT in Education – a five year plan
- 1997 –2002: MP1
- Four key Dimensions
  - Curriculum and assessment
  - Content and learning resources
  - Physical and Technological Infrastructure
  - Human Resource Development

Using computers as tools for Art lessons

Learning content with the aid of multimedia CD ROMs

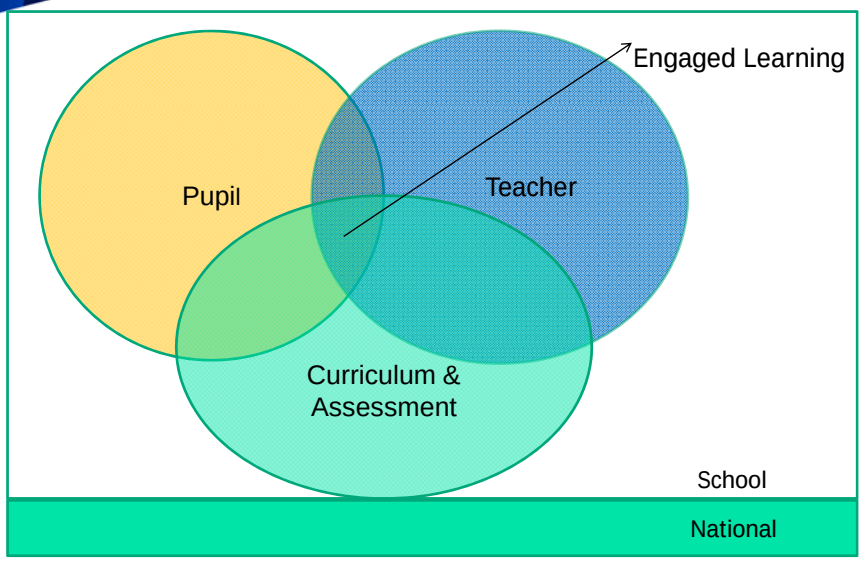
Mode of instruction – Computer assisted instruction

Key achievements MP1

- Students possessed basic ICT skills to complete ICT-based projects and Assignments
- Teachers possessed basic ICT skills
- Teachers were receptive to the use of ICT as a pedagogical tool
- Improved Basic infrastructure. Student: Computer ratio. Primary school .6:1; secondary 5:1
- Sporadic good practices on the use of ICT in teaching.

2nd ICT in Education Master Plan - 2003

Conceptual framework



2nd ICT Master Plan for Educaiton

- 2003 –2008: MP2
- Five programs
  - ICT in Curriculum and assessment
  - Teacher Professional Development
  - Schools' capacity building
  - Research and Development
  - Infrastructure and support

- ICT in Curriculum and assessment: A shift from information receiving to information processing and knowledge creation approaches.
- Professional Development – from basic training skills to customized training according to school's directions. Sharing and building of community

- School's capacity-building: Shift from a top-down approach (Mp1) to a decentralized. Schools have autonomy to set their own directions in consultation with MOE
- Research and Development: Set-up a R& D unit and the formation of Learning Sciences Laboratory. LSL emphasizes on learning sciences with ICT and probably develop prototypes

- Infrastructure and support: To enhance network and internet access, to provide more technical support, and to enhance richer ICT environments.

(mp2: 2003-2008)

- Emphasis of ICT for engaged learning
- Decentralized funding
- LEAD ICT Schools – about 76 schools
- Setting up of Learning Sciences Research Lab
- Games for learning as a pedagogical approach
- Set up of Futureschools@singapore

LEAD ICT Schools)

5 FutureSchools@singapore

FUTURE SCHOOLS @SINGAPORE

$80m for creative learning

4 consortia to turn futuristic education ideas into reality

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SINCE it was announced in 2006 that Singapore would develop "schools of the future" to take learning up a notch by taking pupils down the infocomm highway, there have been no shortage of proposals for innovative IT ideas in education.

Now, four consortia have been unveiled to take those ideas from the drawing board to reality for the five pioneer schools in the FutureSchools@Singapore scheme.

The four – led by Hewlett-Packard, SingTel, ST Technologies and Civica respectively – are set to deploy their technological solutions for creative learning as soon as the end of the year. These include four-dimensional classrooms and laboratories with multi-sensory functions and tools that can mimic different kinds of environment.

The results of the Call-for-Collaboration last May to industry players were announced jointly yesterday by the Infocomm Development Authority of Singapore (IDA) and the Ministry of Education and will see the IDA, National Research Foundation and industry players invest $80 million in the public and private collaboration over a period of four years.

ARTIST'S IMPRESSION COURTESY CANBERRA PRIMARY

CANBERRA'S 4D CLASSROOM

With a mobile device in hand, a pupil learns about climate change by looking at factories spewing harmful pollutants into the atmosphere. He jots down his experience in the device and shares it with his classmates later.

But he will not need to step out of school at all. The classroom has been transformed into a four-dimensional virtual lab where graphics of the factories are cast onto the wall and tools are also installed to give the child a multi-sensory learning experience.

Teachers can then track pupils' performances and provide feedback online.

BEACON'S VIRTUAL WORLD

What do pupils do when they are reading a storybook, and they come across a word they are unsure of?

At Beacon Primary, virtual dictionary will explain the meaning of the word. If they would like to check their pronunciation, they read the word aloud and send a recording via the school's virtual platform to their teacher for him to check. All this will be done through an integrated, web-based

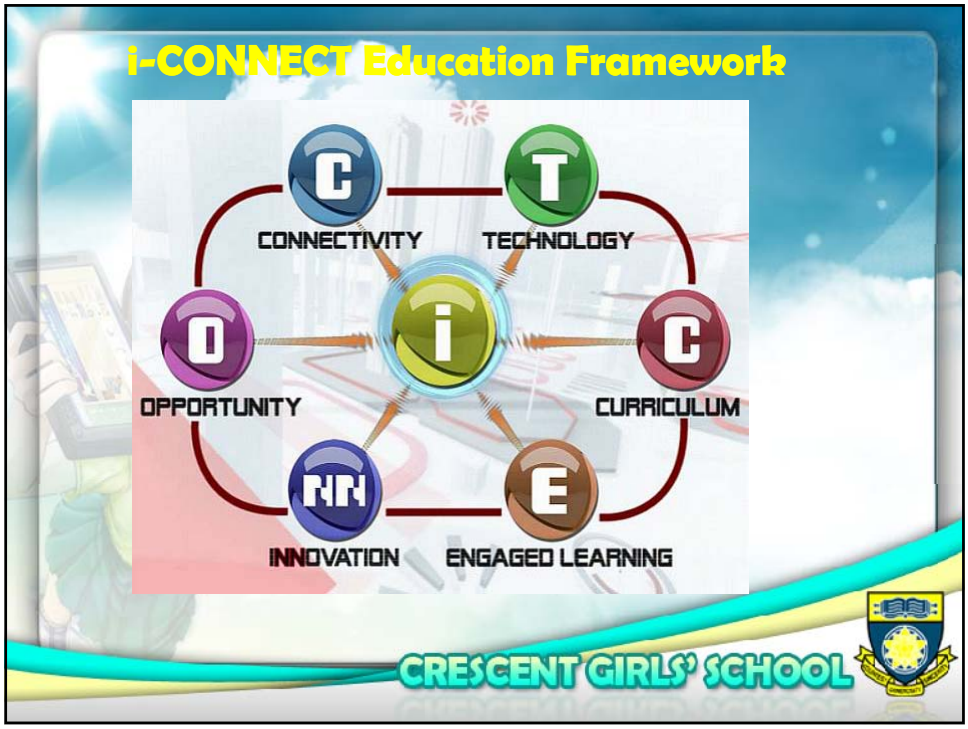
Beacon Primary School:

FUTURE SCHOOLS @SINGAPORE

- **Envisioning the Future, Varied Perspectives**
- "… extend their learning beyond knowledge, skills and values to grow the ability to envision for the future and contribute to make a difference."

Canberra Live

4DI & 3D Hive



Hwa Chong Institution

FUTURE SCHOOLS @SINGAPORE

- **A Passion-Driven and Borderless Learning Institution**
- "aims to combine technology with new ways of learning to create educational value. This is achieved by creating opportunities beyond the school's physical campus at Bukit Timah, so that learning transcends boundaries between subjects, classrooms, schools, countries and cultures. "

Jurong Secondary School

FUTURE SCHOOLS @SINGAPORE

- **Networked Learning Community**
- "…to leverage the powers of technologies, to engage the community actively to provide our students with authentic learning experiences. Our vision as a future school is that the world and the community is our classroom."

Some innovative approaches

- Using Twitter for summarizing lesson
- Using MSN chat to ask questions (expert system)
- Project work
- Portfolio creation
- Knowledge construction process through CSCL using Knowledge Forum platform
- Simulation and exploratory approaches

Evaluation and Impact of MP2

- Students improved their ICT competencies
- Teachers competent in ICT usage and about 66% felt comfortable of using resources to support classroom teaching
- School level- 80% of schools met the outcome expectation as spelt out in MP2
- School ICT infrastructure met requirements

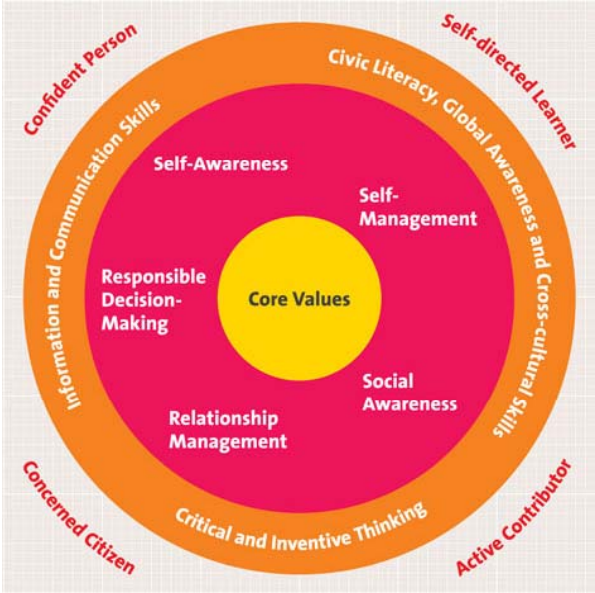
mp2 - Challenges

- Teachers' readiness and capacity to effectively integrate ICT into curriculum
- Better ICT integration rather than add-on
- More varied modes and methods of assessment
- Availability and accessibility of digital resources
- Build School leaders capacity to provide direction and support

enGauge 21st Century Learning (NCREL)

2003 NCREL/Metiri

Ministry of Education, Singapore (2010)



MP3

- 2009 –2014: MP3
- Continuation of MP2
  - ICT in Curriculum and assessment
  - Building the capacity of teachers
  - Share best practices and successful innovations
  - Enhance and upgrade Infrastructure
- **Develop Self-directed learning and collaborative learning**

Features

- Alternative assessment
- Understanding social media and use them for learning experiences
- Cyber wellness
- Mobile and experiential learning
- Professional learning communities

Bring devices into the classrooms – moving to 1-1 different types of devices

Implications to IHLs

Implications 1

- Are universities, colleges, polytechnics (IHL) – ready for students who come to classes / lectures / tutorials with their own mobile learning devices?

Possible approach

- Do not ban devices
- Lessons should be interactive
- Bring virtual technology into the classroom / lecture halls
- Get students involved in lessons.

Implications 2

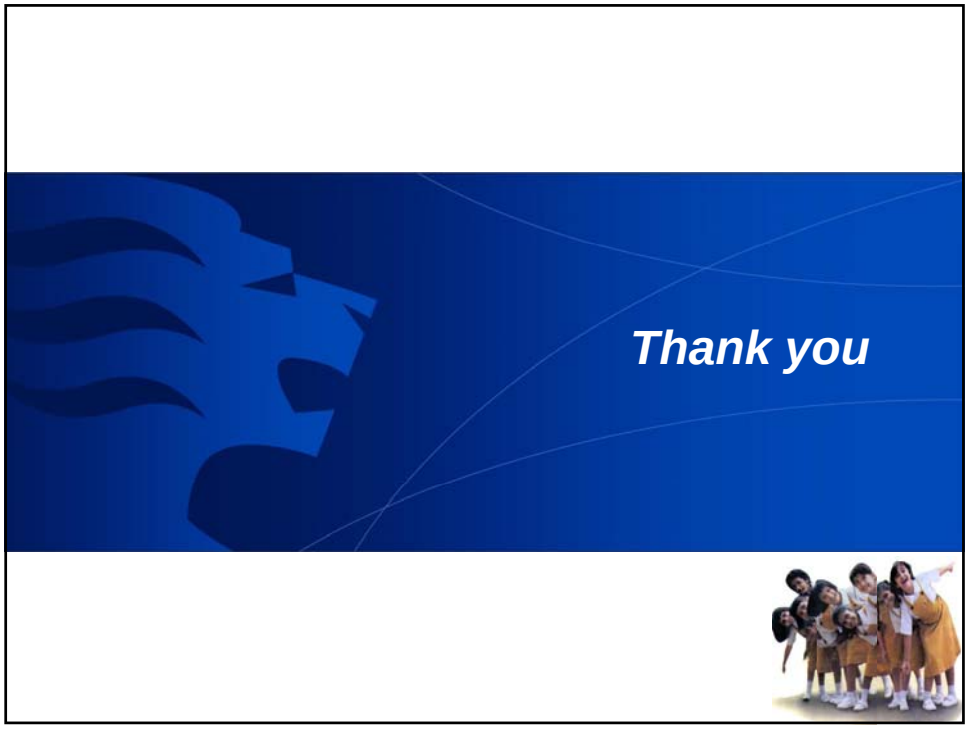
- 21st century skills – Schools are focusing on developing these skills in school children to prepare them to be future workforce. Are IHLs doing this? Have our pedagogies change? Are we still thinking lecturing is the best method of teaching?

- Change pedagogy
- Create chances for self-directed and team work
- Collaborative learning
- Knowledge construction approaches

Implications 3

- If schools are incorporating sophisticated e-learning approaches, what is IHLs' approach to e-elearning? Just downloading lecture notes or powerpoint presentations? Do they use the power of social and collaborative tools?

- Move away from direct instruction
- Professional leaning and sharing – improve our practices
- Use different approaches such as case-based leaning, problem-based learning to anchor the instruction


Thank you