21ST CENTURY LEARNING BY DESIGN:
It does not happen by magic!

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Crescent Girls' School, Singapore
OUTLINE

• The **PROMISE** of technology
• The **PROBLEM** with reform
• The **PRACTICE** of 21st Century Learning by design
THE PROMISE OF TECHNOLOGY

What are current technology trends?
CURRENT TECHNOLOGY TRENDS

Pervasiveness of smartphones

Cloud Computing

Social media

Use of big data
THE PROMISE OF TECHNOLOGY

What are current technology trends for Education?
TECHNOLOGY TRENDS FOR EDUCATION

- Collaborative knowledge creation
- Learning and Creation on-the-go (Active learning)
- Bite-sized information
- Gamification
THE PROMISE OF TECHNOLOGY

What are some projected usage scenarios for education?
Core Purposes of Education

- Personal Identity
  - Race
  - Language
  - Religion
  - Ethics

- Personal Profile
  - Aspirations
  - Style
  - Interests
  - Aptitude

CREATE

- Thriving in an Innovation Economy

CONNECT

- Navigating a multicultural heterogeneous global neighbourhood

Economic

Social / Cultural
SNAPSHOTS OF THE PROMISE OF TECHNOLOGY

**Personalization**

**Pace . Content . Pedagogy**

Personal learning roadmap for each term: what, when, how.

Learning analytics provide data on profile and progress

Fundamentals to cover, beyond which students choose depth/breadth of coverage
SNAPSHOTS OF THE PROMISE OF TECHNOLOGY

Learning 3.0
Anytime . Anywhere . Anyone

- Content on mobile & the web.
- Augmented reality apps situate learning in the environment
- Collaborative learning apps connect students to each other
- Emphasis on collaborative problem-solving in situ
SNAPSHOTS OF THE PROMISE OF TECHNOLOGY

Breaking barriers
Building bonds

Collaborative learning with students within the same continent (same time zone)

Video & augmented reality apps allow real-time transnational interaction
SNAPSHOTS OF THE PROMISE OF TECHNOLOGY

Blended Learning

- Face-to-Face & Online
- Formal school & informal learning environments
- Virtual & physical worlds
- Individual & collaborative
THE PROBLEM WITH REFORM
“We continue to see attempts to improve systems in ways that are manifestly unlikely to work.”
“Reforms that do not take account of what happens in the classroom have a similar effect to that of a storm on the ocean – the surface is agitated and turbulent, while the ocean floor is calm and serene (if a bit murky)”

(Cuban, L. How teachers taught: Constancy and Change in American classrooms)
Failed Improvement
(Harris and Chrispeels, 2008)

• Implementation underestimated
• Too fast
• Imposed (from the top or outside)
• Insufficient leadership capacity building
THE PRACTICE OF 21ST CENTURY LEARNING BY DESIGN

What does research say?
INNOVATIVE TEACHING AND LEARNING (ITL) RESEARCH

A multinational research collaboration between SRI International and Microsoft

- 8 countries: Australia, Finland, Indonesia, Mexico, Russia, Senegal, the United Kingdom, and the United States
- 650 teachers and 24 school leaders in each country
- Classroom observations, and qualitative case studies at selected schools recognized for innovative teaching practices.
INNOVATIVE TEACHING AND LEARNING (ITL) RESEARCH

A multinational research collaboration between SRI International and Microsoft

If you didn’t design for it, don’t expect it to happen!

Source: ITL 2011, LASW method, based on analysis by SRI International
INNOVATIVE TEACHING AND LEARNING (ITL)
RESEARCH

A multinational research collaboration between SRI International and Microsoft

Student opportunities to develop 21st Century Skills vary more within a school than between schools.

Source: ITL 2011, based on analysis by SRI International
Technology use in schools...

<table>
<thead>
<tr>
<th>Activity</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Develop simulations or animations</td>
<td>3%</td>
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<tr>
<td>Work with others from outside class</td>
<td>5%</td>
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<tr>
<td>Use simulations or animations</td>
<td>5%</td>
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<tr>
<td>Create multimedia presentations</td>
<td>6%</td>
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<tr>
<td>Collaborate with peers on learning</td>
<td>9%</td>
</tr>
<tr>
<td>Access class resources or online</td>
<td>12%</td>
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<tr>
<td>Analyze data or information</td>
<td>15%</td>
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<tr>
<td>Write or edit stories, reports, or</td>
<td>15%</td>
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<tr>
<td>Take tests or turn in homework</td>
<td>17%</td>
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<tr>
<td>Practice routine skills and procedures</td>
<td>26%</td>
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<tr>
<td>Find information on the Internet</td>
<td>36%</td>
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</tbody>
</table>

Technology is still largely used for consumption rather than creation.

Source: ITL 2010-11 Teacher Survey, across 7 countries; based on analysis by SRI International.
INNOVATIVE TEACHING AND LEARNING (ITL) RESEARCH

A multinational research collaboration between SRI International and Microsoft

Effective professional development involves active practice and collaboration

Source: ITL 2011, ITL Teacher Survey, based on analysis by SRI International
THE PRACTICE OF 21ST CENTURY LEARNING BY DESIGN

21CLD : 21st Century Learning Design Framework
21ST CENTURY LEARNING DESIGN
A teacher professional development framework

6 Dimensions for 21st Century Learning:
• Collaboration
• Skilled Communication
• Self Regulation
• Real-world Problem Solving
• Knowledge Construction
• Use of ICT for Learning
21CLD
21ST CENTURY LEARNING DESIGN
A teacher professional development framework

COLLABORATION

1. Students are required to work in pairs or groups?
   - NO

2. Students have shared responsibility?
   - NO

3. Students make substantive decisions together?
   - YES

4. Students' work is interdependent?
   - NO

5. 

Students make substantive decisions together?
- YES
21C LD
21ST CENTURY LEARNING DESIGN
A teacher professional development framework

REAL WORLD PROBLEM SOLVING & INNOVATION

1. Main requirement is Problem Solving?
2. Are students working on a real-world problem?
3. Requires innovation?
4. YES NO NO NO
THE PRACTICE OF 21ST CENTURY LEARNING BY DESIGN

The Case of Crescent Girls’ School
21CLD IMPLEMENTATION @ CRESCENT GIRLS’ SCHOOL

Discourse and engagement at EXCO Level

1. 21CLD Workshop for All Staff
2. Small group of teachers (Think Tank) develop and implement sample lesson packages
3. Teachers work in collaborative teams to implement at least one lesson/unit
4. Review and refine at Staff Seminar (microteaching & sharing between departments)

21CC Committee undertakes constant monitoring
Where does technology come in?
## Technology Roadmap

<table>
<thead>
<tr>
<th>Tool</th>
<th>Purpose</th>
<th>Administration</th>
<th>Communication</th>
<th>Collaboration</th>
<th>Knowledge Creation</th>
<th>Self-directness</th>
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<tbody>
<tr>
<td>DizCoverboard</td>
<td>Aggregator of services</td>
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<td>Trail Shuttle</td>
<td>Learning Trail toolkit</td>
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<td>Buffet</td>
<td>Cooperative Learning Tool</td>
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<td>Frappe</td>
<td>Mobile chat</td>
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<td>21CLD</td>
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<td>Merror</td>
<td>Reflection Tool</td>
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<td>Spectrum</td>
<td>Learning Experience Creator</td>
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<tr>
<td>Chronos</td>
<td>Calendar &amp; Workload Management</td>
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THE PRACTICE OF 21ST CENTURY LEARNING BY DESIGN

So what has changed?
21st Century Learning Design: What Has Changed?

1. Student engagement in knowledge building
2. Student ownership of learning
3. Student-control vs Teacher-control
4. Student empowerment
THE PRACTICE OF 21ST CENTURY LEARNING BY DESIGN

LOOKING AHEAD …
LOOKING AHEAD

21CLD : A 21st Century Lesson Builder

Welcome to 21CLD, where educators connect and collaborate for 21st Century Learning Design. Explore resources and tools to enhance your teaching and learning experiences.
From “1-1” learning to “1-m” learning

21st century learning experience creator
• Bite-sized learning activities
• Created, experienced and assessed on the go
• Learning anytime, anywhere and with anyone

21st century assessment
• Assessment of 21st century competencies
• Varied modes of assessment

LOOKING AHEAD
THANK YOU!

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