The Case of Singapore
Rethinking Curriculum for the 21st Century
The Little Red Dot

- An artificial diamond created by stress
- 710 sq km (22% reclaimed)
- 5.0 m people (3.3m citizens)
- Too little land, too few babies
- Advantages
  - Location
  - Multiracial Society
  - Human Capital

Education enables students to:
- develop values, skills and competencies for life and work
- be plugged into innovation-driven global economy
- engage the region and the world
Our Journey: From Past to Future

Moved from **ability-driven education**...

- **Survival-Driven**
  - 1959 - 1978
- **Efficiency-Driven**
  - 1979 – 1996
- **Ability-Based**
  - 1997 – 2011
- **Student-Centric, Values-Driven**
  - 2012 –

...to **student-centric, values-driven education**

© Ministry of Education, Singapore
### PISA 2009

<table>
<thead>
<tr>
<th><strong>Reading</strong></th>
<th><strong>Math</strong></th>
<th><strong>Science</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Country</strong></td>
<td><strong>Country</strong></td>
<td><strong>Country</strong></td>
</tr>
<tr>
<td><strong>Mean</strong></td>
<td><strong>Mean</strong></td>
<td><strong>Mean</strong></td>
</tr>
<tr>
<td>Shanghai</td>
<td>Shanghai</td>
<td>Shanghai</td>
</tr>
<tr>
<td>556</td>
<td>600</td>
<td>575</td>
</tr>
<tr>
<td>Korea</td>
<td>Singapore</td>
<td>Finland</td>
</tr>
<tr>
<td>539</td>
<td>562</td>
<td>554</td>
</tr>
<tr>
<td>Finland</td>
<td>Hong Kong</td>
<td>Hong Kong</td>
</tr>
<tr>
<td>536</td>
<td>555</td>
<td>549</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>Korea</td>
<td>Singapore</td>
</tr>
<tr>
<td>533</td>
<td>546</td>
<td>542</td>
</tr>
<tr>
<td>Singapore</td>
<td>Chinese Taipei</td>
<td>OECD Ave</td>
</tr>
<tr>
<td>526</td>
<td>543</td>
<td>501</td>
</tr>
<tr>
<td>OECD Ave</td>
<td>OECD Ave</td>
<td>OECD Ave</td>
</tr>
<tr>
<td>493</td>
<td>496</td>
<td>501</td>
</tr>
</tbody>
</table>
TIMSS 2007 – Grade 4

<table>
<thead>
<tr>
<th>Mathematics</th>
<th>Country</th>
<th>Mean</th>
<th>(S.E.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hong Kong</td>
<td>607</td>
<td>(3.6)</td>
</tr>
<tr>
<td></td>
<td>Singapore</td>
<td>599</td>
<td>(3.7)</td>
</tr>
<tr>
<td></td>
<td>Chinese Taipei</td>
<td>576</td>
<td>(1.7)</td>
</tr>
<tr>
<td></td>
<td>Japan</td>
<td>568</td>
<td>(2.1)</td>
</tr>
<tr>
<td></td>
<td>Kazakhstan</td>
<td>549</td>
<td>(7.1)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Science</th>
<th>Country</th>
<th>Mean</th>
<th>(S.E.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Singapore</td>
<td>587</td>
<td>(4.1)</td>
</tr>
<tr>
<td></td>
<td>Chinese Taipei</td>
<td>557</td>
<td>(2.0)</td>
</tr>
<tr>
<td></td>
<td>Hong Kong</td>
<td>554</td>
<td>(3.5)</td>
</tr>
<tr>
<td></td>
<td>Japan</td>
<td>548</td>
<td>(2.1)</td>
</tr>
<tr>
<td></td>
<td>Russian Fed</td>
<td>546</td>
<td>(4.8)</td>
</tr>
</tbody>
</table>
## TIMSS 2007 – Grade 8

<table>
<thead>
<tr>
<th>Mathematics</th>
<th>Science</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Country</strong></td>
<td><strong>Mean</strong></td>
</tr>
<tr>
<td>Chinese Taipei</td>
<td>598</td>
</tr>
<tr>
<td>Korea</td>
<td>597</td>
</tr>
<tr>
<td><strong>Singapore</strong></td>
<td><strong>593</strong></td>
</tr>
<tr>
<td>Hong Kong</td>
<td>572</td>
</tr>
<tr>
<td>Japan</td>
<td>570</td>
</tr>
</tbody>
</table>
## PIRLS 2006 – Grade 4

<table>
<thead>
<tr>
<th>Country</th>
<th>Mean</th>
<th>(S.E.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Russian Federation</td>
<td>565</td>
<td>(3.4)</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>564</td>
<td>(2.4)</td>
</tr>
<tr>
<td><strong>Canada, Alberta</strong></td>
<td>560</td>
<td>(2.4)</td>
</tr>
<tr>
<td><strong>Singapore</strong></td>
<td>558</td>
<td>(2.9)</td>
</tr>
<tr>
<td><strong>Canada, British Columbia</strong></td>
<td>558</td>
<td>(2.6)</td>
</tr>
</tbody>
</table>

- ^ also tested in French

<table>
<thead>
<tr>
<th>Country</th>
<th>Mean</th>
<th>(S.E.)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Canada, Alberta</strong></td>
<td>560</td>
<td>(2.4)</td>
</tr>
<tr>
<td><strong>Singapore</strong></td>
<td>558</td>
<td>(2.9)</td>
</tr>
<tr>
<td><strong>Canada, British Columbia</strong></td>
<td>558</td>
<td>(2.6)</td>
</tr>
<tr>
<td><strong>Canada, Ontario</strong></td>
<td>555</td>
<td>(2.7)</td>
</tr>
<tr>
<td><strong>Canada, Nova Scotia</strong></td>
<td>542</td>
<td>(2.2)</td>
</tr>
</tbody>
</table>

- ^ also tested in French
Thinking Schools Learning Nation (1997)

We cannot assume that what has worked well in the past will work for the future. The old formulae for success are unlikely to prepare our young for the new circumstances and new problems they will face...

... Singapore's vision for meeting this challenge for the future is encapsulated in four words: THINKING SCHOOLS, LEARNING NATION. It is a vision for a total learning environment, including students, teachers, parents, workers, companies, community organisations, and government.

Goh Chok Tong
Then Prime Minister, 1997
The most important gift that we can give to our young ... not just preparing them for a job, but learning to live a life, learning to deal with the world, learning to be a full person, what in Chinese, they say, "xue zhuo ren" (学做人) and in schools, there are plenty of opportunities to learn to be a person...

We have got to teach less to our students so that they will learn more. Grades are important, don’t forget to pass your exams but grades are not the only thing in life and there are other things in life which we want to learn in school ...

Prime Minister Lee Hsien Long,
Strengthening Character, Citizenship and Values Education (2012)

“We want them to have the values and character to do well in life, to live in harmony, and to care for one another. We also want them to have strong foundations to seize future opportunities and find fulfilment and success.”

Mr Heng Swee Keat, Minister for Education

- Character and Citizenship Education (CCE) branch was set up in December 2011
- ‘Values in Action’ programme to build a spirit of volunteerism so that students become active contributors and concerned citizens, with empathy for fellow Singaporeans.
- Schools will also be encouraged to develop 4-year or 6-year development plans in order to move towards more coherent and sustainable learning through community involvement.
- Edusave Character Award
Evolution of Curriculum and Textbook Development

1965
Reliance on imported textbooks
MOE started on Civics textbooks
Published by MOE EPB

1969
Pioneering efforts in textbook development by MOE
- Civics textbooks in four languages
- Designed textbooks for innovative teaching

1970
Institutionalized innovation in textbook development
Curriculum Development Institute of Singapore (CDIS) setup to provide textbooks for Primary and Secondary levels of the New Education System

1996
CDIS closed in 1996. MOE focused on curriculum frameworks and syllabuses
- Commercial publishers provide textbooks
- MOE authorize and approve

to-date
Curriculum Vision

Strong Fundamentals,
Future Learnings
### Desired Outcomes of Education

<table>
<thead>
<tr>
<th>Confident Person</th>
<th>Self-directed Learner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thinks independently</td>
<td>Takes responsibility for own learning</td>
</tr>
<tr>
<td>Communicates effectively</td>
<td>Questions, reflects, perseveres</td>
</tr>
<tr>
<td>Has good inter-personal skills</td>
<td>Uses technology adeptly</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Concerned Citizen</th>
<th>Active Contributor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is informed about world and local affairs</td>
<td>Exercises initiative and takes risks</td>
</tr>
<tr>
<td>Empathises with and respects others</td>
<td>Is adaptable, innovative, resilient</td>
</tr>
<tr>
<td>Participates actively</td>
<td>Aims for high standards</td>
</tr>
</tbody>
</table>
21st Century Competencies

Core Values

Respect, Responsibility, Resilience, Integrity, Care, Harmony

Emerging 21st Century Competencies

© Ministry of Education, Singapore
Student Outcomes
Confident Person, Self-directed Learner, Concerned Citizen, Active Contributor

21st Century Competencies

Languages  Math  Sciences  Humanities  PE, Art & Music  CCE  CCAs  School-based Programmes
Secondary School Curriculum

- **LANGUAGES**
  - English
  - Mother Tongue/Higher Mother Tongue/Mother Tongue Language ‘B’
  - 3rd Language (optional – French, German, Japanese, Malay, Chinese)

- **HUMANITIES & THE ARTS**
  - Lower Sec Subjects:
    - Geography, History, Literature in English, Visual Arts, Music
  - Upper Sec Subject:
    - Combined Humanities
  - Upper Sec Electives:
    - Geography, Literature in English, Literature in Chinese, Malay Literature, Tamil Literature, Art & Design, Music, Higher Art, Higher Music

- **KNOWLEDGE SKILLS**
  - CCA, CIP, CME, PCCG, NE, PE

- **LIFE SKILLS**
  - PW

- **MATHEMATICS & SCIENCES**
  - Lower Sec Subjects:
    - Mathematics, Science, Design & Technology, Home Economics
  - Upper Sec Subjects:
    - Mathematics, a Science subject
  - Upper Sec Electives:
    - Additional Mathematics, Biology, Chemistry, Physics, Combined Science options, Design & Technology, Food & Nutrition, Principles of Accounts

**LEGEND**

- **CCA** Co-Curricular Activities
- **CIP** Community Involvement Programme
- **CME** Civics & Moral Education
- **PCCG** Pastoral Care & Career Guidance
- **NE** National Education
- **PE** Physical Education
- **PW** Project Work

Students in the Special and Express courses typically offer 7-8 subjects at the GCE ‘O’ Level examination.

© Ministry of Education, Singapore
‘A’ Level Curriculum

LANGUAGES
Mother Tongue Languages
3rd Languages

HUMANITIES & THE ARTS
e.g. Art, Economics, Geography, History, Literature in English, Music, Theatre Studies & Drama

KNOWLEDGE SKILLS
CCA, CDP, Civics, PCCG, NE, PE

LIFE SKILLS

MATHEMATICS & SCIENCES
e.g. Biology, Chemistry, Physics, Mathematics, Computing

BACKGROUND
From 2006, a broader and more flexible GCE ‘A’ Level curriculum has been introduced for Pre-U 1, to foster new approaches to learning and develop in students a wider range of skills. Students will be challenged to think critically and creatively.

LEGEND
CCA  Co-Curricular Activities
CDP  Character Development Programme
PCCG  Pastoral Care & Career Guidance
NE  National Education
PE  Physical Education
GP  General Paper
PW  Project Work
KI  Knowledge & Inquiry

For details on ‘A’ Level subjects, please refer to page 38 and 39.

© Ministry of Education, Singapore
Focus on Knowledge Skills
- conceptual thinking
- process
- communication

Greater flexibility
- choice of subjects
- depth of study

Greater breadth
- broadening the range of disciplines
- enhancing the non-academic curriculum

'\textbf{H1}'
- Half of H2 in terms of curriculum time

'\textbf{H2}'
- Similar depth and rigour to the previous 'A' level subjects.

'\textbf{H3}'
- Different from 'S' papers. Builds on and extends from H2 subjects.
Curriculum Framework

Goals & Content
What should my students learn?

Curriculum

Pedagogy
How should my students learn?

Assessment
Did my students learn it?

© Ministry of Education, Singapore
Curriculum Development

Two broad phases:
1. Review, design and development of the curriculum
2. Implementation and evaluation of the curriculum

Guided by the following goals:
1. To reflect the character and aspirations of Singapore society
2. To impart a common foundation of values, knowledge, skills and competencies
3. To be broad based
4. To be future oriented
### Curriculum Development and Review

#### Forward Planning
- future needs of society, economy and individuals

#### Systems Approach
- macro-level overall curriculum and micro-level specific subjects
- syllabus (content, pedagogy, assessment)
- teaching materials
- teacher-training
- funds, infrastructure, ICT, equipment, on-line support and discussion
- support and feedback during implementation

#### Stakeholders’ Input
- employers, staff from next-level education institutions, school teachers
- at development/review stages

#### Partnership
- provide industry visits, authentic learning
- science centre, museums, research institutes

#### Regular Review
- 6-year curriculum cycle with a mid-term review
Learning from the Best in the World
• Literature review of curriculum in other education systems

FGDs with external stakeholders
• Seek feedback and suggestions from stakeholders (e.g. Polys and JCs to comment on secondary curriculum and universities to comment on pre-u curriculum)

FGDs with Ps/HODs/Teachers
• Solicit suggestions to close gaps in current curriculum
• Seek comments on preliminary ideas being explored by MOE

Roll-out Preparation
• Trial materials, pedagogies, assessment

Implementation
• Briefing and training of teachers
• Monitor implementation through school visits

Review
• FGDs and Surveys (e.g. QHQSS) to evaluate student performance, teacher capacity, adequacy of curricular support
Curriculum Review Cycle

Year

1
Implementation of new syllabus and curriculum, and use of new instructional materials

2 to 3
Mid-term review process begins, with possibility of minor adjustments and changes to the syllabus and curriculum

4
Full term review process begins with the formation of a syllabus review committee.

5 to 6
Preparation and dissemination of instructional materials, including prototyping and trialing, and professional development for teachers
Strategies to incorporate New Demands

**Add**
- Introduce additional subject
- Increase overall curriculum time (e.g. PE)

**Subtract**
- Trim content and curriculum time to make space for new demands

**Substitute**
- Refresh content of a subject with more current and relevant content

**Integrate**
- Combine subjects to form a new integrated subject

**Infuse**
- New skills to be delivered by every subject
Challenges

1. Centralisation and Autonomy
   - ‘tight-loose-tight’
     * national curriculum, school-based curriculum, key stage national exams

2. 21st Century Competencies: Balance between breadth and depth

3. Curriculum Time Allocation

4. Assessment of 21st Century Competencies
   - higher order thinking skills, project work, oral presentation in national exams
   - starting to explore ICT-delivered assessment

5. Teacher Capacity

© Ministry of Education, Singapore 2011
Every Child A Confident Person, Self Directed Learner, Active Contributor, Concerned Citizen
Holistic Education

Character, Citizenship and Values Education

Every School, A Good School

Opportunities and Pathways to Success

21st Century Competencies

MOE 2012