How did Singapore transit from Third World to First World in four decades, and what role did education and training play in this?
Singapore: Key Indicators

Became independent in 1965
Small island: 710 sq km
Population: 5.183 million
A multi-ethnic society: Chinese (74.1%), Malay (13.4%)
Indian (9.2%), other races (3.3%)

No natural resources, very dependent on trade
GDP growth in 2010: 14.7%
[Expectations for rest of the decade is 5%]
Manufacturing (of GDP): 28%
Savings rate (to GDP): 50% (estimated)
Expenditure in R&D: S$6.04 billion (2.2% of GDP in 2009)
No. of schools / students: 328 / 481,110
Expenditure of education: S$9.91 billion (21.4%) of budget (2010)
S$10.91 billion (23.2%) of budget (2011)
(estimated)
3.3% of GDP (2010)
Key State-Building Imperatives

- Build social cohesion out of ethnic diversity, division and political instability
- Give citizens a stake via job creation, access to quality public goods - housing, health, education etc.
Taiwan, South Korea, Singapore and Hong Kong were fragile states whose sovereignty was under threat; Singapore’s fragility is captured in the phrase ‘politics of survival’.

In Singapore, an export-led industrialisation model (1965-1985) with success in attracting FDI proved to be hugely successful.
Ashton et al (1999) identify four characteristic features of the East Asian developmental states:

- Politico-economic strategy with economic growth as the basis for state’s legitimacy
- Mechanisms to link trade and industry policy to education and training policy
Developmental States in East Asia

- Centralised control, close alignment between the education and training system, and labour markets

- The ability to maintain the links through time

- High level, multi-agency coordination results in ‘joined up government’
Singapore’s limitations forced it from the beginning to be competitive, give priority to economic growth, develop new institutions, build human capital before resource distribution.

State capitalism is alive, well and productive in Singapore. In order to survive, we had always to be competitive.
In Confucian culture, family and community shared with the state responsibility for welfare.

Singapore’s success as a state is due also to being pragmatic not ideological, emphasising effort and standards of excellence.

New institutions, DBS, CPF, EDB, SIA, PSA, HDB, etc. were created to facilitate pro-growth policies.

Singapore Airlines
Singapore developed education policies which emphasise meritocracy, science, mathematics, English.

At the post-secondary level, it expanded technology-oriented certificate and diploma courses at well resourced Institute of Technical Education, five polytechnics.

Five universities cater to about 28% of the cohort; a cap of 30% is envisaged.
Singapore’s Educational Aims

- **Economic** – to transit from an entrepot economy to an individual one via export-orientated industrialisation (EOI)

- **Social** – to strengthen unity between the ethnic groups

- **Educational** – to build an education system appropriate to emerging socio-political needs
Globalisation’s Challenge to Singapore’s Education and Training Values and Infrastructure
How can we understand consequences for education?

- Beyond literacy and numeracy, we need 21st century skills eg problem solving, communication skills etc. We need them for all students.

- We need capacity to develop new knowledge via R&D and make opportunities for lifelong learning available.
Singapore’s Education Reforms

“We have to prepare ourselves for a future of intense competition and shifting competitive advantages, a future of ever increasing change where technologies are replaced at an increasing pace.”

Goh Chok Tong
Prime Minister, Singapore
1997
Responses to Globalisation

The new mission of the schools is to prepare students to work at jobs that do not yet exist, creating ideas and solutions for products and problems that have not yet been identified using technologies that have not yet been invented.

Linda Darling-Hammond
"We have identified as a key focus the fostering of a culture of innovation and enterprise throughout our education system. To prepare students for a future of relentless change, schools themselves must keep looking for ways to improve and stay relevant. Schools themselves have to be models of innovative practices. We must remain open to new ideas and approaches, and at times create new approaches or pedagogical methods."

Tharman Shanmugaratnam
Minister for Education, Singapore
2003
Singapore’s Education Reforms
(1987 – Present)
Singapore’s Education Journey

‘Big bang’ education reforms: 1987 - present

Government desired to shift economy from labour-intensive to capital and technology intensive economy. Population was growing, expectations were high and leaders recognised the threat from other low-wage, low-skill economies in the region.
Could an efficiency, output driven system meet the needs of a knowledge economy and a democratic society?
In order to make a successful economic transition Singapore needed:

- Close linking of manpower and economic priorities
- An education system with a strong focus on science and technology
- English to communicate with investors and to seek export markets
- A labour force with relevant industrial skills
Singapore’s Education Journey


- Towards Excellence in Education
- Thinking Schools, Learning Nation
- IT Master Plan 1, 2 and 3
- National Education
- Junior College/Upper Secondary Report
- Curriculum 2015
Singapore’s Education Reforms

Towards Excellence in Education:
Singapore’s rapid school expansion efforts had resulted in standardisation. The Excellence Report which created ‘independent schools’ (and later autonomous schools) was an attempt to devolve greater management and curriculum authority to schools, as well as to enable the top 20% to benefit from an enriched curriculum.
Singapore’s Education Reforms

**Thinking Schools Learning Nation:** to introduce critical and creative thinking, more diversity in curriculum, greater structural diversity (independent and autonomous schools, school cluster scheme) greater resourcing to encourage bottom up innovation, improvements in teacher education and service and working conditions.
Singapore’s Education Reforms

IT Master Plans:
To exploit the potential of information and communication technology to give students access to new information sources and make anytime, anywhere learning possible
Singapore’s Education Reforms

National Education:
Designed to better acquaint students with their own history, to strengthen civic commitments, and protect and defend Singapore’s core values.
Singapore’s Education Reforms
Diversified Secondary Structure

Singapore has shifted from a rigid system to a more flexible and responsive system, a system of ladders and bridges.
Singapore’s secondary system provides different tracks and subjects to meet a range of abilities and needs. Some 30% of less academically inclined students take vocational and technical subjects, and schools build close links to institutes of technical education and polytechnics.
Singapore’s Education Reforms
Diversified Secondary Structure

Specialised schools:

- Sports
- Visual and Performing Arts
- Mathematics and Science
- Science and Technology
- Future Schools (IT pilots)
Institute of Technical Education

“Perhaps the best in the world and a significant element of the Singapore success story” (OECD)

“A centre of excellence” (Economist)

Goal: 25% of ITE graduates to qualify for polytechnic education
Institute of Technical Education

New ITE Headquarters (1995)  
ITE College East (2005)  
New ITE Bishan Institute (1994)
Singapore’s Five Polytechnics

Singapore’s Education Reforms
Teacher Capacity Building

- 100 hours of professional development entitlement per year
- More opportunities for postgraduate study
- Teachers Network; Academy of Singapore Teachers
- Senior Teachers / Master Teachers
- Research Activists
- School-based Curriculum Development
- Systemic training for school leaders since mid 1980s
Singapore’s Education Reforms

Results:

- Singapore had created a system of ‘high averages’ with high levels of post-secondary participation in further training and education.

- Lower attrition, more students having vocational technical opportunities and closer education-economy, fit was achieved.
Singapore’s Education Reforms

Results:

- Outstanding results for Science, Mathematics and Language Education (TIMMS/IAEA)
<table>
<thead>
<tr>
<th>OECD</th>
<th>Reading Literacy</th>
<th>Math Literacy</th>
<th>Science Literacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spain</td>
<td>481 (26)</td>
<td>483 (28)</td>
<td>488 (28)</td>
</tr>
<tr>
<td>Portugal</td>
<td>489 (22)</td>
<td>487 (27)</td>
<td>493 (25)</td>
</tr>
<tr>
<td>Germany</td>
<td>497 (16)</td>
<td>513 (10)</td>
<td>520 (9)</td>
</tr>
<tr>
<td>Finland</td>
<td>536 (2)</td>
<td>541 (2)</td>
<td>554 (1)</td>
</tr>
<tr>
<td>UK</td>
<td>494 (20)</td>
<td>492 (22)</td>
<td>514 (11)</td>
</tr>
<tr>
<td>Non-OECD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Singapore</td>
<td>526 (3)</td>
<td>562 (2)</td>
<td>542 (3)</td>
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</table>

<table>
<thead>
<tr>
<th>TIMSS 2007</th>
<th>Math Literacy</th>
<th>Science Literacy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4th Grade</td>
<td>8th Grade</td>
</tr>
<tr>
<td>Germany</td>
<td>525 (12)</td>
<td>-</td>
</tr>
<tr>
<td>England</td>
<td>541 (7)</td>
<td>513 (7)</td>
</tr>
<tr>
<td>Singapore</td>
<td>599 (2)</td>
<td>593 (3)</td>
</tr>
</tbody>
</table>

Table 1: PISA 2009 OECD and TIMSS 2007 European Scores with Singapore.

Note: Spain, Portugal and Finland did not take part in TIMSS 2007.
### Top Five Countries in Math Scores on TIMSS

<table>
<thead>
<tr>
<th>Year/ Level</th>
<th>2007</th>
<th>2003</th>
<th>1999</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eighth graders</td>
<td>Chinese Taipei</td>
<td>Singapore</td>
<td>Singapore</td>
</tr>
<tr>
<td></td>
<td>Korea, Republic of</td>
<td>Korea, Republic of</td>
<td>Korea, Republic of</td>
</tr>
<tr>
<td></td>
<td>Singapore</td>
<td>Hong Kong SAR</td>
<td>Chinese Taipei</td>
</tr>
<tr>
<td></td>
<td>Hong Kong SAR</td>
<td>Chinese Taipei</td>
<td>Hong Kong SAR</td>
</tr>
<tr>
<td></td>
<td>Japan</td>
<td>Japan</td>
<td>Japan</td>
</tr>
</tbody>
</table>
Comparisons of PISA 2009

<table>
<thead>
<tr>
<th>Positions</th>
<th>Reading</th>
<th>Mathematics</th>
<th>Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>1\textsuperscript{st}</td>
<td>Shanghai, China</td>
<td>Shanghai, China</td>
<td>Shanghai, China</td>
</tr>
<tr>
<td>2\textsuperscript{nd}</td>
<td>Korea, Republic of</td>
<td>Singapore</td>
<td>Finland (Finnish)</td>
</tr>
<tr>
<td>3\textsuperscript{rd}</td>
<td>Finland (Finnish)</td>
<td>Hong Kong SAR</td>
<td>Finland</td>
</tr>
<tr>
<td>4\textsuperscript{th}</td>
<td>Finland</td>
<td>Korea, Republic of</td>
<td>Hong Kong SAR</td>
</tr>
<tr>
<td>5\textsuperscript{th}</td>
<td>Hong Kong SAR</td>
<td>Chinese Taipei</td>
<td>Singapore</td>
</tr>
<tr>
<td>6\textsuperscript{th}</td>
<td>Singapore</td>
<td>Finland (Finnish)</td>
<td>Japan</td>
</tr>
</tbody>
</table>
Singapore’s Education Reforms

Results:
- Education and skill levels have gone up substantially in the last 20 years.
- Workforce has a strong work-ethic, is collaborative rather than confrontational and has much improved opportunities for re-training.
- Government investment in R&D is rapidly increasing and a research culture is being built up.
Key national priorities were identified and resources allocated. Enhanced human capital skills were seen as crucial to the economy leading to appropriate investment in different types of education and training.

There was an acceptance of the need to take unpopular decisions eg retention of English. In the 1960s, less than 20% of the population was English-proficient.
Critical Success Factors

- Strong sensitivity to labour market needs
- Strong emphasis on bilingualism and values and character education
- Careful mix of certificate, diploma and graduate qualifications – 27% go to universities, 40% to polytechnics and 20% to Institute of Technical Education
Critical Success Factors

- Curriculum modernisation – strong emphasis on Science, Mathematics, languages and technology
- Strong centralised direction by MOE
- Build strong fundamentals before introducing flexibility, choice, diversity
TSLN, TLLM, IT Masterplans etc are efforts at “balancing infocracy, a thinking and creative work force and a participatory electorate with less governability and political control as a consequence.” (L. Lim)
Singapore’s New Challenges
New Challenges for the State

- New immigrants – strains on social cohesion (one in four are foreigners)
- Strong state led to stunted civil society. Can the state adapt to the desire for greater democratisation?
- New media forms challenge state’s monopoly on truth
- Difficulties in building a culture of innovation, enterprise and productivity
Growing income inequality is putting pressure on equal treatment / meritocracy.

Figure 4.1 The percentage of people agreeing that ‘most people can be trusted’ is higher in more equal countries.
Challenges for the State

- Demand for greater inclusiveness, transparency, accountability and a more plural political culture.

- Need for a new ‘social compact’?
“Singapore is still a work in progress” (need to understand) that vulnerability, that fragility of our society and keep it in cohesion” (started off) “with multiple peoples, no common language, no common culture … but “created” a very rare society where people of all races live in the same tower blocks and now speak a common language which is not their native language.

Lee Kuan Yew
Former Prime Minister, Singapore
2011
Key References

Key References


Thank you
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