ICT in education: A powerful enabler and equalizer

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The same place back in the 50’s
Success Story: The “Miracle of Han River”

This change in just one generation.

1960  1980  2000  2020

US$67  US$28,300

GNP per capita

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A case study: Korea

not for you to duplicate, but to do better!
1940’s During Japanese Occupation

34 years of devastation
During Japanese Occupation

Women trucked to military camps as sex slaves
1940’s During Japanese Occupation

Goods and cultural heritage shipped away to Japan
1950’s  During Korean War

- 2.7 million military casualties
- 2.5 million civilian casualties
- 3.2 million refugees
- 100 thousand orphans
1960~80’s  Coup d’etats & Civil Unrest
1980~90’s Corruption & incompetence

‘뇌물 문화’에 물든 나라

 IMF 구제금융 공식 요청

 200 억 달러 수준 될 것
Success Story: The “ Miracle of Han River”

Korea is 9th nation w/ US$1 trillion in export

US$28,300

2020
Success Story: The “Miracle of Han River”

Korea is 9th nation w/ US$1 trillion in export

Korea is 7th in GDP pc US$20,000 & 50M
Success Story: The “Miracle of Han River”

Korea is 9th nation w/ US$1 trillion in export

Korea is 7th in GDP pc US$20,000 & 50M

Korea is 5th nation to host all 4 major sports events

For the Game. For the World.
Success Story: The “Miracle of Han River”

From one of the poorest nations to one of the most dynamic economies. This change in just one generation.

GNP per capita

US$28,300

US$67

1960  1980  2000  2020
Key to success is: Education

1. Build national consensus on the importance of education

   Invest in people especially in the future of children
Key to success is: Education

By land size (km²)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Country</th>
<th>Size (km²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>102</td>
<td>Benin</td>
<td>112,622</td>
</tr>
<tr>
<td>103</td>
<td>Honduras</td>
<td>112,492</td>
</tr>
<tr>
<td>104</td>
<td>Liberia</td>
<td>111,369</td>
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<tr>
<td>105</td>
<td>Bulgaria</td>
<td>110,879</td>
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<td>106</td>
<td>Kyrgyzstan</td>
<td>109,884</td>
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<td>107</td>
<td>Iceland</td>
<td>103,000</td>
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<tr>
<td>108</td>
<td>South Korea</td>
<td>100,210</td>
</tr>
<tr>
<td>109</td>
<td>Hungary</td>
<td>93,028</td>
</tr>
<tr>
<td>110</td>
<td>Portugal</td>
<td>92,090</td>
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<tr>
<td>111</td>
<td>Jordan</td>
<td>89,342</td>
</tr>
<tr>
<td>112</td>
<td>Serbia</td>
<td>88,361</td>
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</table>

By population

<table>
<thead>
<tr>
<th>Rank</th>
<th>Country</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>Tunisia</td>
<td>51,419,420</td>
</tr>
<tr>
<td>26</td>
<td>South Korea</td>
<td>51,342,881</td>
</tr>
<tr>
<td>27</td>
<td>Colombia</td>
<td>48,148,900</td>
</tr>
<tr>
<td>28</td>
<td>Kyrgyzstan</td>
<td>5,935,400</td>
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<tr>
<td>29</td>
<td>Kenya</td>
<td>46,749,000</td>
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<tr>
<td>30</td>
<td>Spain</td>
<td>46,464,053</td>
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<td>31</td>
<td>Argentina</td>
<td>43,131,966</td>
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<td>32</td>
<td>Ukraine</td>
<td>42,873,583</td>
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<td>33</td>
<td>Algeria</td>
<td>40,400,000</td>
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<tr>
<td>34</td>
<td>Poland</td>
<td>38,484,000</td>
</tr>
<tr>
<td>35</td>
<td>Sudan</td>
<td>38,435,252</td>
</tr>
</tbody>
</table>

People are Korea’s only ‘natural resource’
Key to success is: Education

3W learning

Whenever
Wherever
Whoever
Key to success is: Education

3S learning

Same time
Same place
Same age
Key to success is: Education

3S learning

- 11,000 schools
- 483,000 teachers
- 199 four-yr. colleges
- 132 two-yr. colleges
- 0 four-yr. colleges
- 29 two-yr. colleges

1945
Key to success is: Education

3S learning

100% attend K-6
99.8% move onto 7-9
99.6% move onto 10-12
97.9% literacy rate
Key to success is: Education

No. of students per teacher

Elementary
Middle
High school

1960 1980 2000 2020

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Key to success is: Education

3W learning
Whenever
Wherever
Whoever

3S learning
Same time
Same place
Same age

3A learning
Anytime
Any place
Anyone
e-learning (ICT 1.0)

Internet
Computer
TV & AV
e-learning (ICT 1.0)
e-learning (ICT 1.0)
e-learning (ICT 2.0) smart media

It’s mobile and ubiquitous.
e-learning (ICT 2.0) smart media

20 yrs in class  2 wk online  1 yr online

4,000 students  4,000  40,000

Accessibility
Social impact
Key to success is: Education

2 Invest in technology

✓ ICT is a great enabler

✓
smart media (ICT 2.0)

South Korea and Japan Top Internet Speed Ranking
Average measured internet connection speed in Q1 2013

- South Korea: 14.2 Mbps
- Japan: 11.7 Mbps
- Hong Kong: 10.9 Mbps
- Switzerland: 10.1 Mbps
- Netherlands: 9.9 Mbps
- Latvia: 9.8 Mbps
- Czech Republic: 9.6 Mbps
- Sweden: 8.9 Mbps
- United States: 8.6 Mbps
- Denmark: 8.2 Mbps

Source: Akamai

3A learning

Anytime
Any place
Anyone
### Percent of South Korean Students Owning Smartphones

Source: Ministry of Education Survey released July 29, 2013

<table>
<thead>
<tr>
<th>Regional category</th>
<th>Elementary</th>
<th>Middle School</th>
<th>High School</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>City</td>
<td>49.2</td>
<td>85.4</td>
<td>83.7</td>
<td>69.6</td>
</tr>
<tr>
<td>Rural</td>
<td>46.6</td>
<td>83.1</td>
<td>83.7</td>
<td>66.5</td>
</tr>
<tr>
<td>(farming/fishing villages)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Korea had the highest smartphone ownership in the world last year.
smart media (ICT 2.0)
smart media (ICT 2.0)

5 TV channels dedicated to learning

- General audience
- Elementary school children
- Middle school students
- College preparatory
- English Education
Key to success is: Education

3W learning  3S learning

2013 PISA result:
(Program for Int’l Student Assessment)
Korea is the best
among 34 OECD nations
in Math, Science and Reading

MATH Rank
1. Korea
2. Japan
3. Switzerland
4. Estonia
5. Finland
6. Canada
7. Poland
8. Belgium
9. Germany
10. Austria
11. Australia
12. Ireland
13. Slovenia
14. Denmark
15. New Zealand
16. Czech Republic
17. France
18. United Kingdom
19. Iceland
20. Luxembourg
21. Norway

Whenever  Wherever  Whoever
Same time  Same place  Same age

1960  1980  2000
‘ICT in education’ in Korea helps achieve better educational equity and parity.

DRA and PRA, OECD 2009

Korea

OECD avg

Difference is 88 pts.

Difference is 120 pts.

OECD avg. 499
Key to success is: Education

2 Invest in technology

- ICT is a great enabler
- ICT is also a great equalizer
- 
Old generation
Retiring Korean worker: Last in the world
Proficiency in problem solving in technology-rich environments

New generation
Future Korean worker: First in the world

Old generation
Retiring Korean worker: Last in the world

Korea is building future society now!
Key to success is: Education

2 Invest in technology

✓ ICT is a great enabler
✓ ICT is also a great equalizer
✓ ICT is about nation building
Key to success is: Education

A word of caution!
A word of caution!

Introducing ICT in classrooms is not sufficient.
The most advanced form of smart media reinforcing the worst form of teaching.

Oh, God. He says only one word...“next, next”

Just more & faster
The teacher teaches!
The teacher teaches! But students learn???
The **dumbest use** of smart media

No creativity!

*Just more & faster*
Another word of caution!

The world map as we know
Another word of caution!

World according to creativity (IP)

Creators of ICT

Consumers of ICT
We did it through teacher retraining!

The role of teachers needs to shift!

unacceptable

suitable

Passive
Unidirectional

Active
Interactive
We did it through teacher retraining!

The role of teachers needs to shift!

Information transmission

Interpersonal relation

E-lec-tronic learning

E-mo-tion learning

ACCESSIBILITY and CONNECTIVITY

to information & learning(?)

to model & mentoring
We did it through teacher retraining!

The role of teachers needs to shift!

Information transmission

Interpersonal relation

TEACHER (RE)TRAINING

every year, 25% of teachers
attend workshop on ICT in education

Teachers as a model of success!

ACCESSIBILITY and CONNECTIVITY

to information & learning

to model & mentoring
Intellectual property (creativity)

Figure A.2.1.2 Trend in patent applications for the top five offices

Note: The top five offices were selected based on their 2012 totals.

Source: WIPO Statistics Database, October 2013
Intellectual property (creativity)

Figure A.2.1.2 Trend in patent applications for the top five offices

- China
- United States of America
- Japan
- Republic of Korea
- European Patent Office

Application year:
- 1883
- 1890
- 1900
- 1910
- 1920
- 1930
- 1940
- 1950
- 1960
- 1970
- 1980
- 1990
- 2000
- 2010

Applications:
- 0
- 200,000
- 400,000
- 600,000
- 800,000

Note: The top five offices were selected based on their 2012 totals.

Source: WIPO Statistics Database, October 2013
Key to success is: Education

3 Invest in teachers
Key to success is: Leapfrogging

4 Invest, not to do just more & faster, but in order to leapfrog!
Key to success is: Education

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11,000 schools
483,000 teachers

3S learning

3A learning

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Key to success is: Leapfrogging

3W learning
Whenever
Wherever
Whoever

3A learning
Anytime
Anywhere
Anyone

1960
1980
2020

Same time
Same place
Same age
A second word of caution!

We were once brainwashed to believe more and faster is better.
Don’t repeat the mistakes of other nations

Take advantage of your won strengths!
Decision was made by leaders 50 years ago...

Build national consensus
Education as dream-making
Success through technology
Teachers are Nation Builders

Whether to make the change or not
Korea did it in spite of

✓ poverty
✓ corruption
✓ incompetence
✓ civil unrest
✓ geopolitical tension

So can you!