Bi-lateral Co-operation in the Field of School Education – A Joint Seminar

Organised by

The National Council of Educational Research & Training (NCERT), New Delhi, India

In collaboration with

The Academy of Korean Studies (AKS), Seoul, ROK

From 27-29 July, 2016

CIET, NCERT, New Delhi

Theme: Bilateral Cooperation in ICT and Educational Technology

ICT in Education through Teacher Development: Possibilities of India-Korea Collaboration

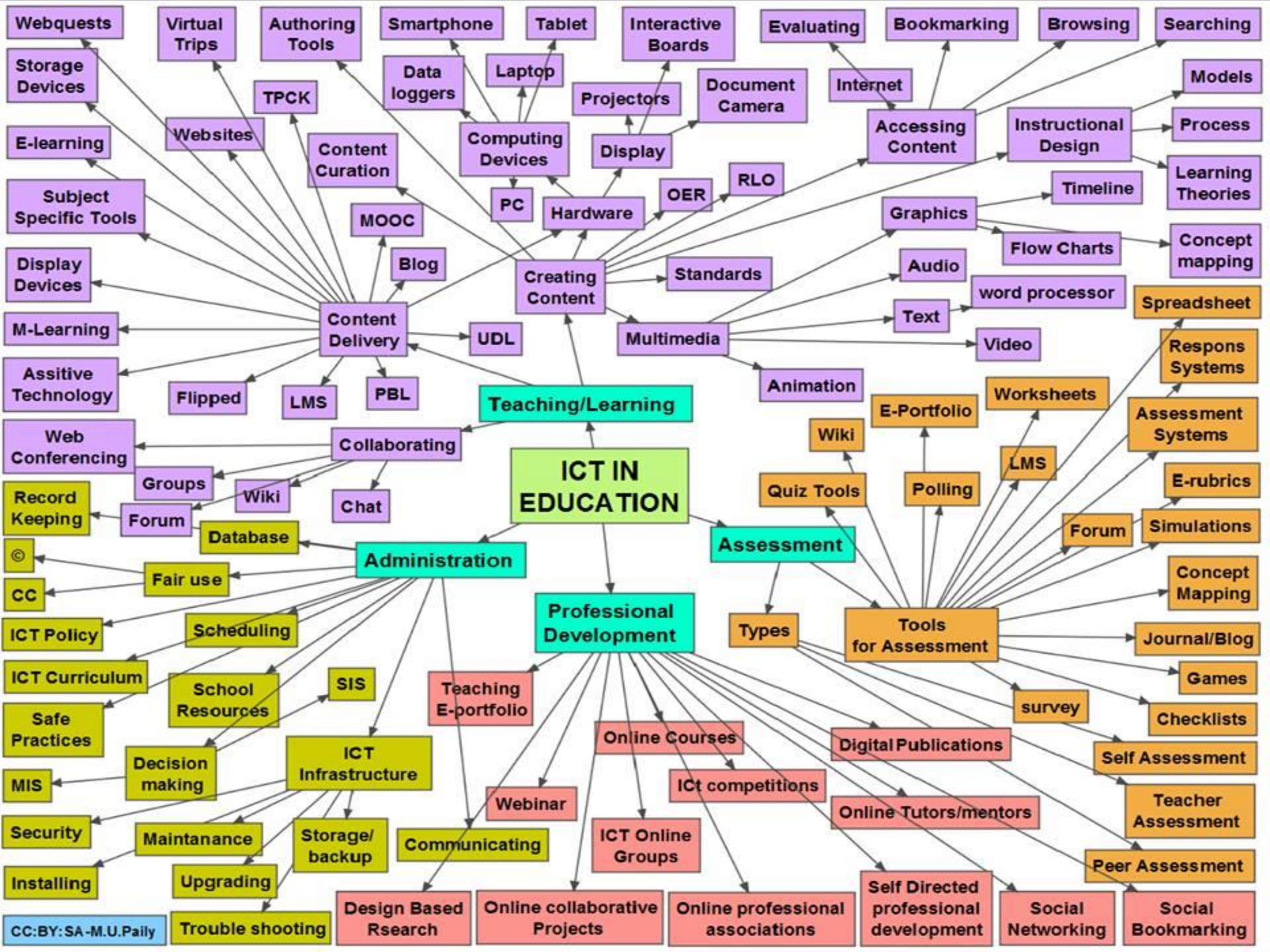
M.U.Paily, Ph.D
Professor of Education
Regional Institute of Education (NCERT), Mysore

Essential Question

- What are the possibilities of cooperation between India and South Korea in the domain of ICT applications in education especially imparting teachers training programme for capacity building?

The Daily: The Korea Times on 22.5.2012

- "A number of countries have shown keen interest in Korea's smart learning technologies. Lee (Korea's top educator:Lee Ju-ho) has engaged in active diplomacy with the rest of the world, especially less-developed nations, to promote Korea's unique smart education solutions. By spurring the convergence of technology and education and sharing this knowhow with other countries, Korea seeks to establish a reputation as an educational powerhouse in the digital era, Lee said"



- The Global Information Technology Report 2015

India v/s Korea

The Networked Readiness Index 2015

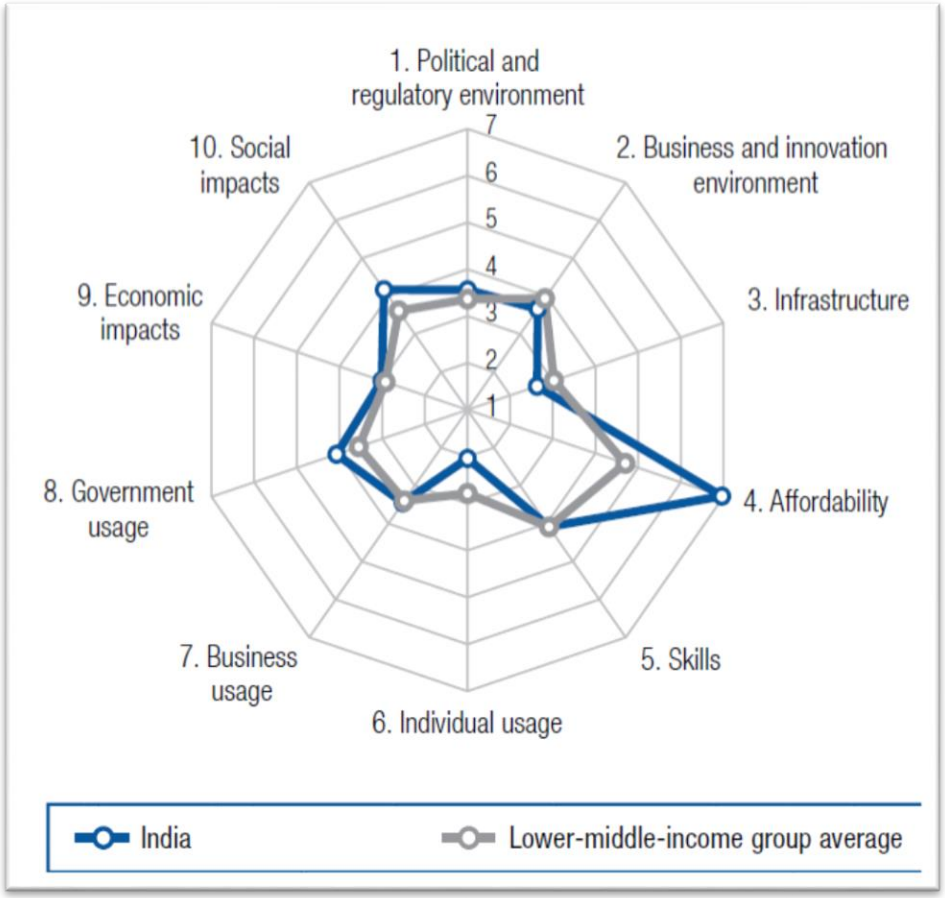
Table 1: The Networked Readiness Index 2015

Rank	Country/Economy	Value	2014 rank (out of 148)	Income level*	Group†
1	Singapore	6.0	2	HI	ADV
2	Finland	6.0	1	HI-OECD	ADV
3	Sweden	5.8	3	HI-OECD	ADV
4	Netherlands	5.8	4	HI-OECD	ADV
5	Norway	5.8	5	HI-OECD	ADV
6	Switzerland	5.7	6	HI-OECD	ADV
7	United States	5.6	7	HI-OECD	ADV
8	United Kingdom	5.6	9	HI-OECD	ADV
9	Luxembourg	5.6	11	HI-OECD	ADV
10	Japan	5.6	16	HI-OECD	ADV
11	Canada	5.5	17	HI-OECD	ADV
12	Korea, Rep.	5.5	10	HI-OECD	ADV
[illegible]	Germany	5.5	12	HI-OECD	ADV
14	Hong Kong SAR	5.5	8	HI	ADV
15	Denmark	5.5	13	HI-OECD	ADV
16	Australia	5.5	18	HI-OECD	ADV
17	New Zealand	5.5	20	HI-OECD	ADV
18	Taiwan, China	5.5	14	HI	ADV
19	Iceland	5.4	19	HI-OECD	ADV
20	Austria	5.4	22	HI-OECD	ADV
21	Israel	5.4	15	HI-OECD	ADV
22	Estonia	5.3	21	HI-OECD	ADV
23	United Arab Emirates	5.3	24	HI	MENAP
24	Belgium	5.3	27	HI-OECD	ADV
25	Ireland	5.2	26	HI-OECD	ADV

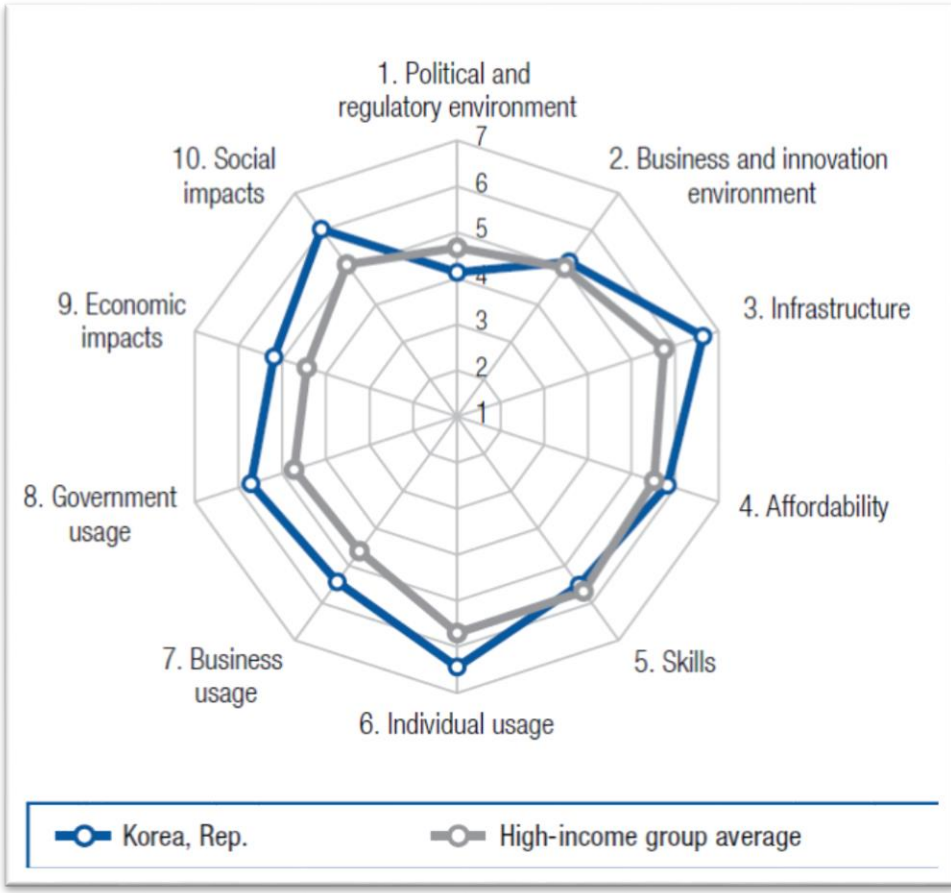
Rank	Country/Economy	Value	2014 rank (out of 148)	Income level*	Group†
73	Bulgaria	4.0	73	UM	EDE
74	Seychelles	4.0	66	UM	SSA
75	South Africa	4.0	70	UM	SSA
76	Philippines	4.0	78	LM	EDA
77	Serbia	4.0	80	UM	EDE
78	Morocco	3.9	99	LM	MENAP
79	Indonesia	3.9	64	LM	EDA
80	El Salvador	3.9	98	LM	LATAM
81	Tunisia	3.9	87	UM	MENAP
82	Jamaica	3.9	86	UM	LATAM
83	Rwanda	3.9	85	LI	SSA
84	Brazil	3.9	69	UM	LATAM
85	Vietnam	3.9	84	LM	EDA
86	Kenya	3.8	92	LI	SSA
87	Cape Verde	3.8	89	LM	SSA
[illegible]	Bhutan	3.7	94	LM	EDA
89	India	3.7	83	LM	EDA
[illegible]	Peru	3.7	90	UM	LATAM
91	Argentina	3.7	100	UM	LATAM
92	Albania	3.7	95	UM	EDE
93	Guyana	3.7	88	LM	LATAM
94	Egypt	3.6	91	LM	MENAP
95	Dominican Republic	3.6	93	UM	LATAM
96	Iran, Islamic Rep.	3.6	104	UM	MENAP
97	Lao PDR	3.6	109	LM	EDA

Networked Readiness Index 2015

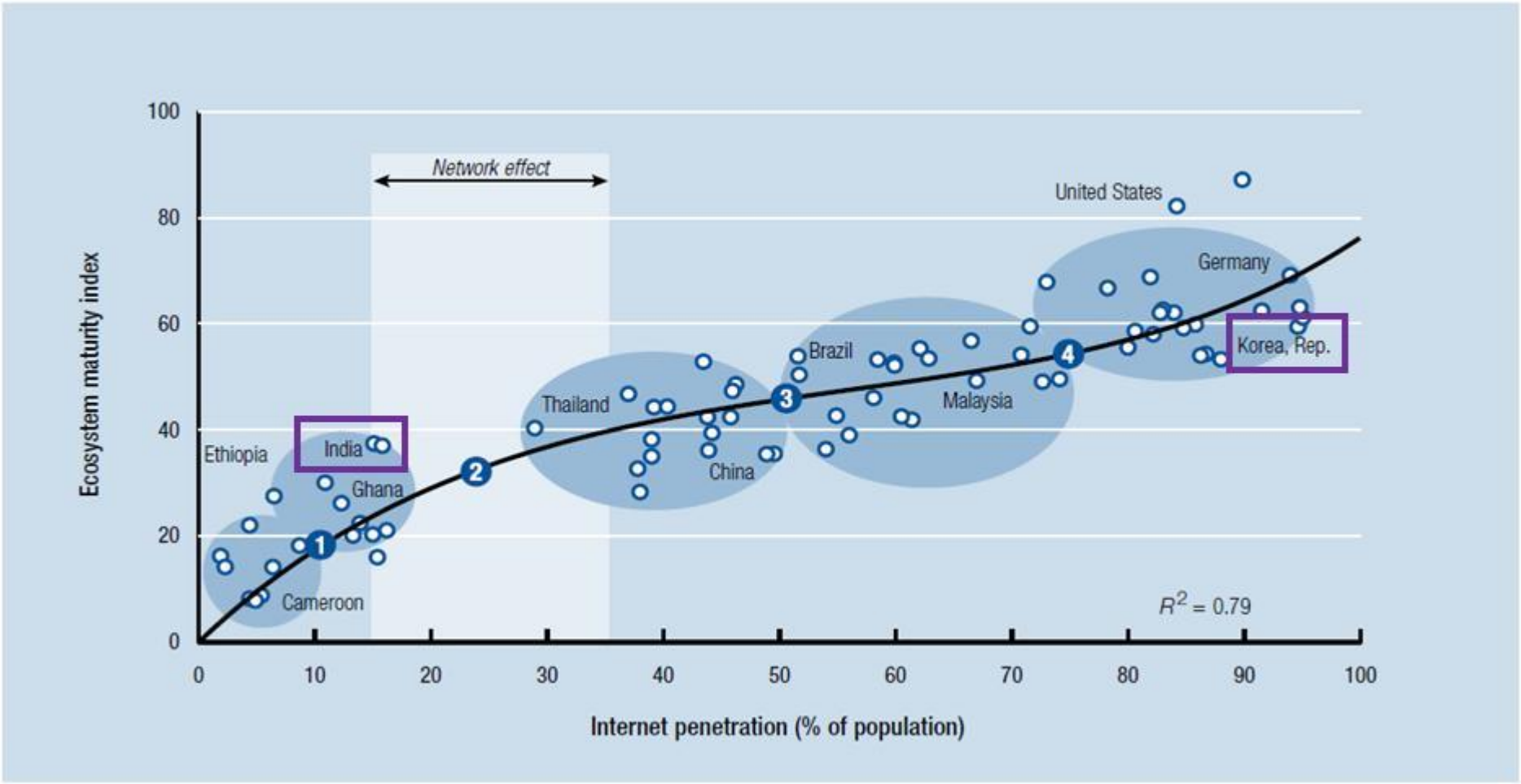
India



Korea

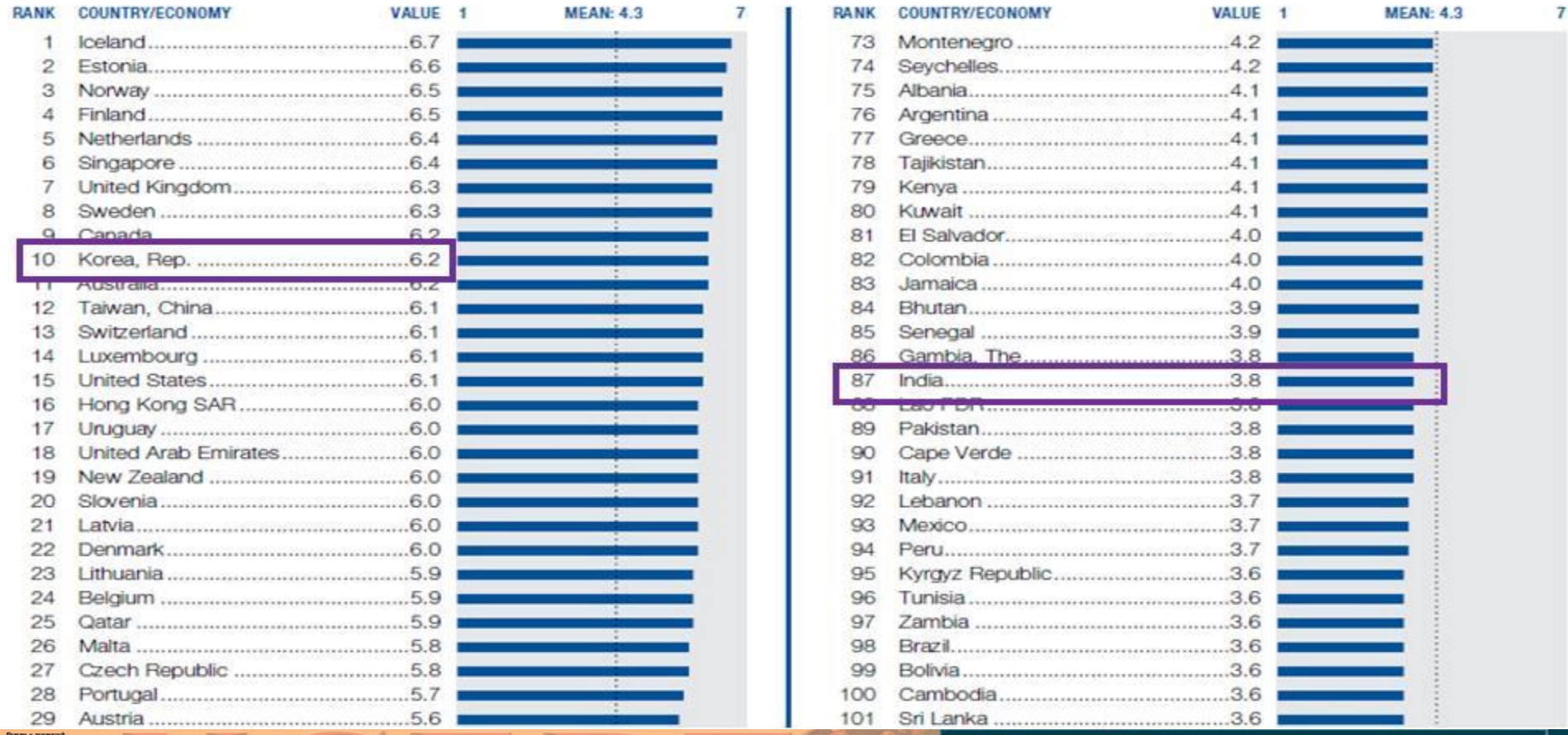


Ecosystem maturity vs. Internet penetration



Internet access in schools

In your country, how widespread is Internet access in schools? [1 = nonexistent; 7 = extremely widespread] | 2013–2014 weighted average



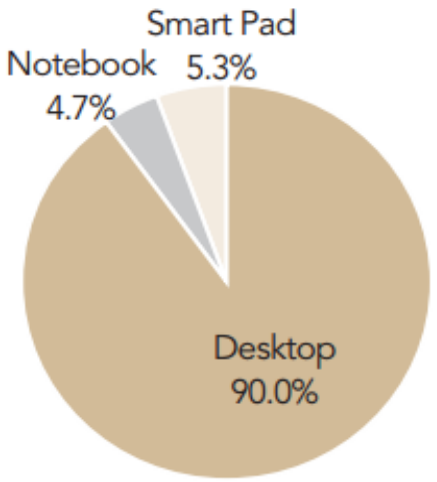
2014
Statisics

Key Figures of 2014

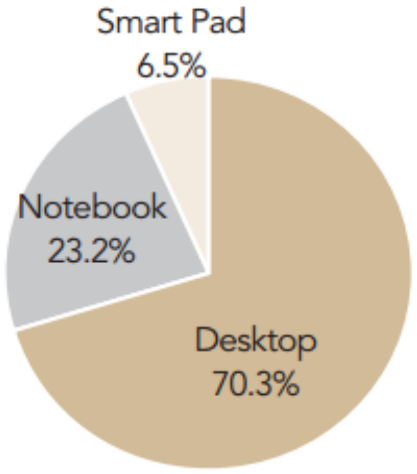
*KERIS 2014 ICT in Education Survey
- participants: 9,840 schools from 2014.10.1.~ 10.17

1 ICT Infrastructure per School

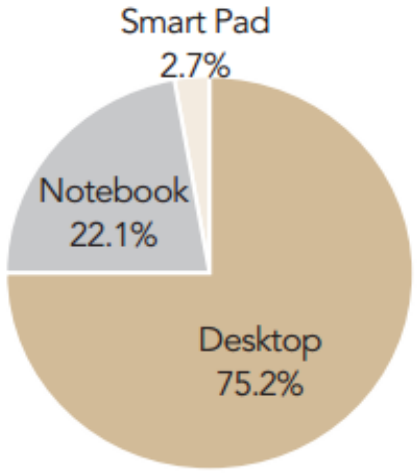
1. Number of Computers per School



Elementary Schoo l: 728,895



Middle Schoo l: 416,834



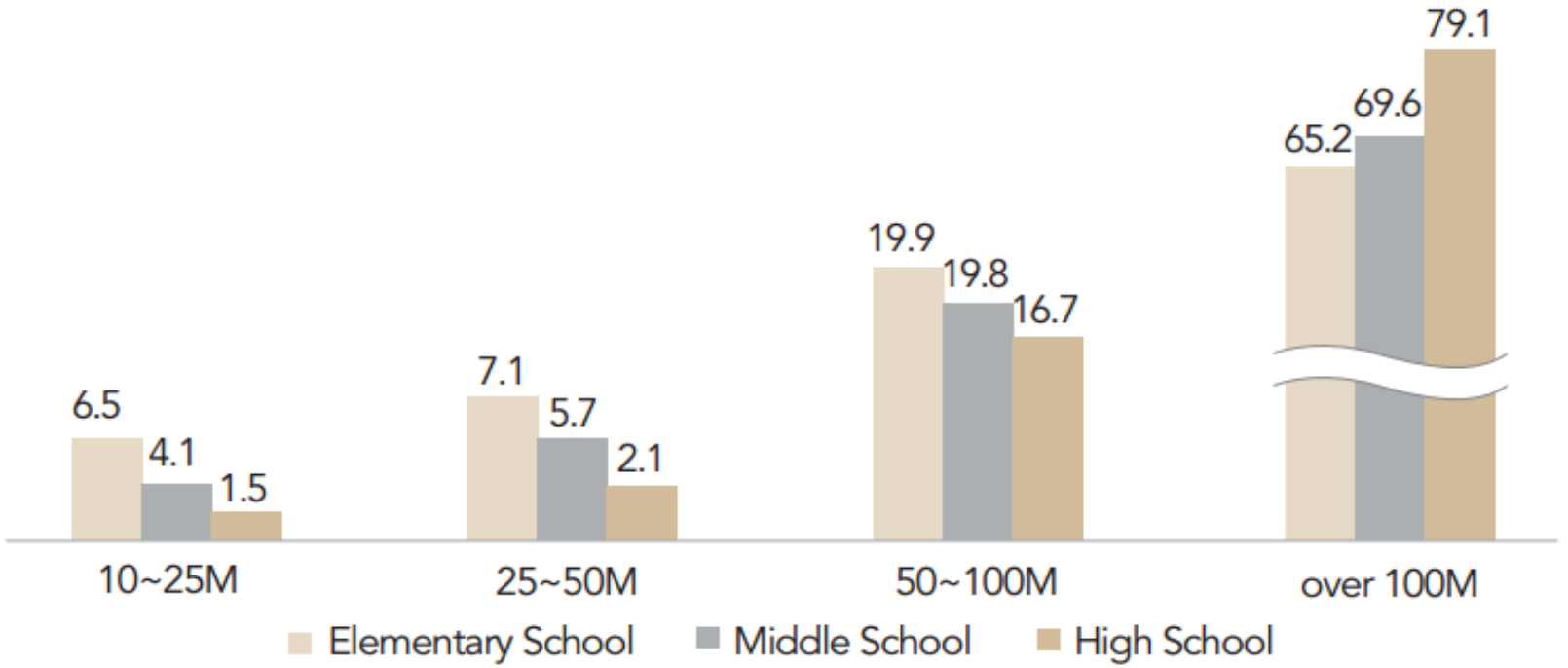
High School : 560,125

※ Source: KERIS 2014 Education Statistics

4. Internet Line Speed per School

(Unit: %)

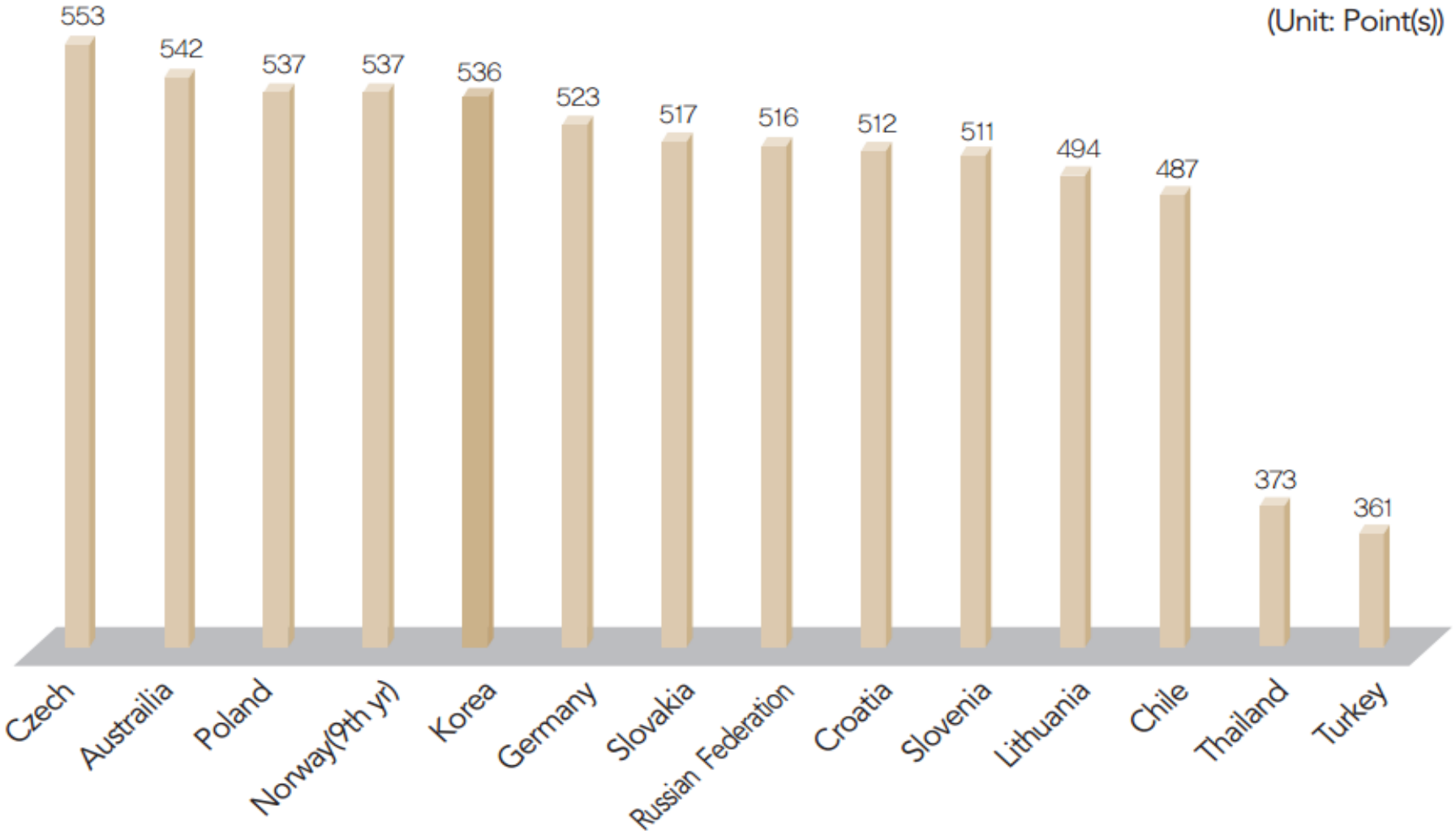
Classification	10~25M	25~50M	50~100M	over 100M
Total	4.8	5.7	19.2	69.2
Elementary School	6.5	7.1	19.9	65.2
Middle School	4.1	5.7	19.8	69.6
High School	1.5	2.1	16.7	79.1



※ Total includes special schools and other schools

※ Source: KERIS 2014 ICT in Education Survey

4 ICILS 2013 Computer Information Literacy Scores



※ ICILS : International Computer and Information Literacy Study

※ Source: KICE Press Document (2014.11.20)

Some Indicators of Korea

- The Republic of Korea has built a world-class IT infrastructure and Internet facilities nationwide.
- average number of students per personal computer is 3 whereas India is about 30
- More than 60% of schools are equipped with 100Mbps Internet lines
- The majority of the population in Korea is able to access the Internet anywhere and anytime
- Internet utilization rate is ranked in 10th position
- 89.9% of the population use the Internet at home
- E-learning was adopted by 80.0% of regular education institutes in 2009
- highest broadband penetration in the world at 97 percent and is a leader in broadband speed with an average peak connection of close to 50 megabits per second

Initiatives in Korea

- encourage ICT application by fostering ICT application capability of teachers and **providing education contents** to all courses using PCs distributed to all classes and Internet.
- construct teaching-learning support system for all courses and raise quality of teaching-learning by building **distance education support system** for remote villages schools and optional courses.
- **Support supplementary study and independent study at home** by providing autonomous study support system and supplementary class support system for slow learners
- foster activation of ICT use by establishing **policies** by specialists on education and by providing systematic teaching-learning methods of ICT education.

ICT literacy education and ICT application education

- **Through**
  - Policy
  - Schemes
  - Curriculum
  - Syllabus
  - Standards
  - Courses and e-content
  - Textbooks
  - Supplementary class support at Home and for slow learner
  - Infrastructure – offline and online
  - Budget
  - T-L support system
  - Professional development

ROK ICT Master Plans

- **The first Master Plan (1996—2000)** was focused on the establishment of a world-class ICT infrastructure in elementary and secondary schools.
- The objective of the **second Master Plan (2001— 2005)** was to enhance the quality of education by allowing open access to educational content and providing teacher training for the integration of ICT into classroom teaching practices.
- **The third Master Plan (2006— 2010)** has been focused on the creation of sustainable learning environments with u-Learning and future education through more flexible and secure educational services such as the development of digital textbooks

Master Plans Continued…

- MOE announced the fifth phase of its five-year master plan (2014~2018). Phase V's vision concentrates on **'training creative minds through converging education and ICT',** as it aims to lead creative education for the future, support customized education to realize dreams and talents and to provide fair and equal educational opportunities through cooperation and collaboration.
- **Cooperation- possibly to initiate ICT specific five year plans for India**

Key Players

- The use of ICT in education in ROK has been driven by a strong cooperation among three key players:
  - **Ministry of Education, Science, and Technology (MEST)** - coordinating the processes from policy planning to implementation
  - **Korea Education and Information Service (KERIS)** - supporting and planning implementation of the national ICT policy
  - **16 Metropolitan Provincial Offices of Education (MPOEs)** - implementing the national ICT policy at the regional level

  - **Collaboration- Study how the ROK ICT policy are implemented ate 16 MPOE. The practice is that 16 MPOE establish and implement ICT policy in compliance with national policy – This would help us in state level implementation of national ICT policy**

Teacher Training

- Since the late 1980s the ROK government has provided teacher training for both ICT literacy and integration purposes.
- The focus of teacher training, however, has changed over the course of the three master plans from computer literacy to curriculum integration.
- In addition, the government has built the teacher training framework for ICT in education to meet the specific needs faced by teachers throughout their career.
- The new teacher roles and adequate ICT competencies should be taken into consideration for the future design of teacher training.
- **Collaboration to understand the development and implementation of "Teacher Training Framework for ICT in Education" and to develop and implement such a framework for India**

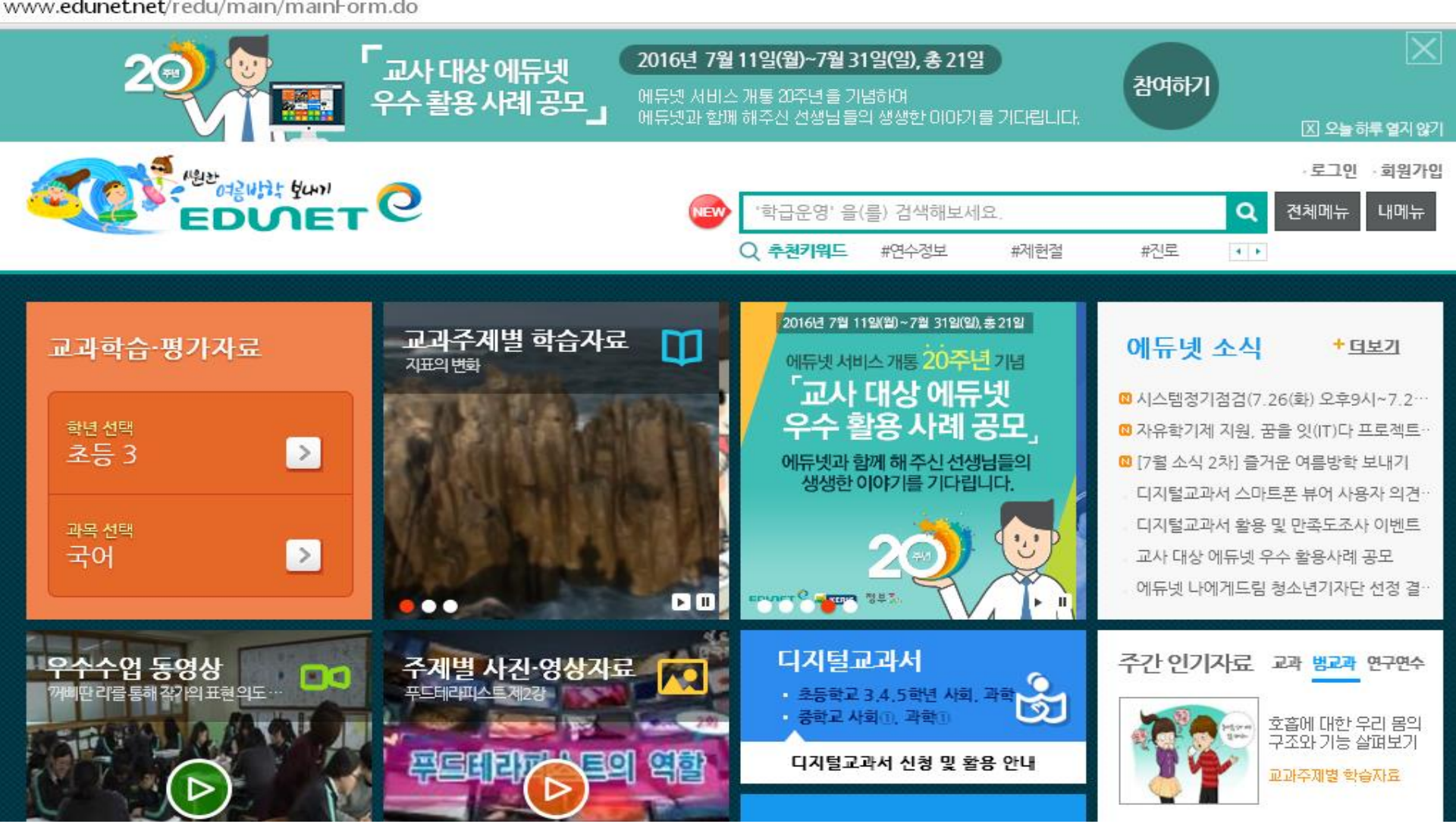
ICT Service System

- The information service system in education is comprised of three main groups: EDUNET (for teaching and learning), EMIS and NEIS (for administration), and CHLS (for home learning).
  - EDUNET was developed to operate and provide multimedia materials, instructional lesson plans and evaluation items according to school level.
  - EMIS focuses mostly on collecting annual statistical data from educational institutions
  - NEIS manages and integrates personnel, financial, and school affairs within or between institutions, regional offices and the Ministry of Education.
  - CHLS provides individual learning materials and online tutorial support in order to bridge the education divide for after school private tutoring.
  - **Collaboration is possible to develop such an ICT service system in India**

The Success Factors

- The achievements of Korean e-Learning and ICT in education policy are recognized as a result of a
  - **Solid legal framework,**
  - **systematic implementation mechanism,**
  - **secured budget and support,**
  - **timely capacity building,**
  - **successful cooperation between public and private sectors, and an**
  - **effective monitoring and evaluation system.**

  The Pointers for India



- Collaboration to study EDUNET and for strengthening the NROER and Epathshala Initiatives

Monitoring and Evaluation

- The overall scheme of monitoring and evaluation of ICT policy in education in Korea consists of
  - Measuring ICT in education for schools
  - ICT literacy tests for students, as well as an
  - External evaluation of major national ICT projects

Collaboration: study the ICT monitoring and evaluation mechanism of Korea and strengthen the same in India including programe evaluation

Cooperation: The Korea Initiatives

- Beyond domestic implementation, the Korean government has expanded its cooperation with the global community to reduce the digital divide through ICT in education. Representatives of over 50 countries visit the Republic of Korea every year to benchmark best practices in this sphere. The number of requests for consulting projects for ICT in education through ODA grants and EDCF loans has increased considerably.

ICT-The Legal Framework

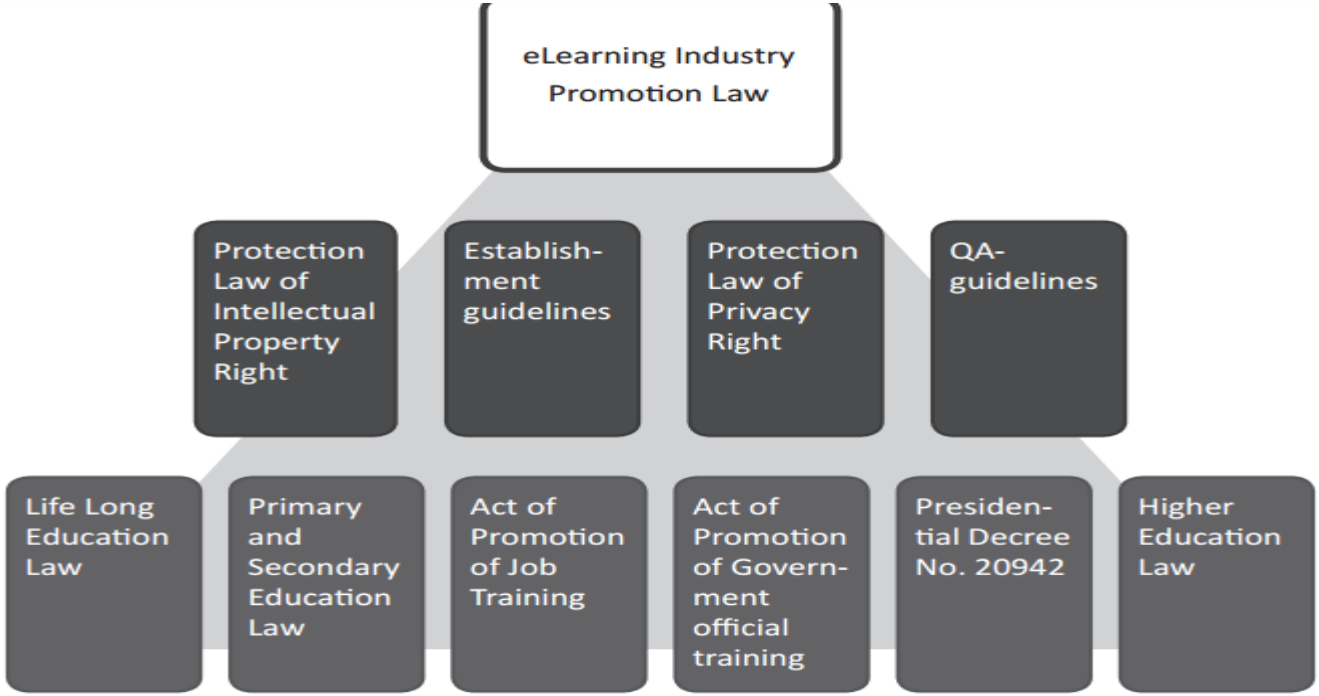


Figure II-1. Legal Frameworks for the Promotion of ICT.

- Can collaborate on developing a legal framework for ICT in Education in India

ICT Levels of Adaptations

- **Level 1** - Black board or in some case not even a blackboard
- **Level 2** - Blackboard, Chart, Models, Maps, Labs, Specimens
- **Level 3** - Slide projector, OHP, Television, Tape Recorder, Radio (in addition to level 1 and 2 media)
- **Level 4** - Computer, Word Processor, Spread sheet, presentation, Multimedia projector (in addition to level 2 and 3 media)
- **Level 5** - Response devices, IPTV, interactive white board, Document Cameras, Tablets (in addition to level 3 and 4 media)
- **Level 6** – Phablets, Websites, Blogs, LMS, Wiki, Social bookmarking, Social Networking, E-mail, Forum, Chat, Podcasts (in addition to level 4 and 5 media)
- **Level 7** – 3d printing, wearable computing, augmented reality, learning analytics, Natural User interface (CLI-GUI-NUI), sensor networks and Ubiquitous computing, Semantic web and $5_{in}5$

Curriculum Transaction Levels

- **Level 1** - Lecture or not even lecture
- **Level 2** - Lecture, Assignments, Projects, Homework, Exercises
- **Level 3** - Pair work, Demonstration, Group work, Field trips, role play, debate, experiments, Questions, (in addition to level 1 and 2 strategies)
- **Level 4** - Cooperative learning, Problem based learning, Graphic organizers, Discovery learning, Project based learning (in addition to level 1, 2 and 3 strategies)
- **Level 5** - E-learning, Experiential learning, Networked learning, Constructivism, Peer coaching, Cognitive apprenticeship, (in addition to level 1, 2, 3, and 4 strategies)
- **Level 6** – Flipped classroom, M-learning, ubiquitous social media, MOOC, M-learning, u-Learning

- next generation broadband and wireless Internet in schools
- Flipped Learning
- BYOD/BYOx/2:1 computing
- ICT based assessment practices/online assessments
- U-learning and MOOC
- Cloud based educational service
- E-content

- Cooperation on the above areas and corresponding teacher professional development

Teacher Development –Korea Initiatives

- 2009-Teacher Training Information Service (TTIS) was opened
- 2011- 'Smart Education Implementation Strategies' were developed to run digital textbook and smart education policies more efficiently.
- 2012 - Smart Education Teacher Training Accreditation System was created.
- 2013 - the Teacher Informatization Competence Development Project was developed to focus on the reinforcement of teachers' competence for the sake of the application and dissemination of digital textbook-aided teaching and learning.
- **Cooperation-similar teacher development strategies could be implemented in India**

Teacher Informatization Competence Development Project

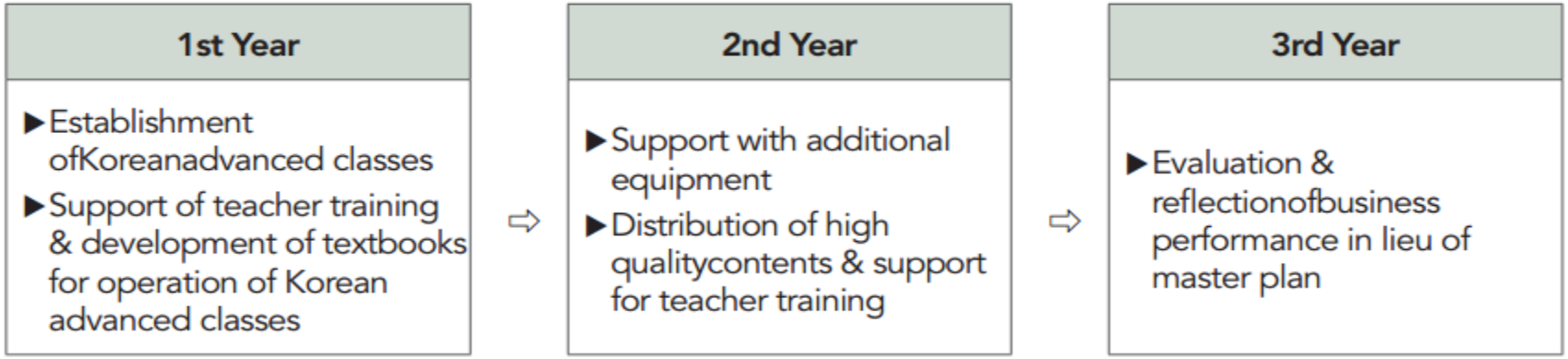
- Firstly, the 2014 project carried out digital textbook and smart education training for existing teacher trainers and newly recommended teachers.
- Secondly, it supported 14 national curriculum research committees and 34 regional curriculum research committees to develop and distribute class protocols utilizing digital textbooks and smart education.
- developed an online and a mobile diagnostic tool via EDUNET to allow teachers to do self-evaluations in terms of smart education competence and receive teacher feedback
- began to develop an advanced integrated study and learning center site to improve preliminary teachers' informatization competence.
- Operation of Distance Learning Training Centre

International Cooperation in Education Informatization

Classification	Project	Project Overview		
		Business Scope	2014 Budget	Designated Institutions
Primary & Secondary Education	E-learning Globalization	Infrastructure & teacher training support to 17 countries in conjunction with city & provincial offices of education, development of international index of ICT in education indicators with international partners, &organizing global ICT symposiums, etc. (2005 onwards)	KRW 2.27 billion	KERIS, KEFA, Institute of APEC Collaborative Education
	Export Support for Advanced Korean Education Services	'Advanced ICT Application Pilot Class' support to developing countries (2011 onwards)	KRW 1.74 billion	KEFA& KT Corp.
	Solar Powered School	Solar School Application Education Support in partnership with Samsung Electronics & support for teacher's ICT competence for African countries (2013 onwards)	KRW 0.1 billion	KERIS&Samsung Electronics
Higher Education	ASEAN Cyber University E-learning	Support e-Learning competence for ASEAN countries & activation of Korea-ASEAN cooperation (2012 onwards)	KRW 2.1 billion	Seoul Cyber University

- Export Support for Advanced Korean Education Services Project –
  - Advanced ICT Application Pilot Class
  - educational e-learning contents and
  - needs-based teacher training courses

[Figure 8] Overview of Export Support of Advanced Korean Education Services



Teachers First

- Ensuring high speed internet access to all schools
- Ensuring access to high quality pedagogical approaches through face-to-face mode/online mode
- High quality digital content on all school subjects
- Harnessing the potential of web 2.0 technologies in collaboration and networking

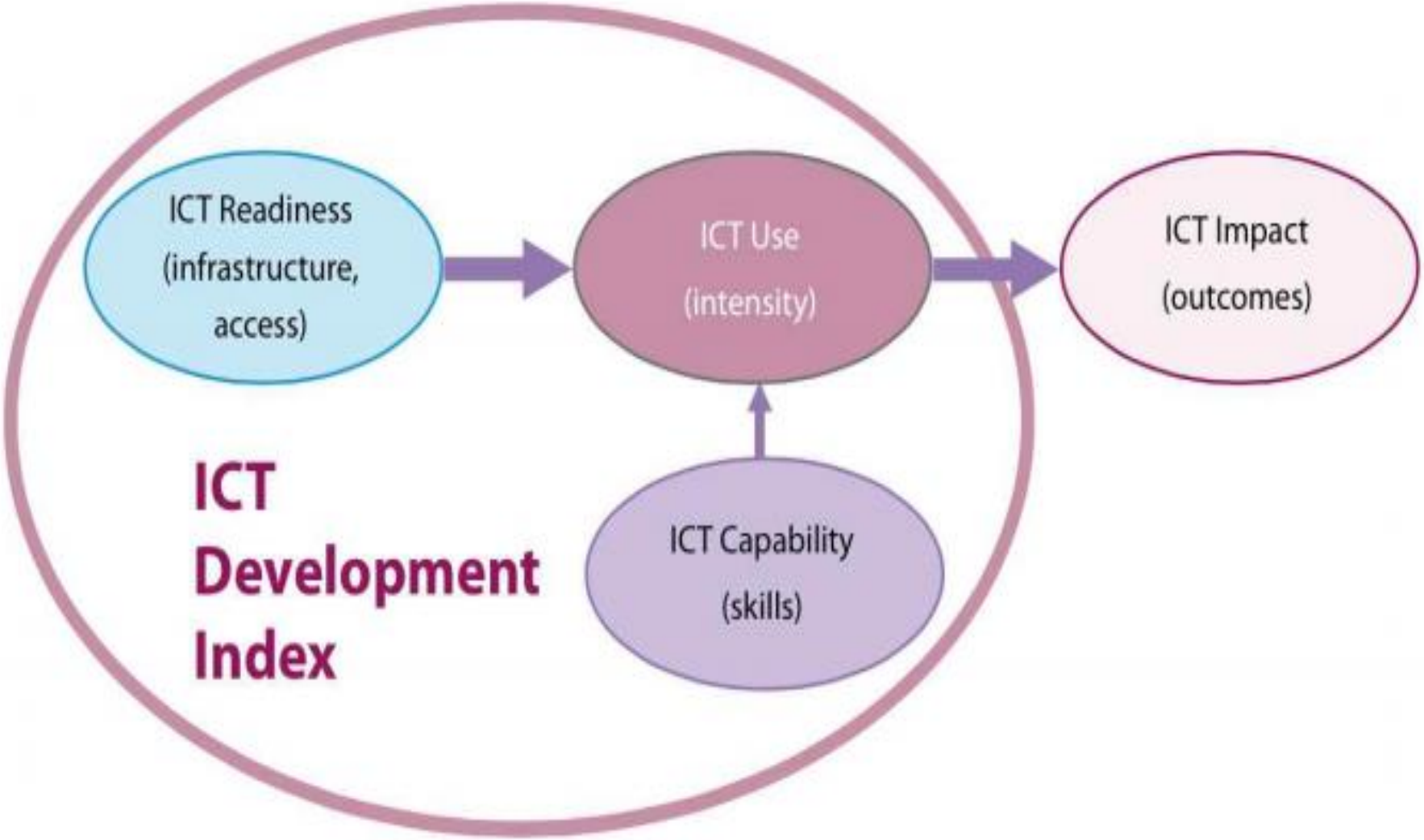
- Collaboration- A project for teachers could be taken up in collaboration with ROK in limited schools for providing access device + high speed 3g/4g internet + digital content + Pedagogical Videos + web 2.0 collaboration + Training – study the impact

Globalization of e-learning

- The e-learning policies and projects implemented by south Korea have lead to world-leading programs. Many international organizations and foreign nations are using Korean e-learning programs as bench mark for their own systems. In addition, the Korea Government has received many requests from the international community for exchange programs so that Korea can share the knowledge and experiences it has accumulated in e-learning

E-learning Globalization Project

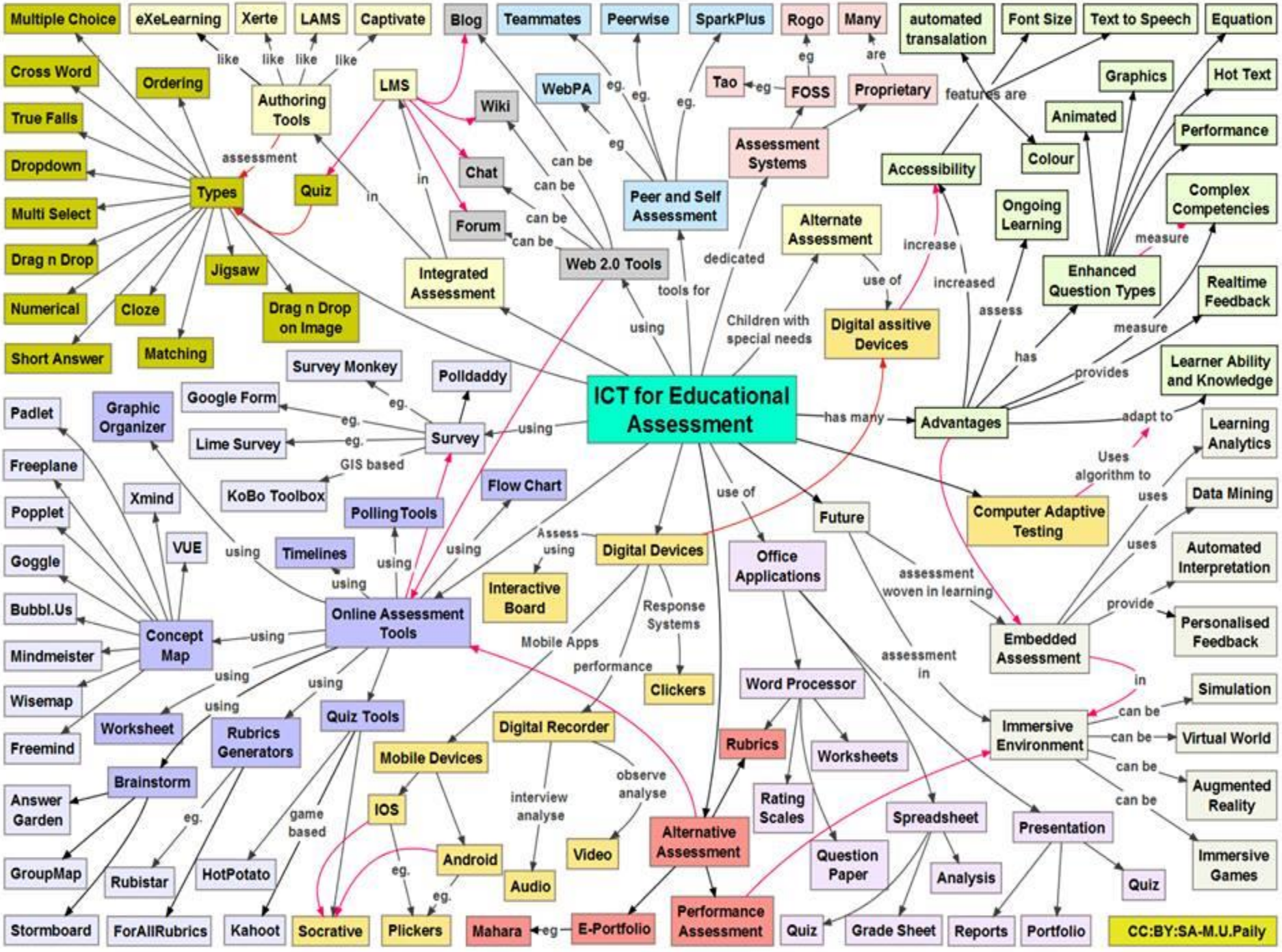
- cooperation among international organizations and multilateral e-learning programs,
- support with e-learning infrastructure and related technologies for target countries of strategic investment, and
- lastly, education informatization experiments and training support



[Figure II-1] Three stages in the evolution towards an information society

(Source: ITU, 2013, 18p)

ICT in Assessment


ICT for Educational Assessment
Multiple Choice
eXeLearning
Xerte
LAMS
Captivate
like
like
like
like
Authoring Tools
Ordering
Cross Word
True Falls
Dropdown
Multi Select
Drag n Drop
Numerical
Cloze
Short Answer
Matching
Drag n Drop on Image
Jigsaw
assessment
Types
Quiz
Blog
Teammates
Peerwise
SparkPlus
Rogo
Many
eg
are
Tao
eg
FOSS
Proprietary
LMS
Wiki
Chat
Forum
in
in
can be
can be
can be
can be
WebPA
eg.
eg.
eg.
eg
Peer and Self Assessment
Assessment Systems
Integrated Assessment
Web 2.0 Tools
tools for
dedicated
using
automated transalation
Font Size
Text to Speech
Equation
Graphics
Hot Text
features are
Animated
Performance
Colour
Accessibility
Complex Competencies
Ongoing Learning
Alternate Assessment
increase
measure
Enhanced Question Types
use of
increased
Children with special needs
Digital assitive Devices
assess
Realtime Feedback
measure
has
provides
Learner Ability and Knowledge
Advantages
has many
adapt to
Survey Monkey
Polldaddy
Google Form
eg.
eg.
Survey
using
Lime Survey
GIS based
KoBo Toolbox
Padlet
Graphic Organizer
Freeplane
Xmind
Popplet
VUE
Goggle
Bubbl.Us
Concept Map
Mindmeister
Wisemap
Freemind
using
using
using
using
using
using
using
using
using
Timelines
Polling Tools
Flow Chart
Assess using
Digital Devices
Interactive Board
Online Assessment Tools
use of
Future
Computer Adaptive Testing
Uses algorithm to
uses
uses
Learning Analytics
Data Mining
Automated Interpretation
provide
Personalised Feedback
Office Applications
assessment woven in learning
Embedded Assessment
Response Systems
Mobile Apps
performance
Clickers
Word Processor
assessment in
in
Simulation
Immersive Environment
can be
can be
can be
can be
Virtual World
Augmented Reality
Immersive Games
Worksheet
Rubrics Generators
Brainstorm
Answer Garden
GroupMap
Rubistar
Stormboard
ForAllRubrics
eg.
Quiz Tools
game based
HotPotato
Kahoot
Socrative
Digital Recorder
Mobile Devices
IOS
Android
Audio
Plickers
interview analyse
observe analyse
Video
Rubrics
Worksheets
Rating Scales
Question Paper
Alternative Assessment
Performance Assessment
Mahara
eg
E-Portfolio
Spreadsheet
Analysis
Grade Sheet
Presentation
Quiz
Reports
Portfolio
Quiz
CC:BY:SA-M.U.Paily

Further Areas of Cooperation

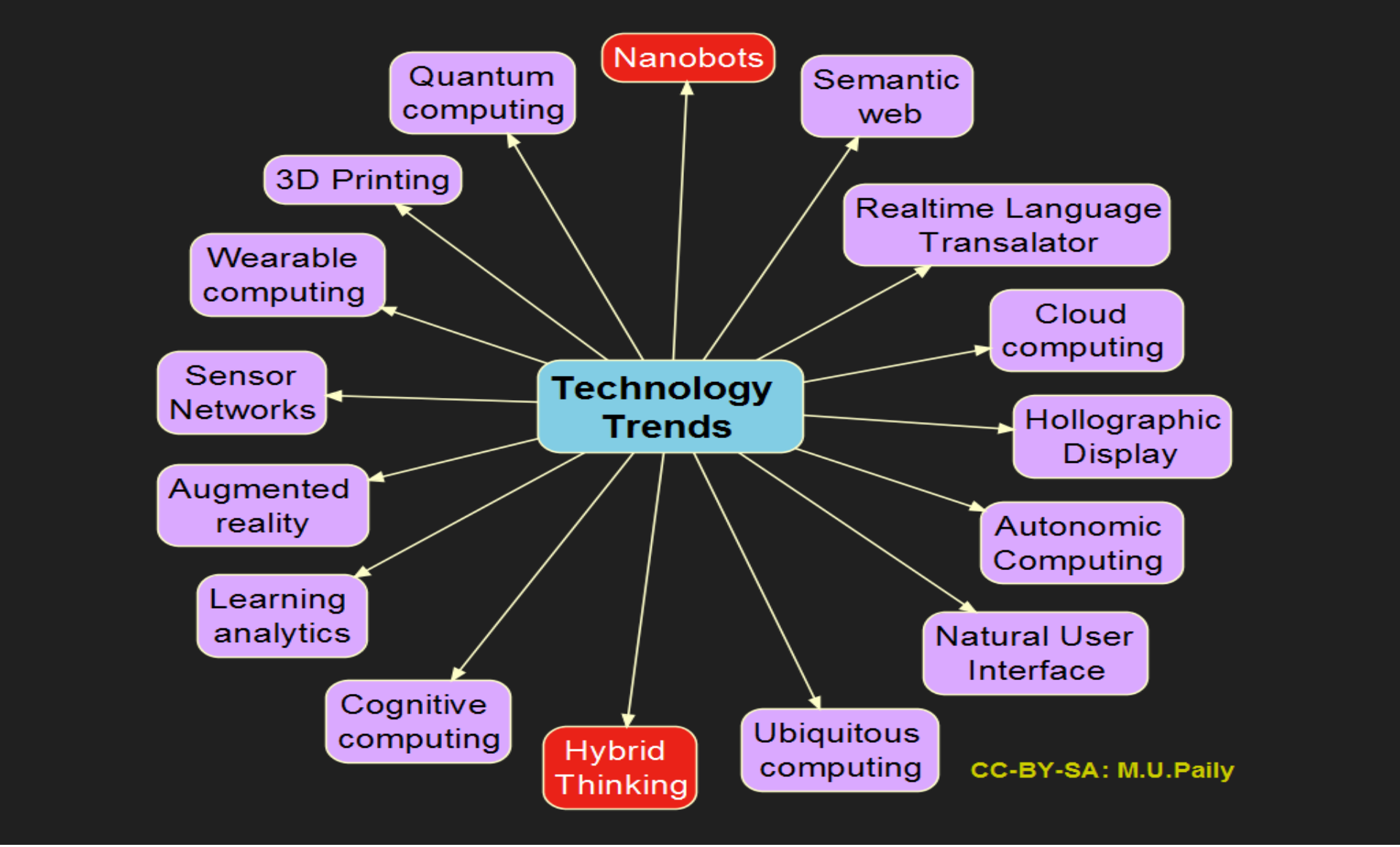
1. Common set of standardized internationally agreed indicators on ICT in education including a numbers related to teachers' professional development and usage
2. Need to develop a national guidelines/standards for e-content development. Develop e-content in compliance with this guidelines. Quality control/assurance of the e-content developed
3. Study of how did Korea implement u-learning and how to create a u-learning environment in India?
4. How did Korea strengthen infrastructure to bridge the information gap for Students with Disabilities.
5. Use of ICT for students with special educational needs – collaboration to popularise UDL among teachers

Further Areas of Cooperation

- International/ROK collaboration on reviewing and updating national ICT policy and developing a detailed implementation plan
- Digital textbook experience of Korea could be studied to improve epathsala effort of NCERT
- Study of 'Infinite Imaginarium' could be taken up. Infinite Imaginarium is a space aimed at fostering creativity and imagination.
- Development of MOOCs for professional development of teachers

- Policy development
- Skill development
- Standards development
- Content Development
- Monitoring and evaluation
- Infrastructure development

- Through
  - Joint conferences
  - Faculty exchanges
  - Teacher trainee exchanges
  - Virtual collaboration
  - Collaborative projects
  - Special interest groups



Collaboration- Prediction for future ICT infrastructure, analysis of technology trends, research for improvement

Thank You