ICT in Education Policy of Korea

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Contents

I. Overview

Overview

- Global competence in elementary and secondary school education, but not in higher education on the contrary of the highest ratio of college enrollment
- Well established implementation system and strong cooperation : MEST, KERIS, MPOE
- World class environment : High drive in education, ICT infrastructure, Internet use
- Smart innovation leads paradigm shift to education/learning, working, government, and life
- e-Book and digital book diversify learning platforms
- Emerge ubiquitous devices enhance mobility and portability of service
- Cloud service and computing bring sea change to secure resources of education/learning
- Performance management emphasis on outcome and evidence
- In policy making, evidence has much more valued than data

De-synchronization in Society

Company/Business **100 mph**

NGO(non-governmental grassroots organizations) 90 mph

Family 60 mph

Labor Unions 30 mph

Government bureaucracies 25 mph

School System **10 mph**

Intergovernmental Organizations 5 mph

Backgrounds of Education Innovation

De-synchronization

Globalization
(Competitiveness)

Education Innovation

Challenge to Paradigm Shift In Education

Exploiting Technology Innovation

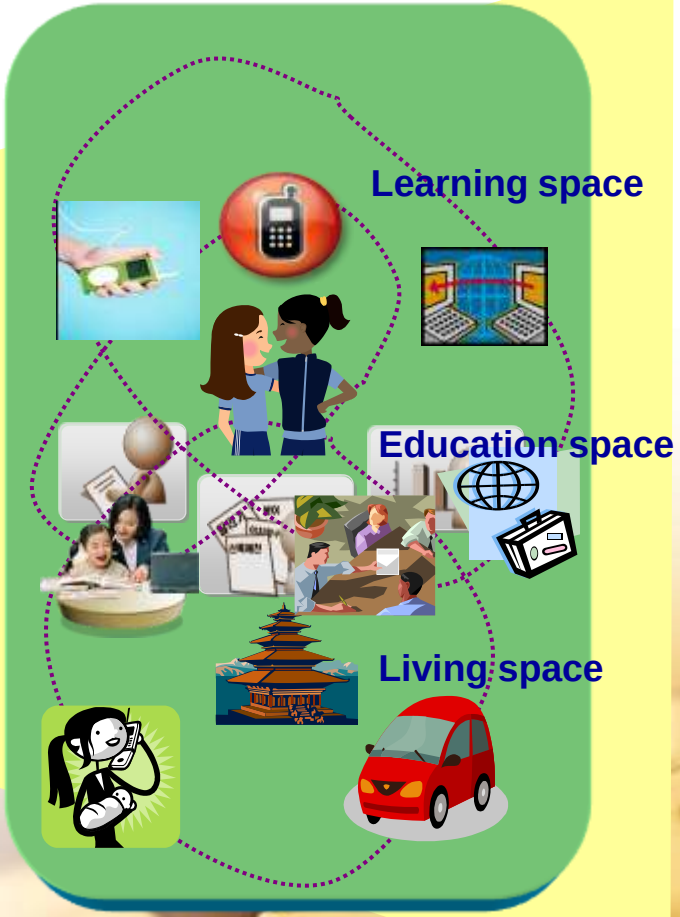
A
Catalyst for
Education Innovation
is Use of ICT in Schools

Progress of ICT in Education

Separate use of ICT equipments in classrooms

Learning space in Cyber space

Education space extended to Cyber space for Learning



Integration of 3spaces for Creative Education/Learning

Evolution of ICT in Education

Master plans	**MP 1: ICT literacy**	**MP 2: Promotion and stabilization of ICT use in Education**	**PM 3: Advances ICT use in education**	**MP 4: Utilization based ICT**
Goal	**Establish ICT infrastructure**	**Promotion of use of ICT in education**	**Advances in Education and Research Information service**	**Creative ICT based Education/Learning**
ICT Develop-ment	**1996-2000** • Infrastructure building • ICT literacy education • Internet portal service • Opening of EDUNET	**2001-2005** • Development and distribution of content • National system for sharing educational contents • Digital Library System • Improving teaching methods • EDUNET Teaching/ Learning center • Cyber Home Learning System • EBS lectures for college academic ability test	**2006-2010** • Customized learning • Develop digital textbooks • U-Learning pilot projects • National Teacher Training Information Service • Restructuring EDUNET based on Web 2.0 • Develop Edu-fine • Establish KOCW • Education Cyber Security Center • Global consulting on e-Learning • Penetrate into foreign Knowledge business market	**2011-2015** • Create digital ecosystem for learning and research • Intensify ICT use • Focused on side effects of ICT • Data and evidence based on policy making • Encourage stake holder's participation and communication • Promote internal ICT use in education
Training Policies	**ICT training for over 25% of all teachers annually**	**ICT training for over 33% of all teachers annually**	**Teacher training for use of ICT in education: 30 hrs(15 hrs, optional) for every 3 years**	
Training Direction	**Focus on ICT literacy** →			**Creative HRD using ICT**

ICT in Education for Primary and Secondary Schools during 2011-2015

Creative teaching/learning activity based digital learning system

Capacity building of teachers and students

- Run ICT in education fair
- Run teacher capacity training system
- Intensify reading comprehension ability
- Develop advanced digital textbook
- Consolidate information ethics for primary and secondary schools

Establish creative teaching/learning service system

- Run EDUNET service
- Establish support system for creative and discovery activity
- Develop content and service for CHLS
- Advanced education information Sharing system
- Establish IPR for education information
- Quality management for e-Teacher Training Centers

Legal Framework of ICT in Education

ICT in Education Policy

1. Computer Education Reinforcement Plan(1987)
2. Education Reform Plan(1995)
3. ICT in Education Master Plan I (1996)
4. Guidelines for ICT in Education in Primary & Secondary Schools (2000)
5. ICT in Education Master Plan II (2001)
6. ICT Adapted Education Promotion Plan (2001)
7. National HRD Master Plan through e-Learning (2004)
8. Monitoring & Evaluation for ICT in Education
9. ICT in Education Master Plan III(2006)

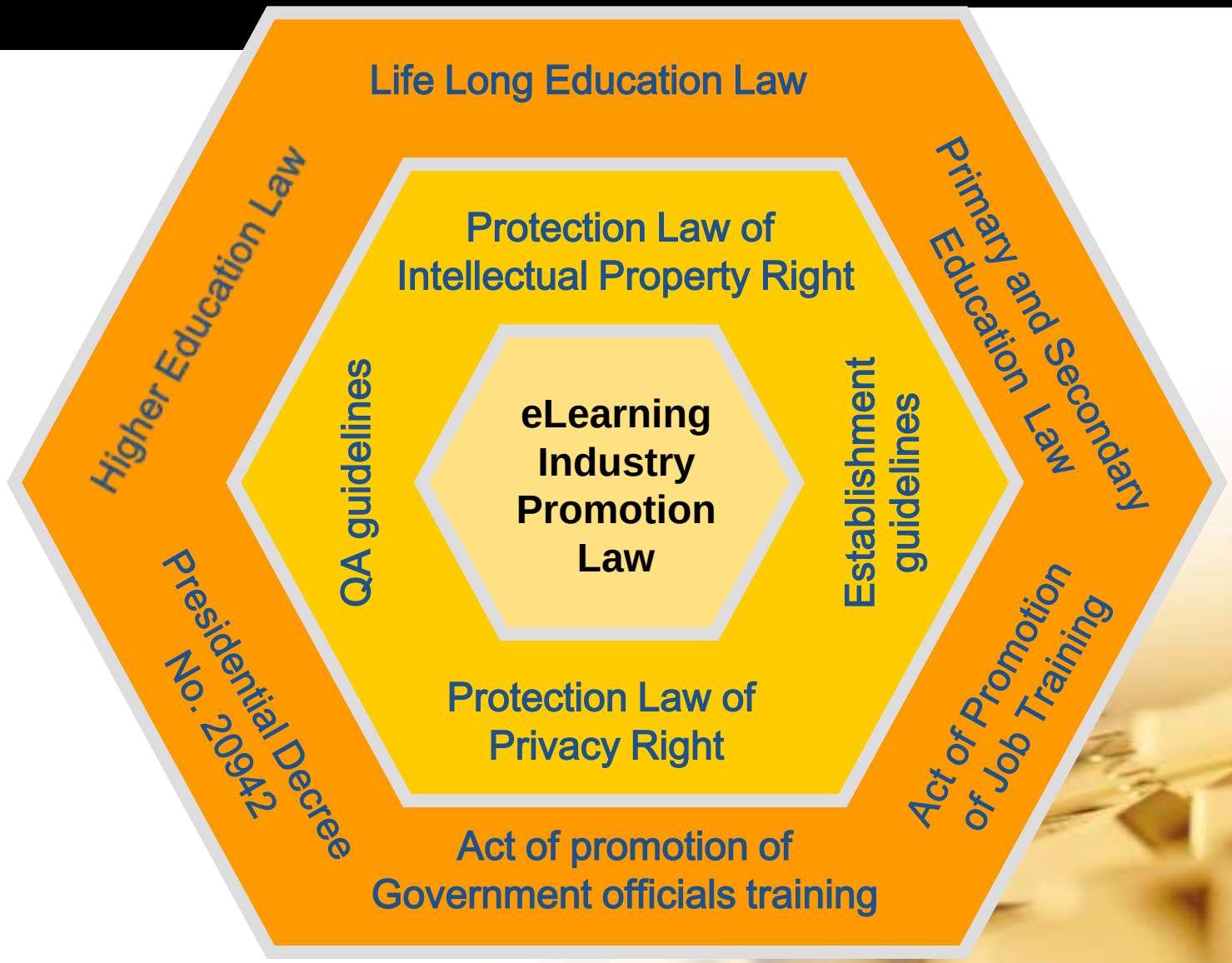
Computer Education Reinforcement Plan (1987)

- Goals
  - Increase computer education opportunities
  - Strengthen computer education in public schools
- Major Initiatives
  - Computer literacy training
  - Computerization for school administration
  - 8 bit and 16 bit computers
  - EDPS training program for teachers
  - Adopted CAI (Computer Assisted Instruction) in teaching-learning
  - Computer training center

Education Reform Plan (1995)

- Goals
  - Education reform by adopting ICT in education
  - Conversion "computer education" → "ICT in education"
- Major Initiatives
  - Multimedia content
  - CAI (Computer Assisted Instruction) & database
  - Korean Multimedia Education Center
  - Distance learning for teacher training

Legal Framework of e-Learning



Overview of e-Learning in Korea

- e-Learning markets in revenue : USD 2.07B
- e-Learning in schools : 76.8%
    - Primary (83.5%), Secondary(76.6%), High(67.8%), Junior High(45.1%)
    - HE: Junior college(57.6%), 4Yr University(77.5%)
- Strategy of HRD
    - Gov. official training : 517,700('08)
    - Job training : 1.55M('08) <- 20,000(1999)
    - Teacher training: 130,000/year
- Legal foundations : Primary and Secondary Education law, HE law, LLL law, Presidential decrees, IPR protection law, Privacy protection law, e-Learning industry promotion law, e-Training in Labor Education Law
- e-Learning quality management:
    - Establishment guidelines : Cyber university, e-Learning institutes
    - QA guidelines : CHLS, Regional e-Learning e-Teacher training, Cyber university, e-Learning institutes
    - Certification guidelines : content and SW for education and training

Analysis of Individual e-Learners

Category		2007(%)	2008(%)	2009(%)	Growth Ratio(%)
Total		39.4	45.0	48.3	3.3
Gender	Male	45.8	47.6	50.4	2.8
	Female	31.5	41.9	46.1	4.2
Age Group	6- 19	67.0	70.9	72.0	1.1
	20-29	50.7	61.3	62.6	1.3
	30-39	27.2	30.5	40.8	10.3
	40-49	23.4	29.6	31.7	2.1
	More than 50	11.2	13.5	18.4	4.9
Educational Background	Pre/Primary school	61.3	70.3	62.7	-7.6
	Middle school	65.6	64.5	84.2	19.7
	High schools	77.4	81.2	90.5	9.3
	University, Graduate School	69.5	69.3	70.2	0.9
Vocational Background	Student	66.8	70.5	NA	NA
	Professional Clerical	43.5	48.8		
	Service/ Production	16.1	22.4		
	Housewife	10.0	10.5		
	Jobless	21.1	26.5		

*** Source: Survey of the eLearning Industry in Korea, NIPA, 2010, http//www.nipa.or.kr**

Cyber University in Korea

- Types of operations: Cyber Universities and LLE Institutions
- Course available : Social science(72.7%), Humanities and Engineering(63.6%), Education(45.5%), Arts(36.4%)
- Students registered in 2009: 95,640
- Cyber Universities: 12(67%): $250M
    - •Established by School Foundations
    - •Enrollment capacity in 2009: 20,260
    - •Offer BA programs
- Life Long Education Institutions: 6(33%), 7,700, $350M
    - •Type A: 4(22%)
        - •Established by non-profit organizations
        - •Enrollment capacity in 2009: 5,600
        - •Offer BA programs
    - •Type B: 2(11%)
        - • Established by School Foundation
        - • Enrollment capacity in 2009: 2,100
        - •Offer Diploma programs

e-Learning in Teacher Training

- Teacher training programs designed for ICT literacy, ICT use, and ICT leadership
- Operation of teacher training institutes(175)
  - Government run TTIs(4), University attached TTIs(84), MPOE run TTIs(16), e-Teacher Training Institutes(71)
- Number of teacher trained in 2009: 226,313 teachers
  - e-Teacher training Institutes(37%), MPOE run TTIs(29%), Government run TTIs(27%), University attached TTIs(7%)
- Scope of teacher training: in-, and pre-service, capacity
- Types of teacher training
  - e-Learning: 55.1%,
  - Blended : 29.1%
  - Offline : 14.6%
- Overall satisfaction on e-Teacher training is high: 82.61%

II. Initiatives of ICT in Education

Implementation System

Overarching National Policy for ICT in Education

Responsible for promotion of ICT in Education

MEST

Enacting Education Policy

KERIS

MPOEs

- Firm support and involvement of top educational administrators
- Capability of organizations
- Implement top-down pilot projects / promote grassroots approach
- Monitoring & evaluation system
- Collaboration between government bodies
- Appropriate and sustained budget allocation

Initiatives of ICT in Education

EDUNET: National Teaching-learning center
NEIS: National Education Information System
CHLS: Cyber Home Learning System
KMEC: Korea Multimedia Education Center
KERIS: Korea Education & Research Information Service

Master Plan III
Master Plan II
Master Plan I
Beginning

1996
2001
2006

U-Learning model school
CHLS
Digital Textbook
Enhanced teacher training
NEIS
Self-directed learning content
u- Learning infra
Education resources Sharing system
Teaching-learning model
Cyber security center
Innovative teacher
Metadata standard
School administrative system
ICT model school
Multi media
e-Learning infra.
EDUNET
Expand content
Infra. completed
Regional center for ICT in education
Teacher training
Computer subject
Regional bureau
CAI content
School network
Computer education in schools
KMEC & KERIS
P-P Partnership
PCs, H/W
National Bureau

Education information service
Capacity building for teacher
ICT in education standardization & Educational content
Infrastructure
ICT in education policy

Education Information Service Platform

EDUNET
Teacher, Student, Parent
(web 2.0-based, individualized, user homepage)

User Layer

Integrated certification system/copyright management system

NEIS | **Center for Teaching & Learning** | **Cyber Home Learning** | **Digital Library** | **Digital Textbook**

Nationwide center for integrated educational information service

Service Layer

Central Teaching and Learning Center | **Central Cyber Home Learning Center** | **Central DLS Center** | **Education Cyber Security Center**

Educational information data (applied KEM/DRM), various unit service modules (assessment tools, online discussion tools, etc)
※ Ensure interoperability through compliance with the W3C web standard and adoption of IMS Common Cartridge

Resource Layer

(ERSS, national educational information sharing system)

Teacher Training Programs based on Career Stage

Training Level

ICT Literacy Course	Basic ICT Use Course	Advanced ICT Use Course	ICT Leadership Course
• Basic ICT Skills (eg) Information search, use of ICT tools, etc.	• ICT-based, problem-based education	• Creative lesson planning • Developing thinking skills • Teacher Training for 21st Century Learners	• Building 21st century • schools • Lead Innovation

Peer coaching course on ICT use

Target Groups

School Teachers

School CEOs

Teachers' Career Stages
(from induction to retirement)

Development of ICT Indicators in Education

- **Index for assessing the utilization of ICT in education**

Index	Main contents	Target
ICT literacy assessment tools for students	Focus : Assessing the ability to resolve the given problematic situation effectively Utilization : Apply to the revision of the information education system Domain : - Content domain: Computers networks and , Expression and logic of Information, Algorism and modeling, Information society and ethics - Ability : define, Access, Evaluate, Create, Manage, Communicate	Primary school students(1-2, 3-4, 5-6grade), Secondary school students (middle school and high school students)
ICT Skill Standard for Teacher (ISST)	Focus : Assessment of ICT skill depend on role of teachers Utilization : Use in the teacher training courses Domain : Information gathering, Information processing, Information exchange, Information ethics	Teachers, Executive teachers, CEOs

Cyber Home Learning System: Goals

- Allow students to have equal opportunity for learning
- Provide students with seamless learning environment
- Reduce private tutoring expenses
- Enhance quality of public education

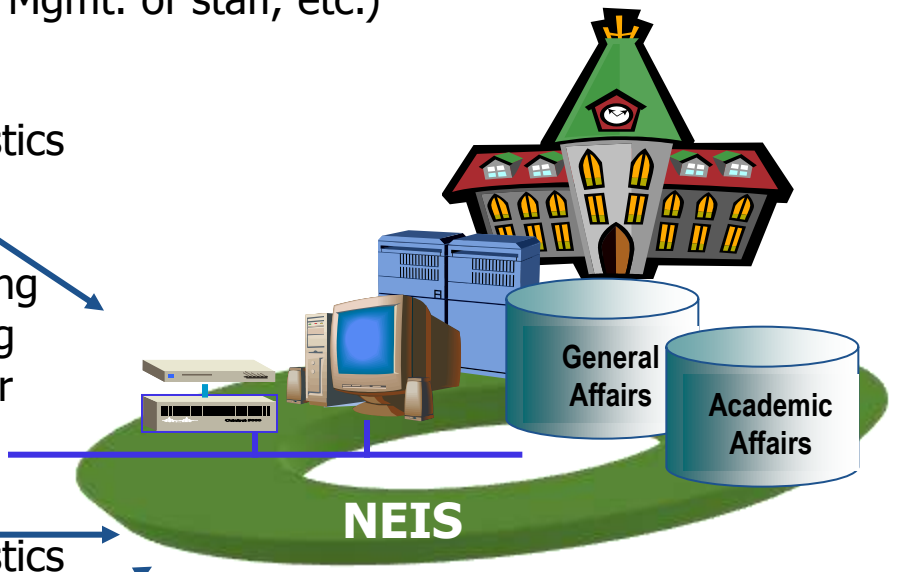
- Student-centered
- Blending of learning and education
- Curriculum-based
- Supplementary

National Education Information System

General Affairs (Payroll, Audit, Budget, Accounting, HR Mgmt. of staff, etc.)

Staff
(Offices of Education)

Statistics



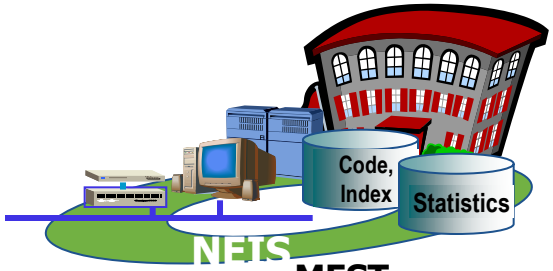
School Affairs (Processing students grades, recording student activities and their performance), school accounting, etc.

Teachers/Non-teaching staffs
(School)

Statistics

16 Metropolitan and Provincial Offices of Education

Statistics/Code



MEST

Civil Service
(Online service for certificate issuance)

Parents/Citizens

"Digital Textbook" Project

III. Outcomes and Implications

A Summary of Outcomes

EDUNET

S: integrated information portal
T: reduce subject preparation time(53<-71m), community service
P: allow participations
Total , 6.14M registered registered

S,T, Institutions: allow secure information service

CHLS

ECSC

NEIS

S: online transcript service
T: reduce administration workloads community service, process renovation
P: counseling/consulting service, location based service, certification issue service

S: provide learning opportunities after schools, second choice to rural students for private tutoring

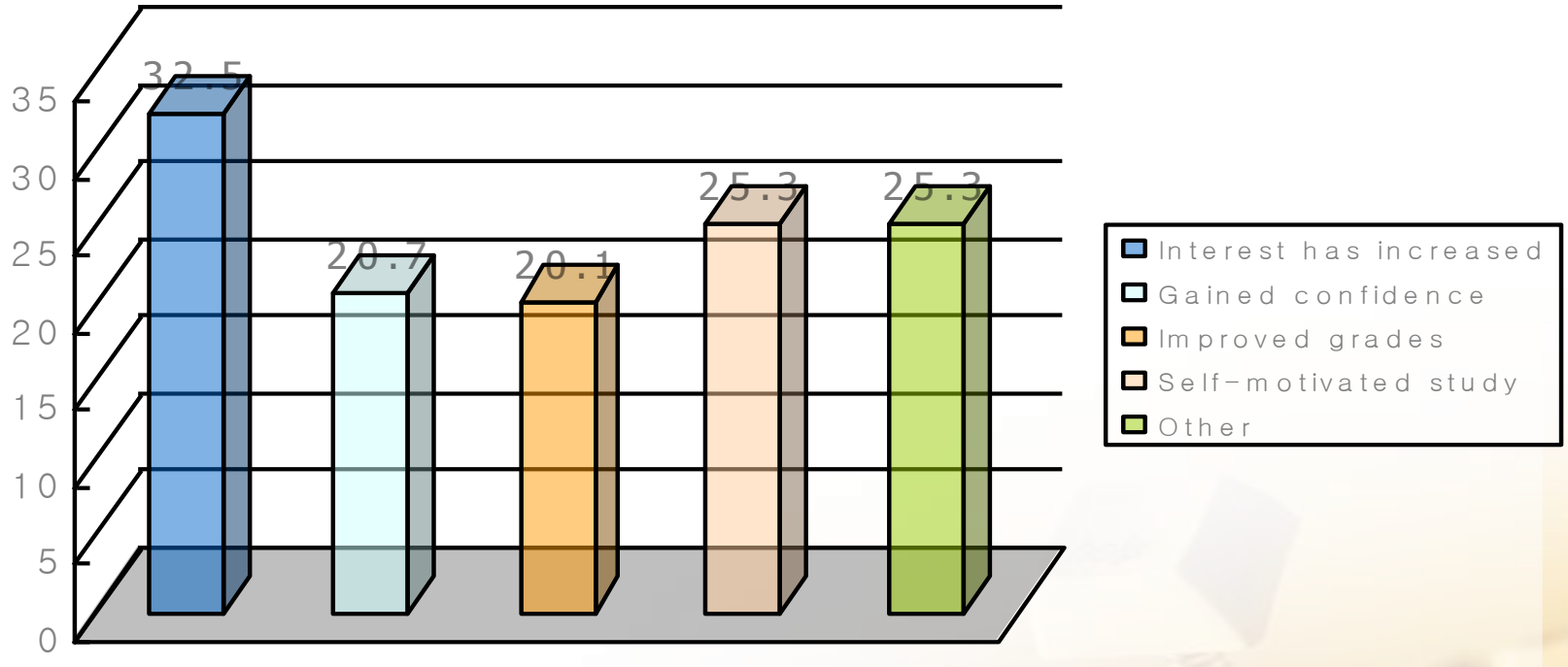
T: role for facilitator, life long learner
P: tutoring opportunities

NTTIS

T: integrated teacher training information service portal, personalized consulting service for capacity building

Impact of Cyber Home Learning System: Learner achievement

(unit : %, n=54,775)



- More interested in learning : 32.5%
- Enhanced self-motivated studying habits : 25.3 %
- Confidence gained in problem solving : 20.7 %
- Overall improvement in grades in the subject : 20.1 %

Factors of Success in ICT in Education

Global Best Practice of ICT in Education

Korean's high drive for education	Government leadership	Strong cooperation among private, pubic, and schools
Curriculum redesign & Perform management	Foundations: Laws, Acts, Presidential decrees	Well established ICT Infrastructure
Teacher capacity Training	Role play among MEST, KERIS, and MPOE	Standards : KEM, SCORM, Education Information Sharing Environment

IV. What to know more about

Changing Environment for Education/Learning

- **Encourage students and teachers to improve their ability to develop and apply new teaching/learning models and methods that are appropriate for the changing educational environment**

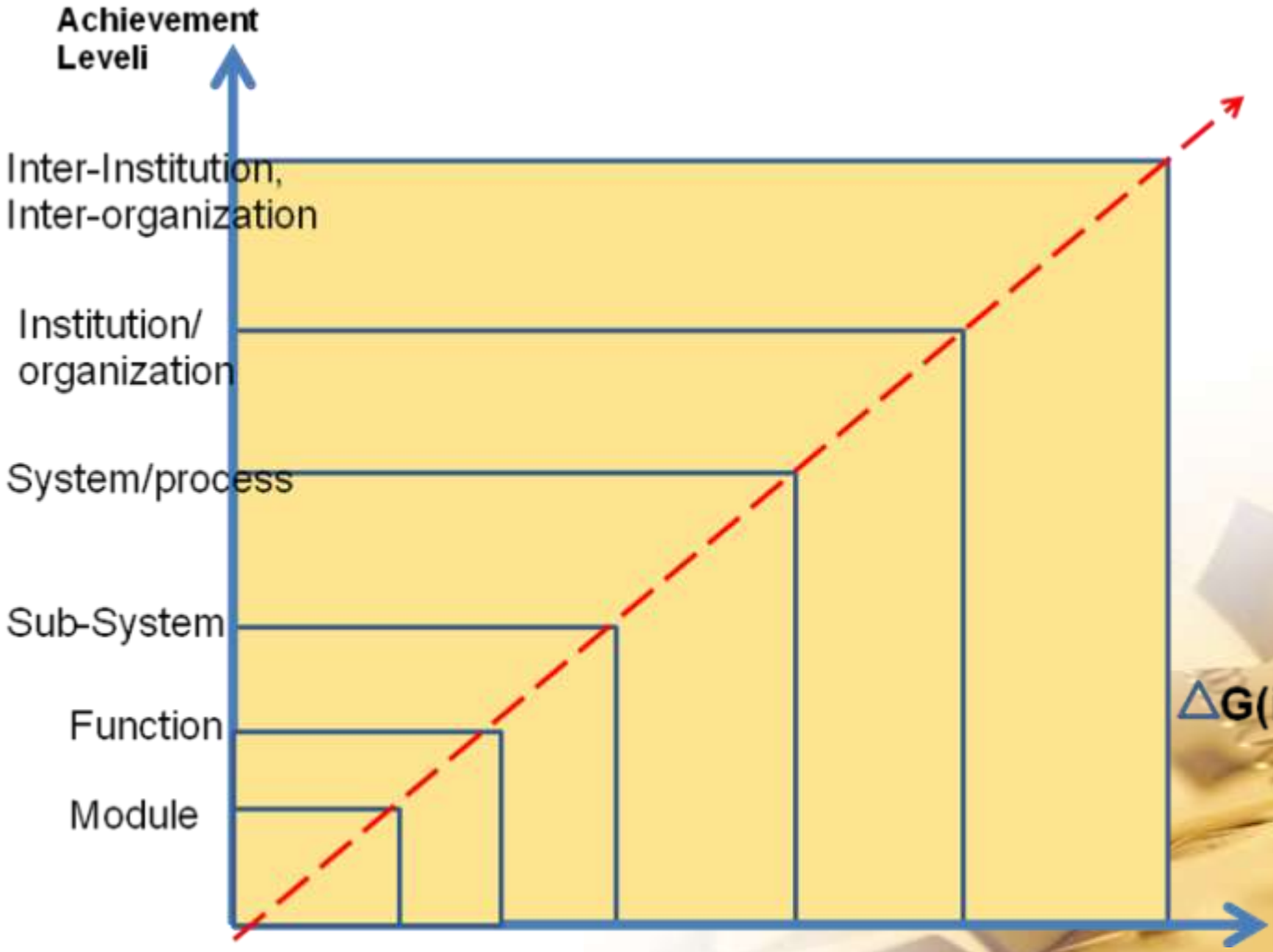
Smart Education/Learning

A flexible environment for education/learning where competence of learners to be intensified based on changes in student's behavior through open access to Open Educational Resource, smart IT, and international standards.

- By Dae Joon Hwang at An Invited Talk at MESI, on YouTube, Nov. 19, 2010, Moscow, Russian Federation

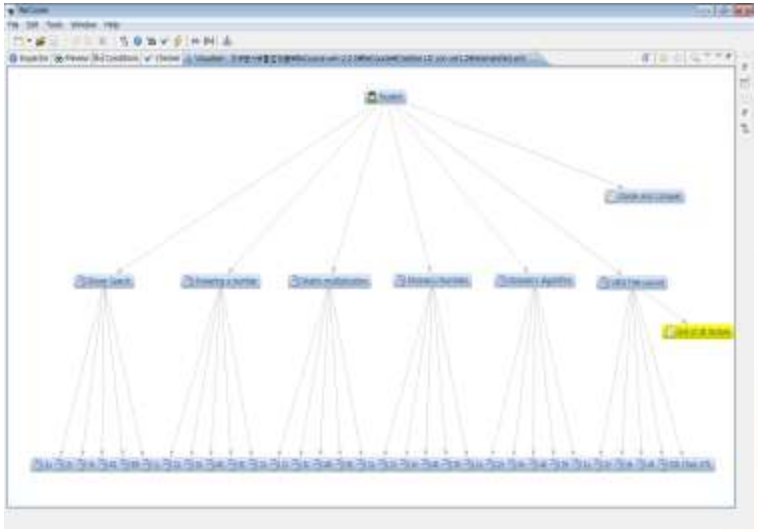
Domain of Smart Innovation in Education/Learning

Level of Smart Innovatio



Innovation in Pedagogy

- Focused on creativity and creative thinking
- Encourage motivation
- Collaborative Education/Learning
- Personalized learning: student's level and preferen
- Adopt learning design
- Use advanced resources: 3D, Second Life, VR, AR, and simulation technologies

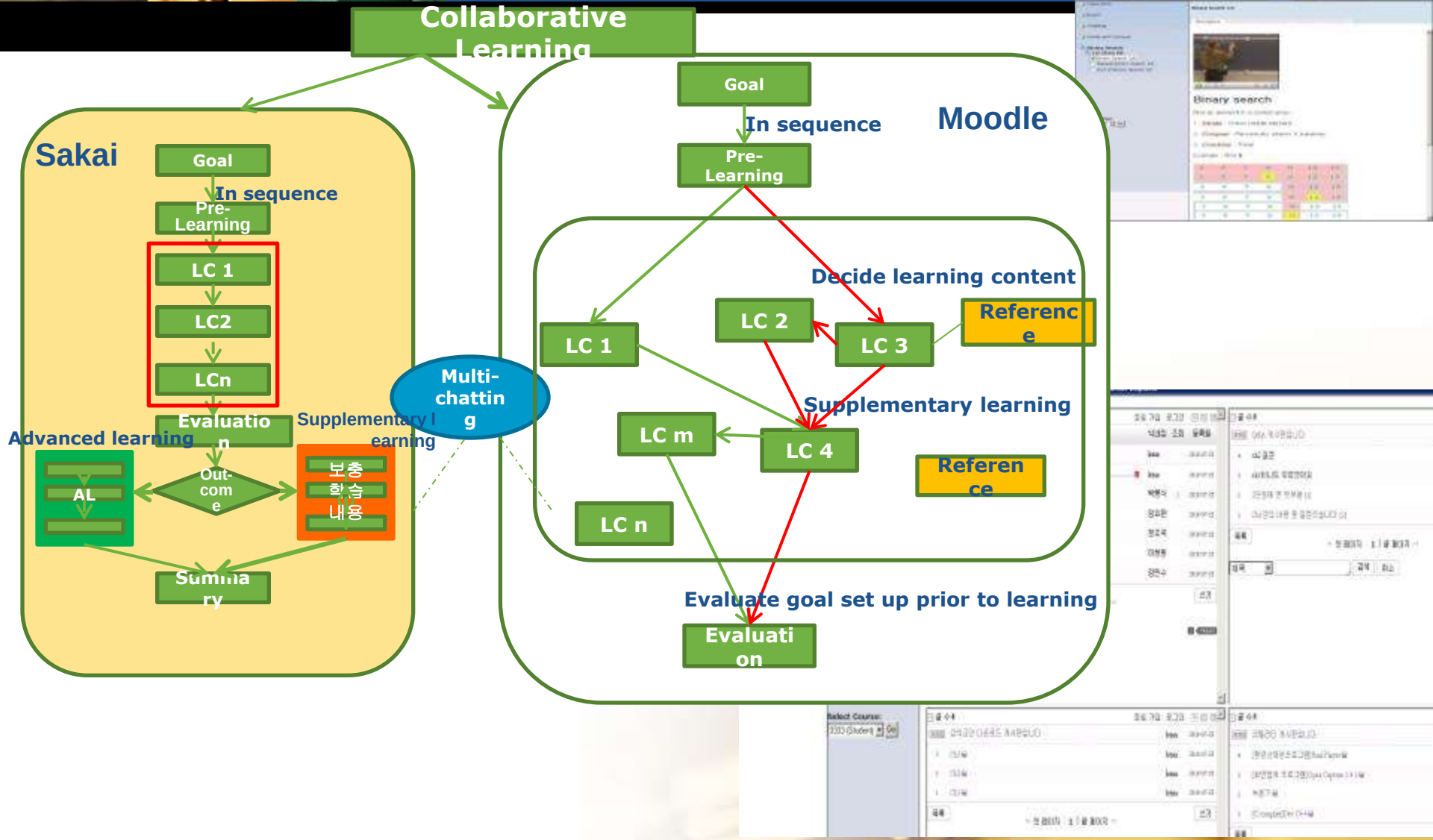


Way of Teaching/Learning: Creativity and Thinking

Toward Mathematics	Creative Thinking					Toward Art
Formal Symbolic Thinking	Analytical Thinking	Inferential Thinking	Synthetic Thinking	Alternative Thinking	Divergent Thinking	Material Symbolic Thinking
	Conceptual analysis, Textual analysis	Analytical inference, Synthetic inference	Logical puzzle Decision making Sensitivity Overarching	Standpoints/innovative thinking, Create alternatives, View point/expand, Vision/redefine, Inspiration based problem solving	Fluency, Flexibility, Originality, Elaborateness	
Logical thinking				Creative thinking		
Broad logical thinking					Narrow creative thinking	
Narrow logical thinking			Broad creative thinking			

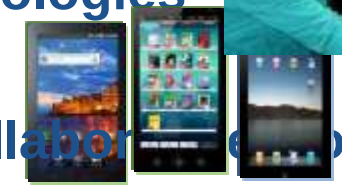
Source: Y. Kim, Creativity and critical thinking, Seoul National University, 2009

Collaborative Learning on Multi-Platforms



Flexible Education/Learning Environme

- Student centered design
- Install Tele-presence technologie
- Use of ubiquitous technologies
- Virtual lab.
  - Cooperation and collabor[illegible]ork
  - Remote experimentation



Smart Sourcing of Educational Resource

- Sea change in securing educational resources
  - OER: OER(OSS, best practices)
  - Cloud application and cloud applications

Future of Smart Education/Learning

Cloud applications

Cloud computing

Cloud Service : Education/Learning

Digital Pedagogy

Smart use of Technologies

Nurturing Teachers and Students

Interoperability : LTI

Content packaging: CC

Digital publishing: ePub

Formal Education/Learning

In-, Non-formal Education/Learning

Conclusions

- Policy issues
  - Policy planning : data-based -> evidence-based
  - Flexibility in securing resources: OER, Cloud, Smart sourcing of information service and technologies, Intellectual Property Right
  - Budget allocation : buying & own, utilization rate -> smart and dynamic use of education resources
  - Digital divides : from ICT literacy to Media literacy
- Pay more attention to the implications of Korea's best practices
- Creativity, critical thinking, and collaboration are key words for future education/learning
- Concern more about in- and non-formal learning to challenge ubiquitous society
- Flexibility in teacher capacity training to challenge new demands from students and society : offline online, blended, self-directed
- International standards get importance for sharing and interoperability
- Performance management : competence and changes in human factors

감사합니다
Thank You

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