

# ICT Competencies for Teachers

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ICT in Education Programme Officer, UNESCO Bangkok

**ICT and Deep Learning Skills for Better Education**

1 December 2015, SMX, Philippines

# Overview

- Education 2030
- Why we need ICT Competency Standards
- Existing frameworks and operationalization
- Philippine Case

# Education 2030 Agenda



**SDG4:** Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

- **Teachers:** fundamental in guaranteeing quality education
- By 2030, substantially increase the supply of **qualified teachers**, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States (SDGs)

→ Member states to ensure that teachers and educators are **empowered, adequately recruited, well-trained, professionally qualified, motivated and supported** within well-resourced, efficient and effectively governed systems.  
(Incheon Declaration)

# Education 2030 Agenda

“**ICTs** must be harnessed to strengthen education systems, knowledge dissemination, information access, quality and effective learning, and more effective service provision.”

(Paragraph 10, Incheon Declaration)



Huge investments on:

- Infrastructure
- Connectivity
- Content and systems
- Capacity Building Workshops



potential to use technology  
to improve educational  
outcomes in schools

“no evidence  
that such  
initiatives have  
delivered on  
that promise”



# WEF-Networked Readiness Index 2015

## ICTs in Schools: Focus policy and resources on educators to improve educational outcomes

“...the most effective use of technology to help improve educational outcomes lies not in pushing for getting technology into the hands of the learners in the classroom, **but rather in emphasizing using the strengths of ICTs as integral elements in the development process of teachers.**”

SHIFT must be made “to facilitate enhanced teacher education and teacher professional development. **Building teacher capacity will have a longer-term and sustainable impact on the education of all children.**”

**Source:** <http://reports.weforum.org/global-information-technology-report-2015/1-7-cts-in-schools-why-focusing-policy-and-resources-on-educators-not-children-will-improve-educational-outcomes/>

# Teachers' role

Computers aren't magic. Teachers are.

(Craig R. Barrett, Former CEO, Intel Corporation.)



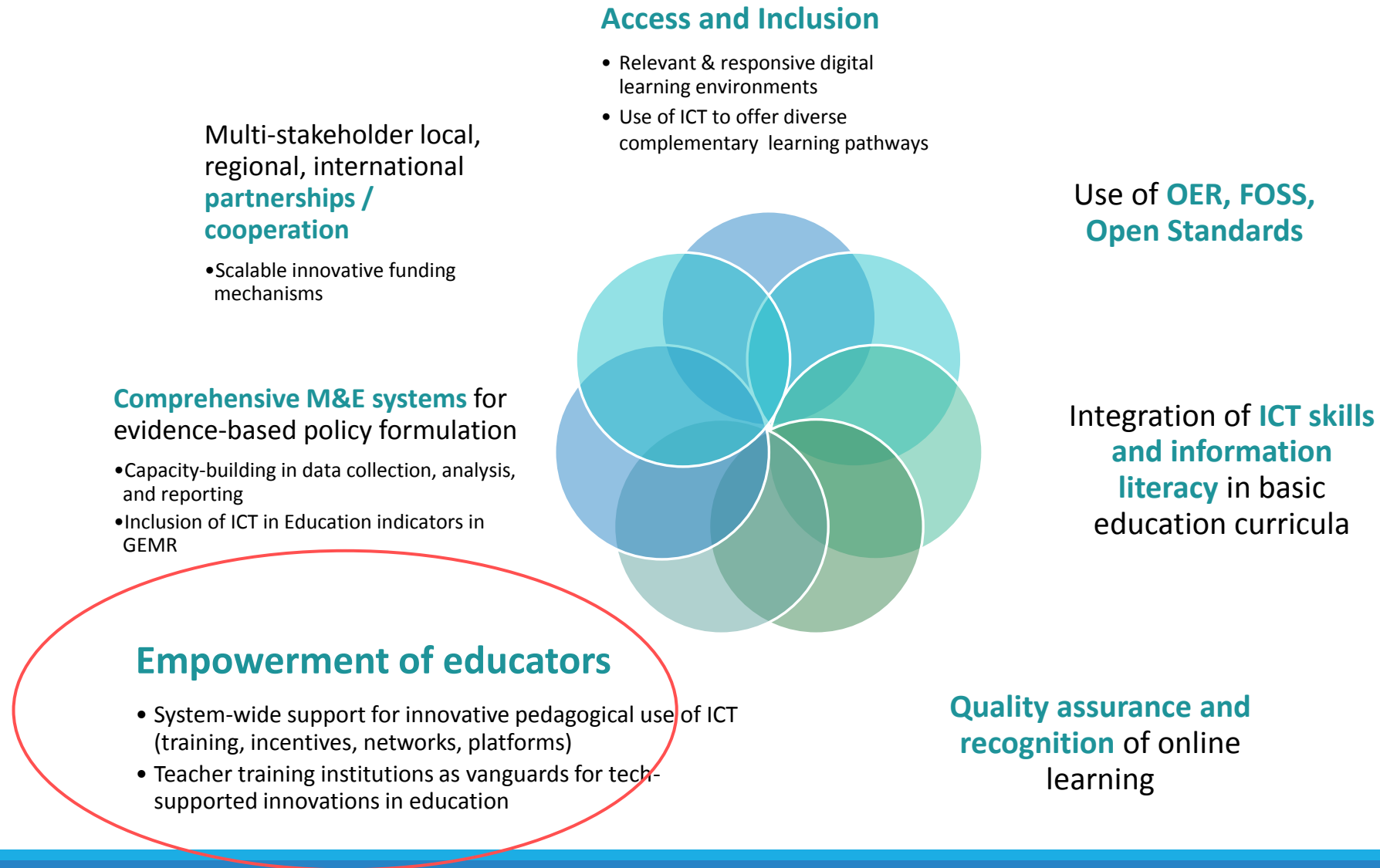
It is not enough to install technology into classrooms – it must be integrated into learning.

**Nothing can substitute for a good teacher.**

- UNESCO DG Irina Bokova, AMFIE 2012

# Qingdao Declaration (May 2015)

## Role of ICT in achieving Education 2030



**WHY would we need  
ICT competency standards?**

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# Is this story familiar to you?

- One-time big-time course
- The same group of teachers taking similar courses repeatedly
- Certificates of Participation (not “learning” or “application”) - only the number of hours matters
- Lack of follow-through support during in-school application
- No monitoring and evaluation

Intel®  
Teach  
Program

Microsoft®  
Partners in Learning

ORACLE® ACADEMY



# Is this story familiar to you?

Visions in Education

Basic  
Education

Knowledge  
acquisition

Knowledge  
deepening

Knowledge  
creation

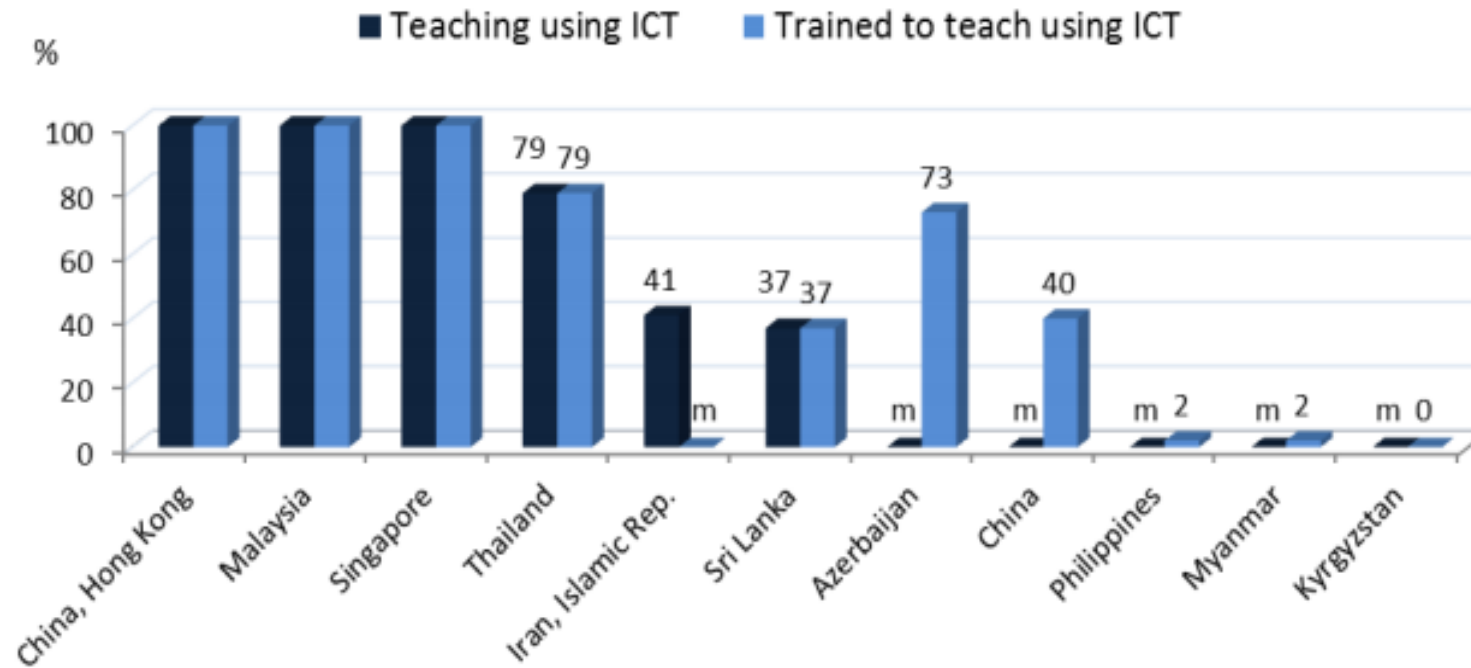
Your  
policy  
vision is  
here

## Your Teacher Development Curriculum in Reality

- The history of computers
- How to connect hardware
- How to use productivity tools



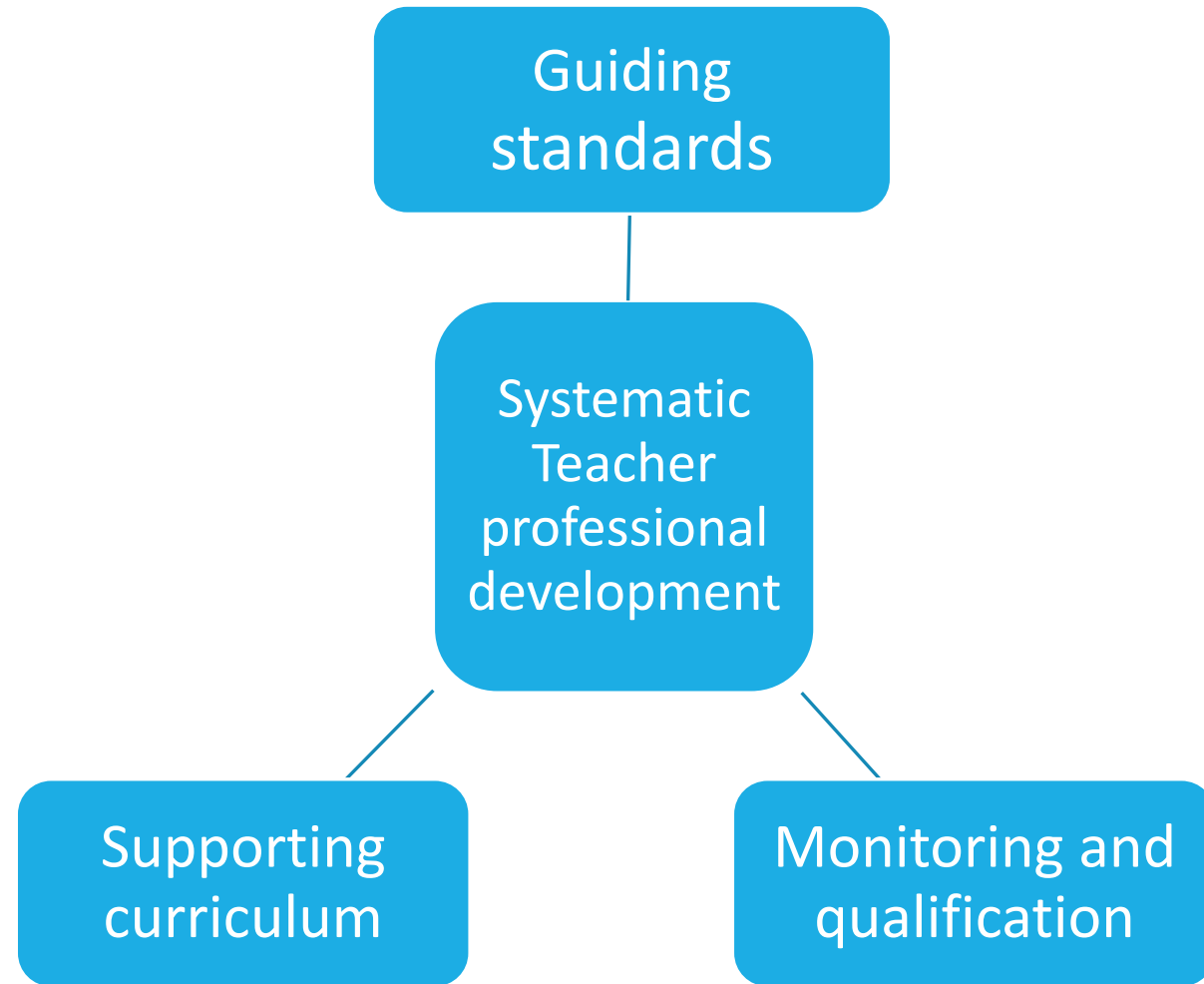
# Teacher Development



Source: UIS database; combined primary and secondary level teachers

Teacher education and training is not systematic yet. Need to consider ICT Competency Standards for Teachers

# Policy Level Intervention

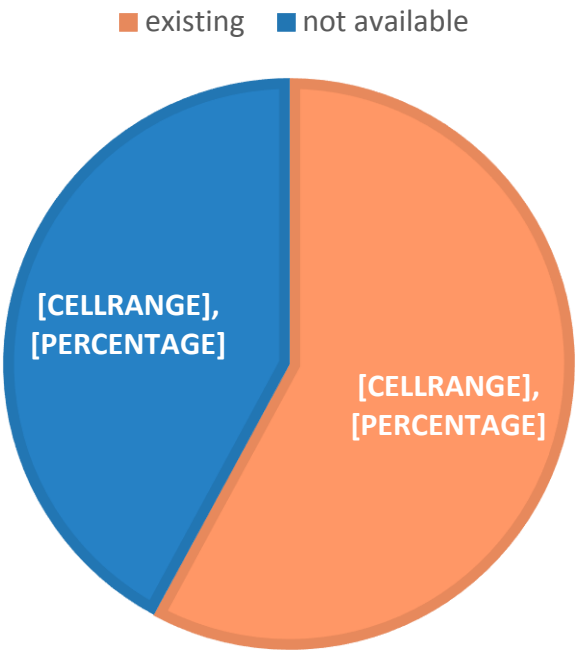


# Status of National ICT Competency Standards for Teachers in Asia Pacific

- Target: 19 Member States
  - 10 ASEAN countries
  - 4 East Asia (China, Japan, Mongolia, and Republic of Korea)
  - 2 Pacific (Australia, New Zealand)
  - 3 Central Asia (Kazakhstan, Kyrgyzstan, Uzbekistan)
- Data:
  - Official documents (e.g. policy documents, laws, strategic plans, published papers, curricula, etc.)
  - Pre-Symposium Survey from the CA countries
- A snapshot of the most significant development in ICT training for teachers

# ICT Competency Standards for Teachers

- Out of 19 Asia Pacific countries surveyed: 10 SEA + 4 EA + 3 CA + 2 Pacific

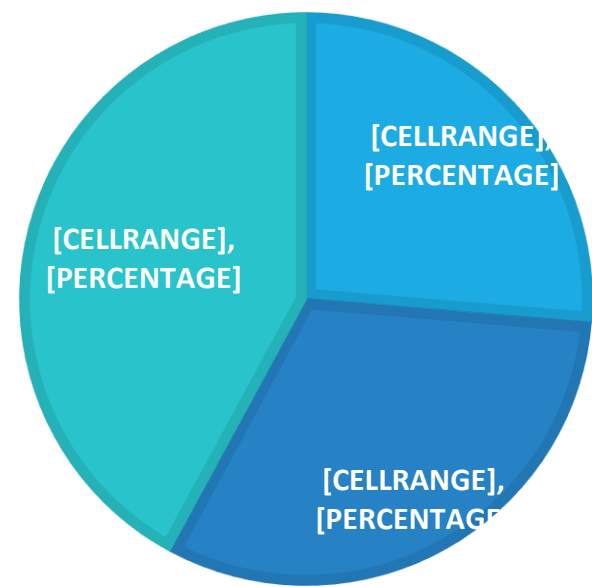


Existing in some form	Not available
CA: UZ EA: CH, JP, KOR, MON Pacific: AUS, NZ SEA: MAL, PHI, SG, TH	CA:KAZ, KYR SEA: BR, CAM, IND, LAO, MYN, VN

# Integrated vs stand-alone

- To what extent/how are the ICT competencies presented in the national competency standards for teachers? (19 countries surveyed: 10 SEA + 4 EA + 3 CA + 2 Pacific)

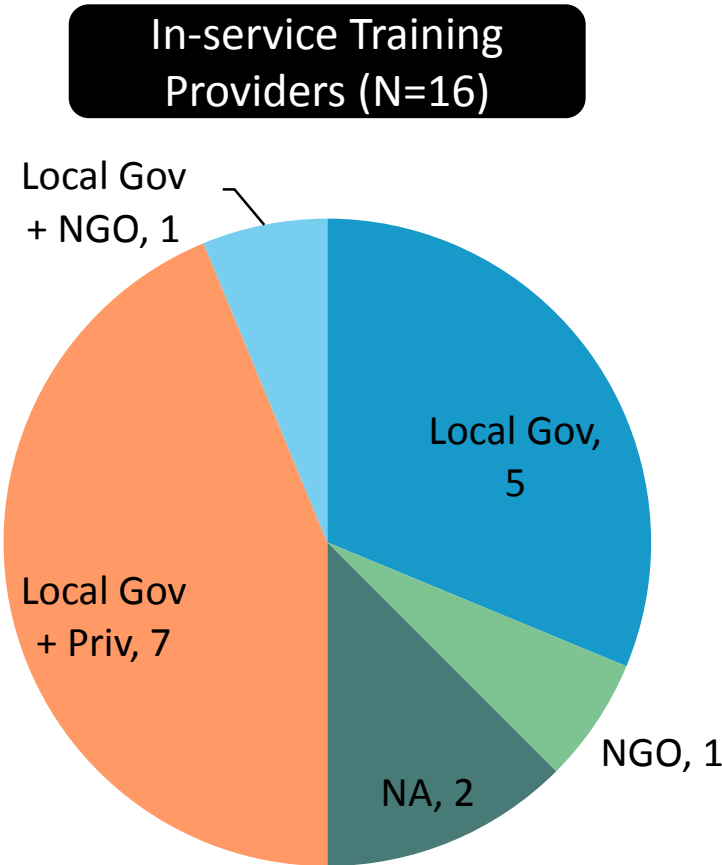
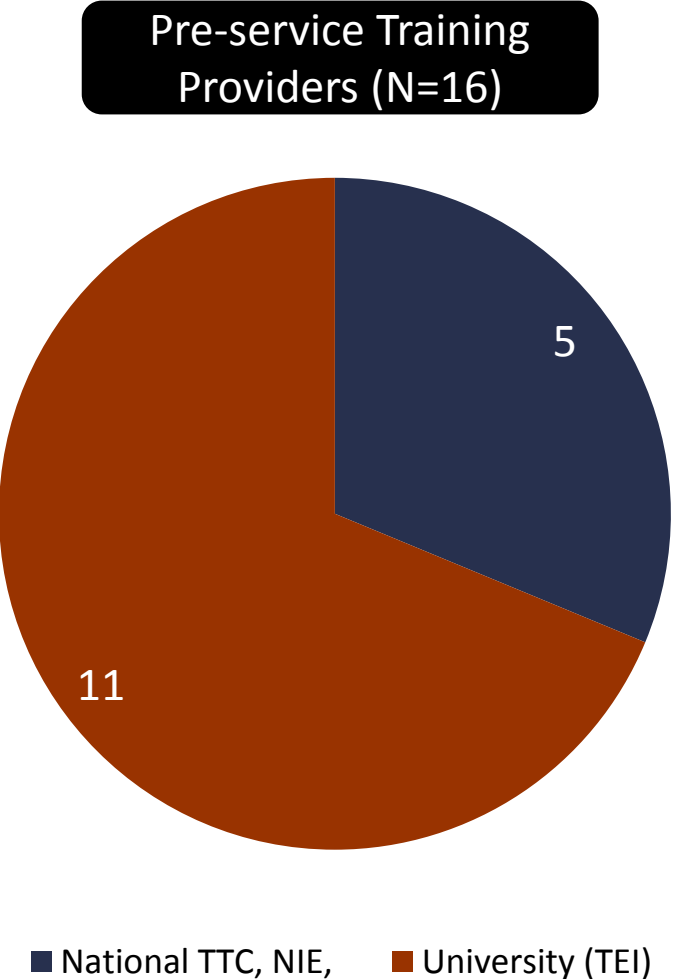
■ stand-alone ■ integrated ■ N/A ■



Stand-Alone	Integrated	Not available
EA: CH, JP, KOR SEA: SG, TH	CA: UZ EA: MON Pacific: AUS, NZ SEA: MAL, PHI	CA:KAZ, KYR SEA: BR, CAM, IND, LAO, MYN, VN

# Teacher training providers

According to a review of 16 Member States in SEA and EA countries in 2013:



Alignment of training programmes to standards not clear



## Are ICT standards compulsory for teacher qualification?

	AUS	CH	JPN	KAZ	KOR	KYR	MAL	MON	NZ	PHI	SG	TH	UZ
Qualification	Y	Y	Y	optional	Y	optional	NA	Y	Y	NA	Y	NA	Y

## Are the ICT Competencies of in-service teachers assessed as part of teacher promotion and/or retention?

	AUS	CH	JPN	KAZ	KOR	KYR	MAL	MON	NZ	PHI	SG	TH	UZ
Promotion	Y	Y	N	optional	N	N	N	optional	Y	NA	NA	NA	Y

NA: data not available

# Types of Assessment

Country (N=8)	Types
AUS	Demonstration of Evidence Recommendation from school / workplace Site visits, observations* (for Highly Accomplished Lead Teachers) Professional discussion*
CH	National Test (written)
KOR	Certification upon course completion
NZ	Evidence, recommendation from school
SG	Self-reporting and portfolio via Enhanced Performance Management System (EPMS)

## Summary of Findings

- Almost half of the studied countries have yet to have ICT competency standards for teachers to guide teacher development.
- In-service teachers development in most of the studied countries has a less clear path for developing teachers' ICT competencies (than pre-service).

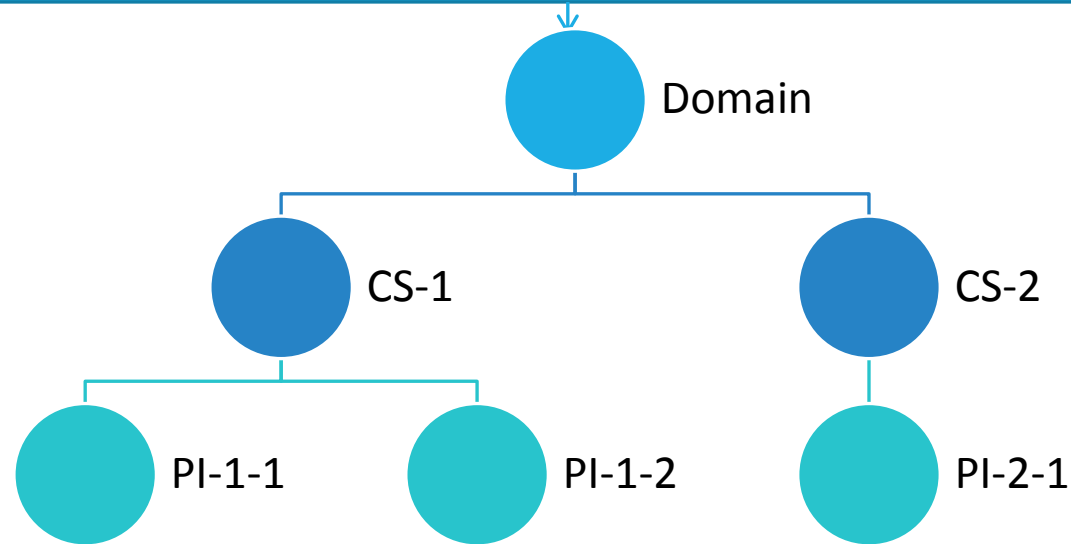
# Existing frameworks

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# Competency standards development

- Sample: Competency Framework for SEA Teachers (2009): E Developing and utilizing teaching and learning resources
  - E.4 Integrate use of ICT in teaching and learning

- Key areas of competency.
- Should address all aspects of teachers' work .



- A unit of competency.
- Basic outline of the knowledge and skills required in the given area.
- Stated in the observable term.

- Specific knowledge, skill, and attitude that a teacher should be able to demonstrate.

# NETS-T by ISTE

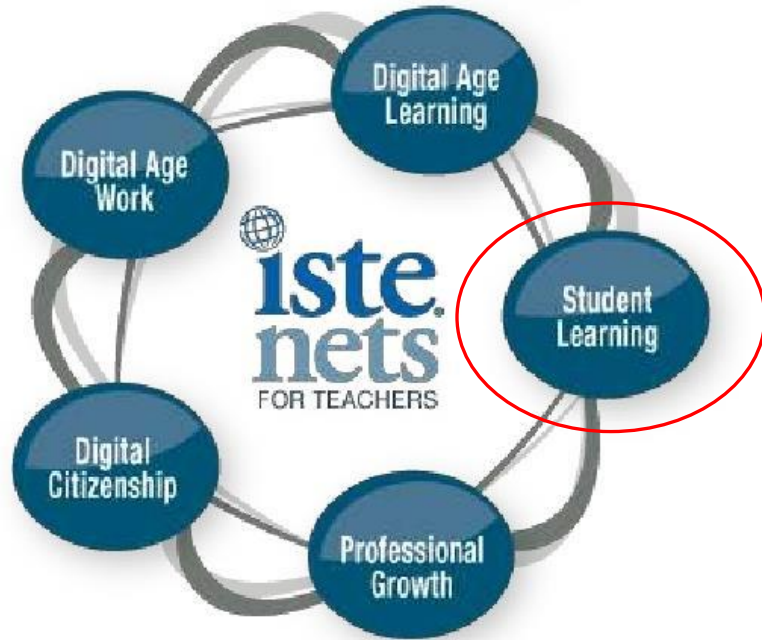
## International Society for Technology in Education



<http://www.iste.org/standards/nets-for-teachers.aspx>

- Countries that localized and developed their own standards, adopting from the ISTE framework: Malaysia, Korea, Japan, Australia, the Philippines and more
- Also available for students, school administrators, technology coaches, and computer science educators
- For more info:  
<http://www.iste.org/standards/iste-standards>

# Sample ISTE NETS-T standards & PIs



National Educational Technology Standards for Teachers by ISTE (5 domains, 20 indicators)  
([https://www.iste.org/docs/pdfs/20-14\\_ISTE\\_Standards-T\\_PDF.pdf](https://www.iste.org/docs/pdfs/20-14_ISTE_Standards-T_PDF.pdf))

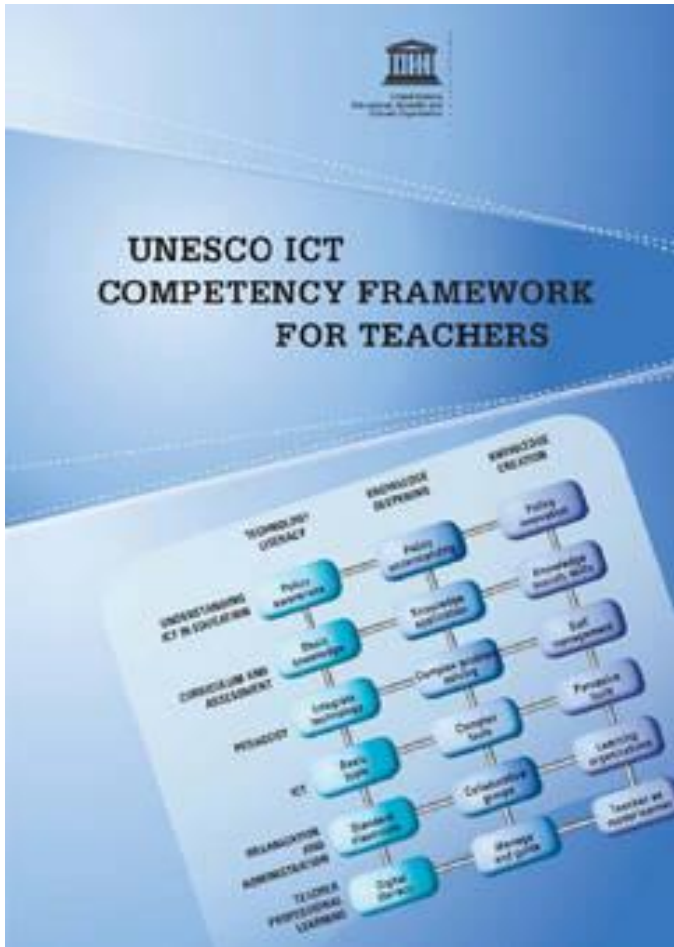
## 1. Facilitate and inspire student learning and creativity

Teachers use their knowledge of subject matter, teaching and learning, and technology to facilitate experiences that advance student learning, creativity, and innovation in both face-to-face and virtual environments.

- a. Promote, support, and model creative and innovative thinking and inventiveness
- b. Engage students in exploring real-world issues and solving authentic problems using digital tools and resources
- c. Promote student reflection using collaborative tools to reveal and clarify students' conceptual understanding and thinking, planning, and creative processes
- d. Model collaborative knowledge construction by engaging in learning with students, colleagues, and others in face-to-face and virtual environments



# UNESCO ICT CFT



6 aspects of  
teacher's work  
(domains)

3 approaches to teaching based on human capacity  
development → check alignment with education  
goals

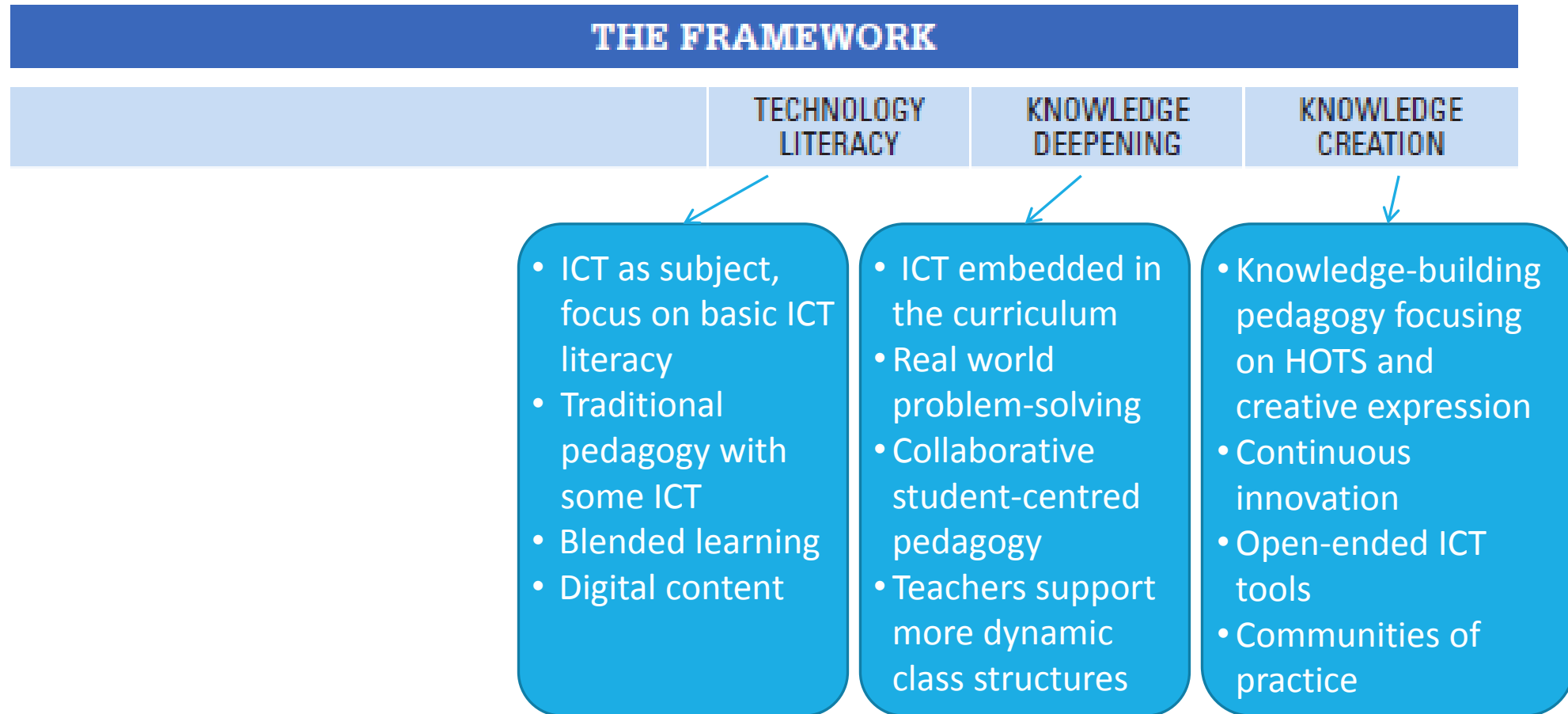
	TECHNOLOGY LITERACY	KNOWLEDGE DEEPENING	KNOWLEDGE CREATION
UNDERSTANDING ICT IN EDUCATION	Policy awareness	Policy understanding	Policy innovation
CURRICULUM AND ASSESSMENT	Basic knowledge	Knowledge application	Knowledge society skills
PEDAGOGY	Integrate technology	Complex problem solving	Self management
ICT	Basic tools	Complex tools	Pervasive tools
ORGANIZATION AND ADMINISTRATION	Standard classroom	Collaborative groups	Learning organizations
TEACHER PROFESSIONAL LEARNING	Digital literacy	Manage and guide	Teacher as model learner

collaboration among UNESCO, CISCO, INTEL, ISTE and Microsoft

<http://unesdoc.unesco.org/images/0021/002134/213475e.pdf>



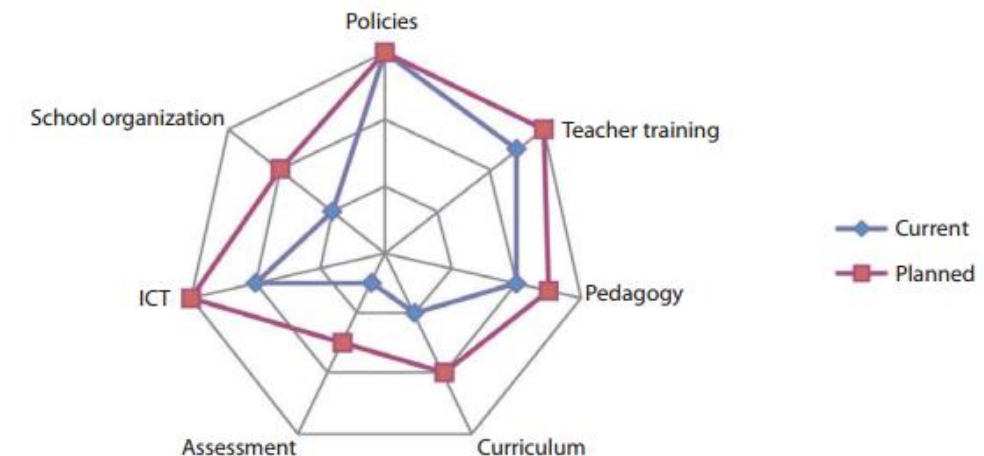
# Three approaches to teaching based on human capacity development → education goals



# UNESCO ICT CFT

THE UNESCO ICT COMPETENCY FRAMEWORK FOR TEACHERS			
	TECHNOLOGY LITERACY	KNOWLEDGE DEEPENING	KNOWLEDGE CREATION
UNDERSTANDING ICT IN EDUCATION	Policy awareness	Policy understanding	Policy innovation
CURRICULUM AND ASSESSMENT	Basic knowledge	Knowledge application	Knowledge society skills
PEDAGOGY	Integrate technology	Complex problem solving	Self management
ICT	Basic tools	Complex tools	Pervasive tools
ORGANIZATION AND ADMINISTRATION	Standard classroom	Collaborative groups	Learning organizations
TEACHER PROFESSIONAL LEARNING	Digital literacy	Manage and guide	Teacher as model learner

Total of 18 modules; can be at different stage for each domain



# Example in Practice: Pedagogy

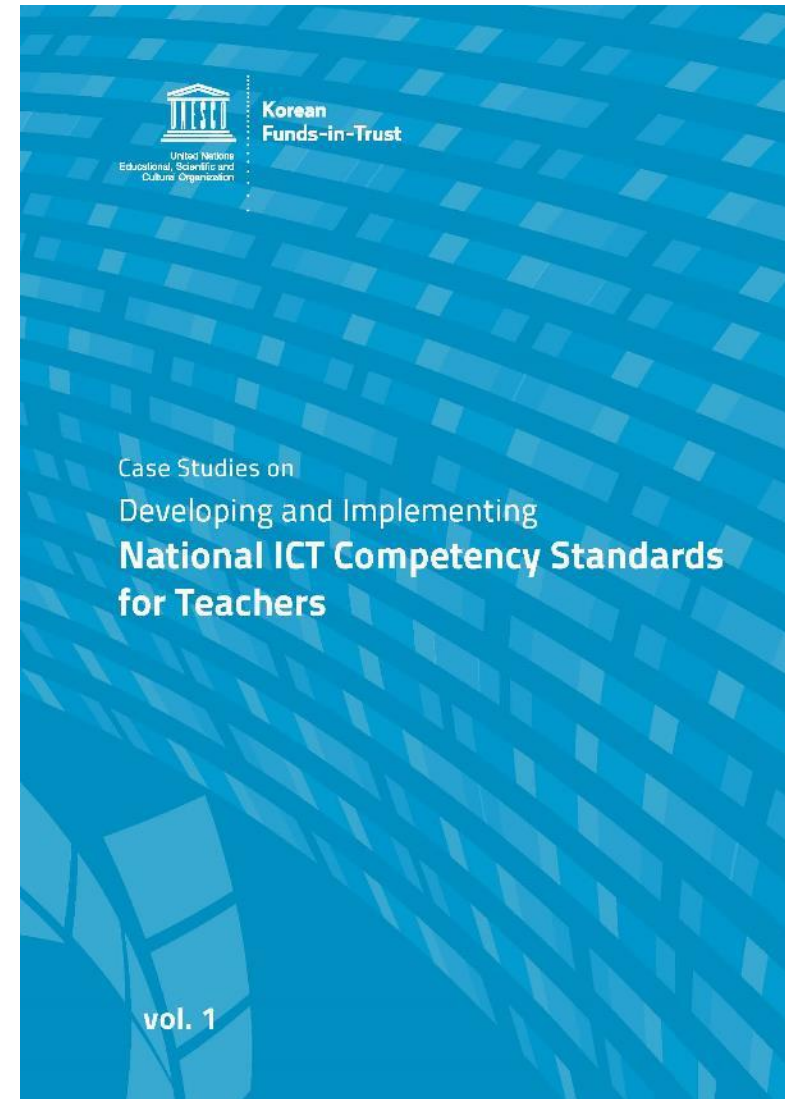
	Technology Literacy	Knowledge Deepening	Knowledge Creation
<b>Pedagogy</b>	Using the word processing application, the teacher displays on the interactive whiteboard some examples of poor writing. She demonstrates how, with a few changes in the choice of words and the word order, sentences can be made simpler and clearer.	The teacher organizes the students into collaborative groups and asks them to devise their own fitness assessments, such as seeing how quickly their heart rates return to normal after exercise. The teacher sets up a online forum and encourage students to track their progress and comments each other over the next month.	The teachers act as monitors and coaches to the students, ensuring the students have the skills and knowledge they need, advising them of methods they could use, ensuring the students stay focused on their tasks and meet the deadlines they have agreed.

# Example in Practice: Professional Learning

	Technology Literacy	Knowledge Deepening	Knowledge Creation
<b>Teacher Professional Learning</b>	The teacher searches various websites to find teaching resources on writing skills, including exercises and writing assignments, stimulus material and ideas for lessons.	The teacher regularly visits an Internet discussion forum that is a useful source of new ideas on how to get students more interested in PE and exercise. He actively seeks for technical advice on an aspect of a new fitness programme the students want to try out.	The teacher regularly shows other teachers how the project uses ICT to enable students to generate knowledge while studying their school subjects. She also explains to colleagues how the project, and her own role in it, has developed and improved in the light of experience and experimentation.

# UNESCO Bangkok's case studies

- Analysis of five country cases where national ICT competency standards for teachers are fully operationalized
- Australia, China, Korea, Kenya and Tanzania
- Duration: Jan – Oct 2014



# Three Approaches



# ICT competency standards

	Title	Domains/Areas
<b>Australia</b>	Australian Professional Standards for Teachers (APST)	<ul style="list-style-type: none"> <li>Professional knowledge</li> <li>Professional practice</li> <li>Professional engagement</li> </ul>
<b>Korea</b>	ICT Skills Standards for Teachers	<ul style="list-style-type: none"> <li>Information gathering</li> <li>Information analysis and processing</li> <li>Information transfer and exchange</li> <li>Information ethics and security</li> </ul>
<b>China</b>	ICT Competence Standards for National Primary and Secondary School Teachers	<ul style="list-style-type: none"> <li>Awareness and Attitude</li> <li>Knowledge and skills</li> <li>Implementation and Innovation</li> <li>Social Responsibility</li> </ul>
<b>Kenya &amp; Tanzania</b>	ICT Competency Framework for Teachers for SIPSE Curriculum Pathways	<ul style="list-style-type: none"> <li>Policy Awareness</li> <li>Curriculum &amp; Assessment</li> <li>Pedagogy</li> <li>ICT - Internet</li> <li>Organization &amp; Administration – Classroom Management</li> <li>Teacher Development</li> </ul>

# Australia: Integrated ICT competencies

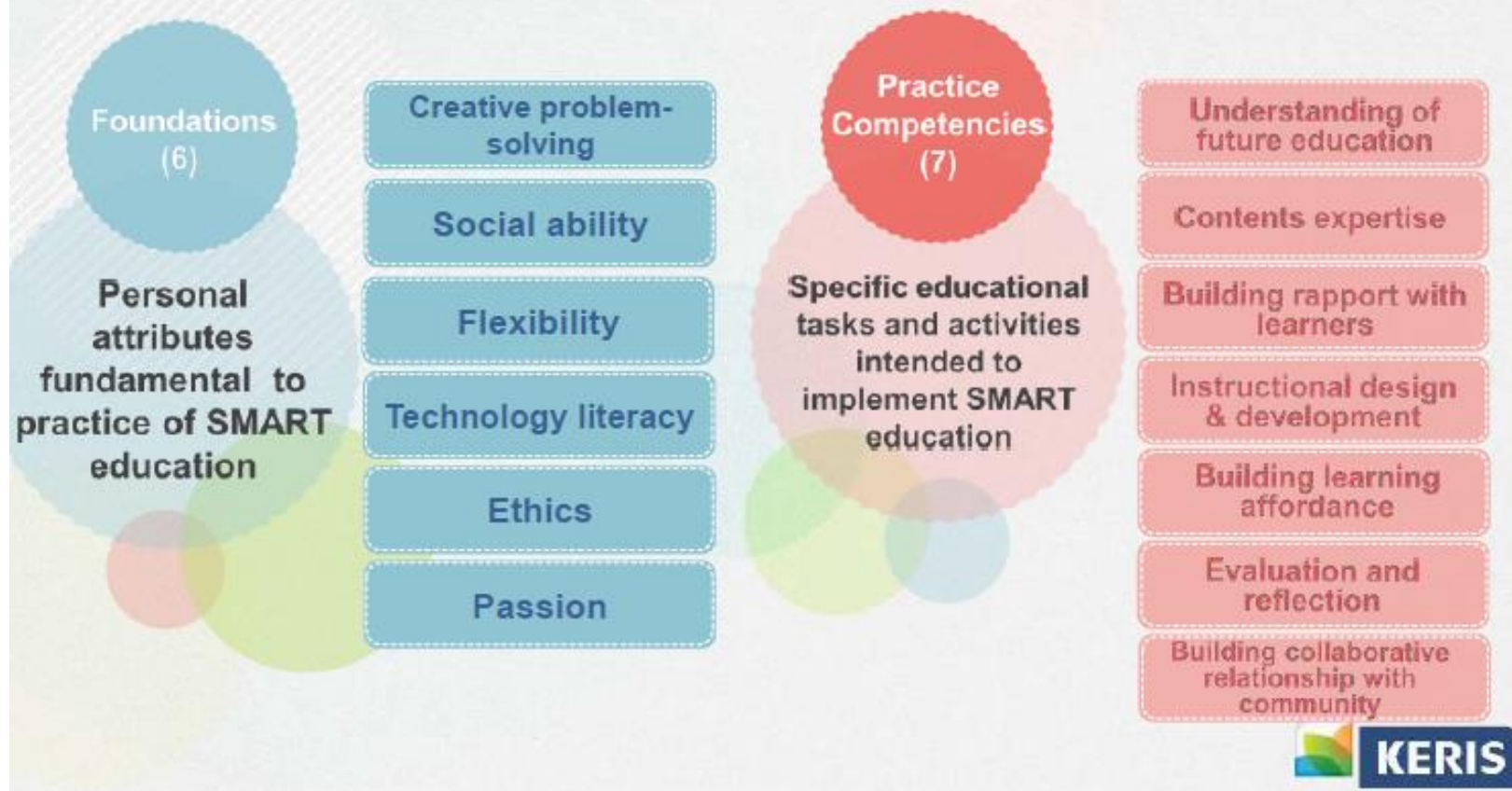
	Standard 2: Know the Content and How to Teach it	Standard 3: Plan for effective teaching and learning	Standard 4: Create and maintain supportive and safe learning environments
Career Stage	Focus Area 2.6: Information and Communication Technology (ICT)	Focus Area 3.4: Select and use resources	Focus Area 4.5: Use ICT safely, responsibly and ethically
Graduate	Implement teaching strategies for using ICT to expand curriculum learning opportunities for students.	Demonstrate knowledge of a range of resources, including ICT, that engage students in their learning.	Demonstrate an understanding of the relevant issues and the strategies available to support the safe, responsible and ethical use of ICT in learning and teaching.
Proficient	Use effective teaching strategies to integrate ICT into learning and teaching programs to make selected content relevant and meaningful.	Select and/or create and use a range of resources, including ICT, to engage students in their learning.	Incorporate strategies to promote the safe, responsible and ethical use of ICT in learning and teaching.
Highly Accomplished	Model high-level teaching knowledge and skills and work with colleagues to use current ICT to improve their teaching practice and make content relevant and meaningful.	Assist colleagues to create, select and use a wide range of resources, including ICT, to engage students in their learning.	Model, and support colleagues to develop, strategies to promote the safe, responsible and ethical use of ICT in learning and teaching.
Lead	Lead and support colleagues within the school to select and use ICT with effective teaching strategies to expand learning opportunities and content knowledge for all students.	Model exemplary skills and lead colleagues in selecting, creating and evaluating resources, including ICT, for application by teachers within or beyond the school	Review or implement new policies and strategies to ensure the safe, responsible and ethical use of ICT in learning and teaching.



# Republic of Korea: Brand-new stand-alone competency standards

## Teacher Competencies for SMART Education: 13 Competencies, 61 Indicators

Defined as "traits required for teachers who perform effective education to promote key competencies of 21<sup>st</sup>-century learners and to achieve educational innovation toward future education"



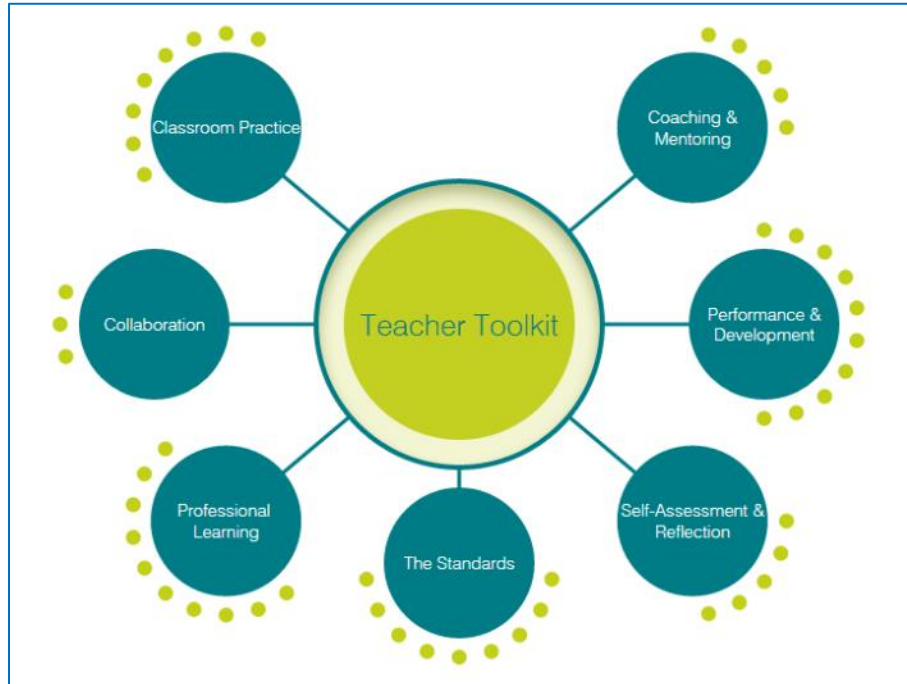
# Operationalization

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# Key factors

- Identification and **involvement of multi stakeholders** along the process
- **Interdepartmental coordination** for in-service, pre-service training and other divisions for teacher performance and evaluation
- A strong developmental system of **teacher preparation and professional learning**, drawn upon the standards
- Provision of **resources and models**
- A **supportive environment and incentives**
- A **feedback mechanism and performance evaluation** system against the standards
- A clear **recognition/qualification system** that motivates teachers to constantly develop their competencies

# Australia

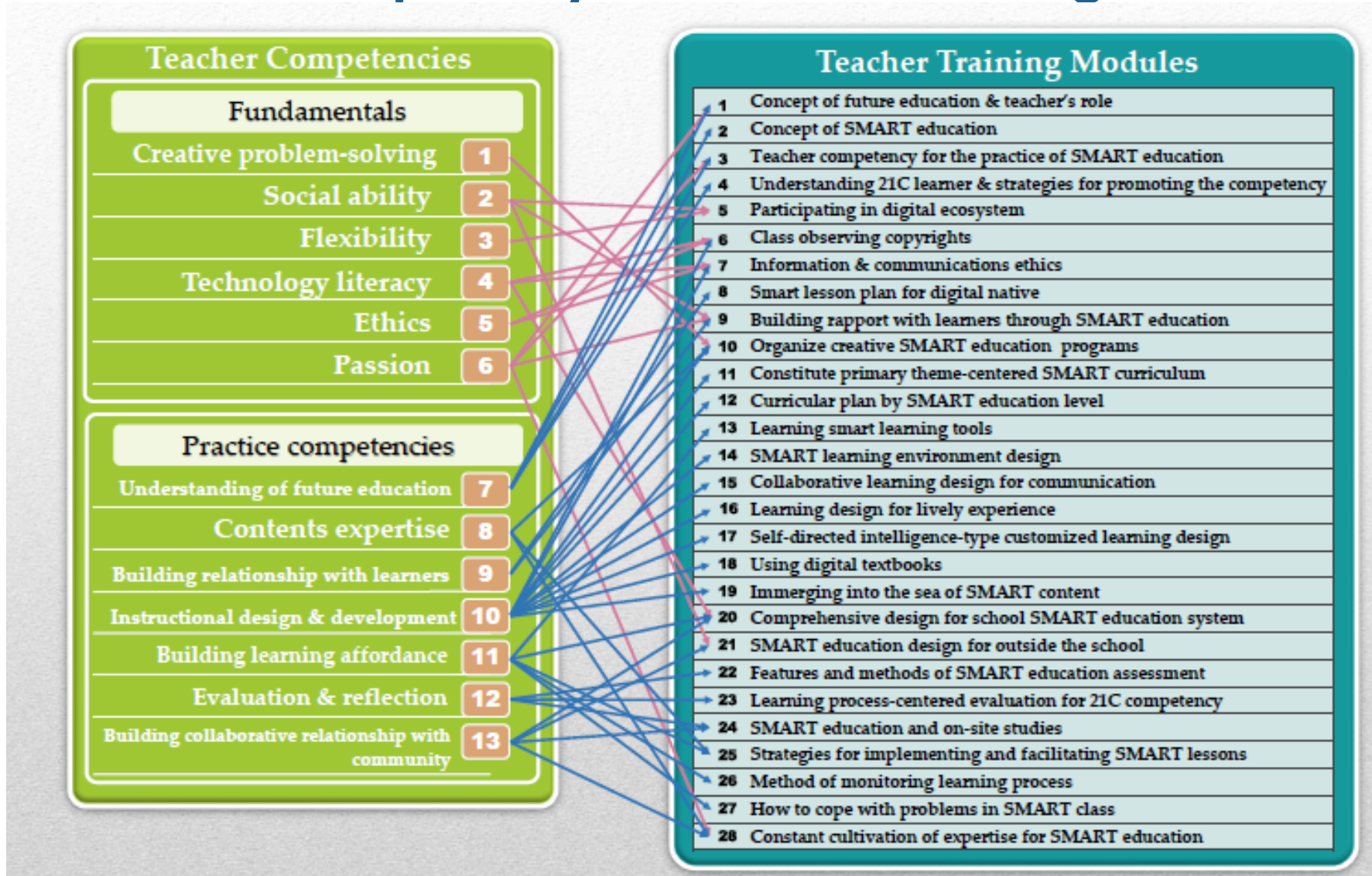


- Teacher resources
- Certification of evidences for in-service registration & school-level assessment
- Accreditation of pre-service providers
- Evaluation of standards

The screenshot shows the AITSL website. At the top is the AITSL logo (Australian Institute for Teaching and School Leadership Limited) and a search bar. Below the logo are navigation tabs: Teachers, School Leaders, ITE Reform, Initiatives, and Resources & Tools. The main heading is "Australian Professional Standards for Teachers". Below this is a breadcrumb trail: Home / Australian Professional Standards for Teachers / Illustrations of Practice / Find by career stage. A left sidebar contains links: Teacher Standards, Illustrations of Practice, Find by career stage, Find by Standard, Find by collection, Frequently asked questions, Teacher Toolkit, Resources, Certification evidence, Evaluation, My Standards app, and Search. The main content area is titled "Illustrations of Practice - by career stage" and includes a description of the practice illustrations. Below this are four sections for different career stages: Graduate, Proficient, Highly Accomplished, and Lead. Each section displays a grid of practice illustrations with titles like "Who am I? puzzles", "Creating wikis", "Seeking professional learning", "Making money amounts", "Team teaching moderation", "Making connections in science", "Improved literacy outcomes", "High expectations", "Engaging parents and carers", "Using the Standards", "Creative online learning", and "Science and agriculture in special education". Each section has a "View all" link with a greater-than sign.

<http://www.aitsl.edu.au/australian-professional-standards-for-teachers/standards/list>

# Republic of Korea: Competency based module design





# Republic of Korea

- Regional teacher training centers and research & information institutes under 17 Provincial Offices of Education
- Accreditation of training institutes by regional educational authorities
- Online diagnostic tools
- Resources, ICT contest, teacher community
- Incentives and promotion opportunities

Supporting Competency-Based  
Teacher Training Reforms to Facilitate  
ICT-Pedagogy Integration Project

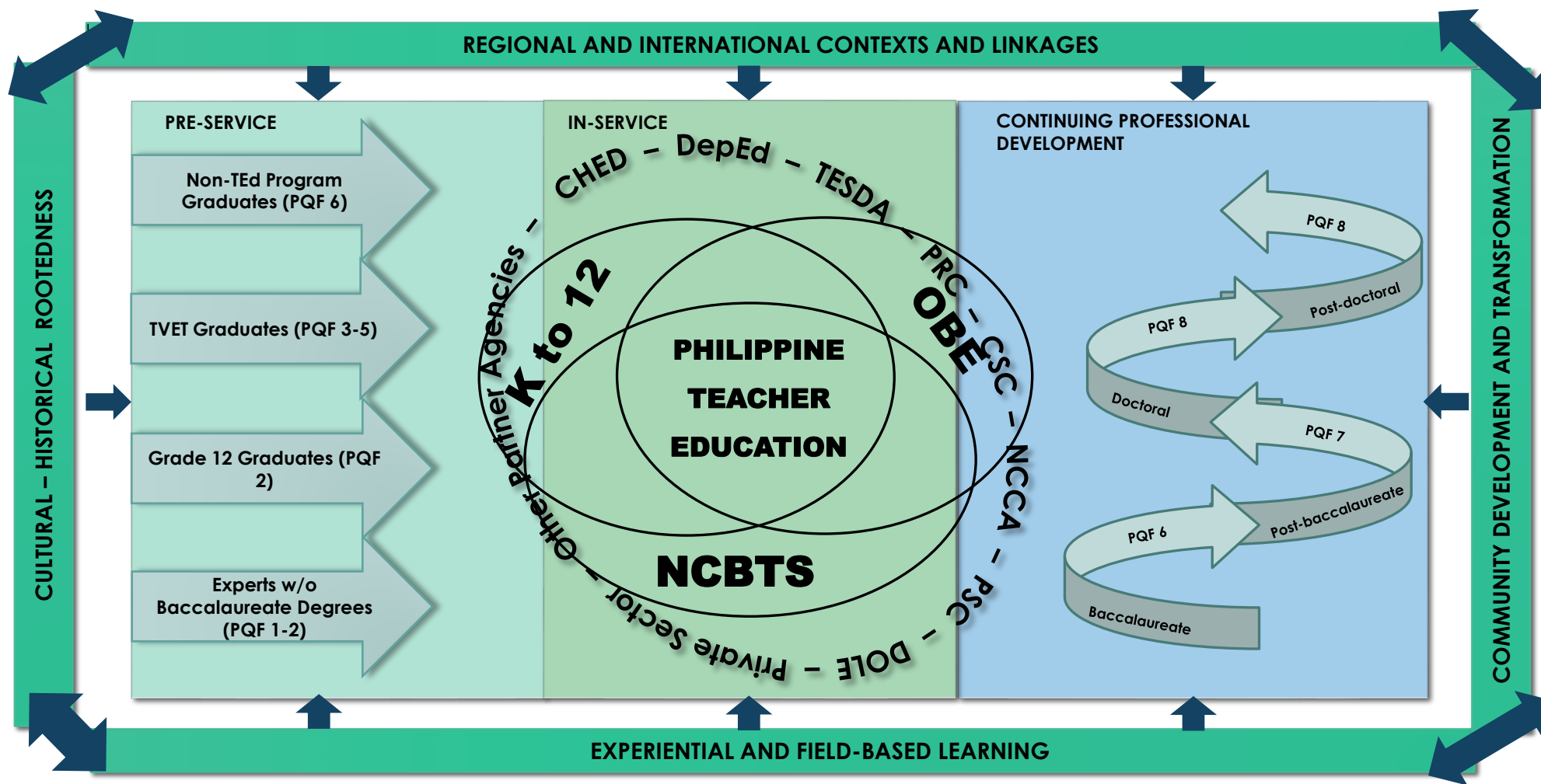


Korean  
Funds-in-Trust

# Philippine Case

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# 21st Century Philippine Teacher Education Framework





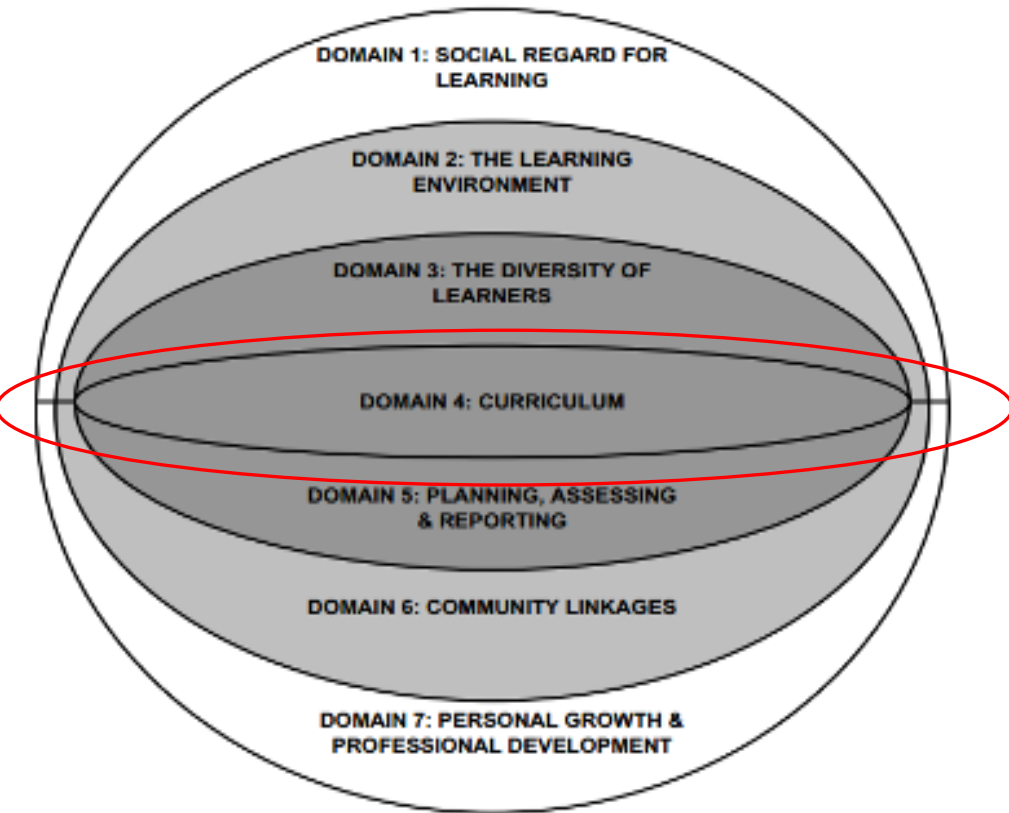
# Incorporation of ICT Competency Standards into NCBTS

**Strand 4.7** Demonstrates skills in the use of ICT in teaching and learning

**Indicator 4.7.1** Utilizes ICT to enhance teaching and learning

**Competencies:** (At what level do I...)

- 173. Know the nature and operations of technology systems as they apply to teaching and learning
- 174. Understand how ICT-based instructional materials/learning resources support teaching and learning
- 174. Understand the process in planning and managing ICT- assisted instruction
- 175. Design and develop new or modify existing digital and/or non-digital learning resources
- 176. Use ICT resources for planning and designing teaching-learning activities
- 177. Use ICT tools to process assessment and evaluation data and report results
- 178. Demonstrate proficiency in the use of computer to support teaching and learning
- 179. Use ICT tools and resources to improve efficiency and professional practice
- 180. Value and practice social responsibility, ethical and legal use of ICT tools and resources
- 181. Show positive attitude towards the use of ICT in keeping records of learners



# Status of ICT-Pedagogy integration

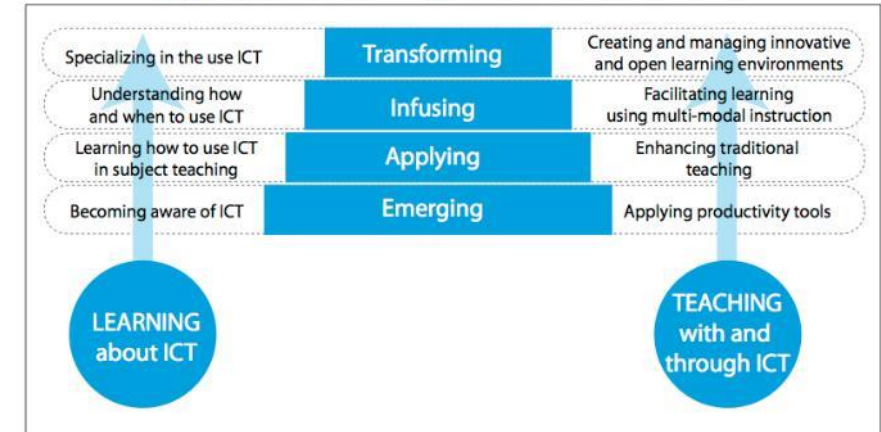
## USAID-funded study:

- 39% of schools were in the emerging stage, 50% were in the applying stage of ICT integration, and 11% were in the infusing stage of ICT integration
- majority of the ICT-related TPDs being offered were on basic ICT skills and less on pedagogical, subject-specific and instructional planning trainings

## Rapid Survey on TEIs' ICT-Pedagogy Integration (103 TEIs, both public and private):

- Development/ further enhancement of ICT competencies among TEI faculty is needed
- especially in the areas of use of ICT for assessment and development / enhancement of existing digital or non-digital learning resources

Figure 4.2: Mapping ICT stages onto learning and teaching



Source: Adapted from Majumdar (2005).

# Status of ICT-Pedagogy integration

## AusAID-funded study by the Philippine National Research Center for Teacher Quality (RCTQ):

- surveyed teachers recognize ICT knowledge, exposure, training, and use as among their “ultimate needs”
- their technical competency is adequate but they still found integrating ICT to enhance pedagogy challenging
- “lack of ICT facilities” in TEIs and in schools as a major constraint to ICT-pedagogy integration

## A separate study among pre-service teachers:

- ICT skills remains to be one core deficiency due to lack of good foundation on exposure to ICT use in teaching and learning in basic education

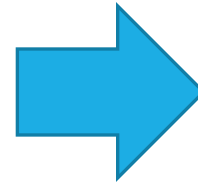
# Findings: UNESCO Teacher Readiness Survey

- Need to make teachers more aware of national policies on ICT in education
- Schools provide Internet access and ICT support; teachers use personal devices.
- Increase in the use of ICTs; prevailing preference for analog/offline modes of teaching (common uses: lesson preparation, didactic teaching, recording grades)
- Need for more teacher training on creating multimedia resources, planning and implementing ICT-enhanced pedagogy, using subject-specific software
- ICT training credits affect career advancement

\* 212 responses from private (46.7%) and public (53.3%) basic education institution teachers in 13 of the country's 17 regions

## 7 Proposed domains for Undergraduate Teacher Education – by the UNESCO project task force (CHED)

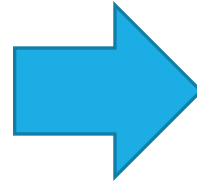
1. Understanding ICT in Education
2. Curriculum and Assessment
3. Pedagogy
4. Technology Tools
5. Organization and Administration
6. Teacher Professional Learning
7. Teacher Disposition



To undergo  
consultations/ public  
hearings, endorsement  
by TP-TE, and approval  
by CHED  
Commissioners

# Operationalization in Pre-Service Teacher Education (CHED)

- Pre-Service Teacher Education Subjects Related to ICT
  - General
    - Computer Education (3 units)
  - Professional
    - Educational Technology 1 (Ed Tech 1)
    - Educational Technology 2 (Ed Tech 2)



Related UNESCO (HQ) project: development of OER for teacher education/ training courses, based on enhanced standards and curriculum

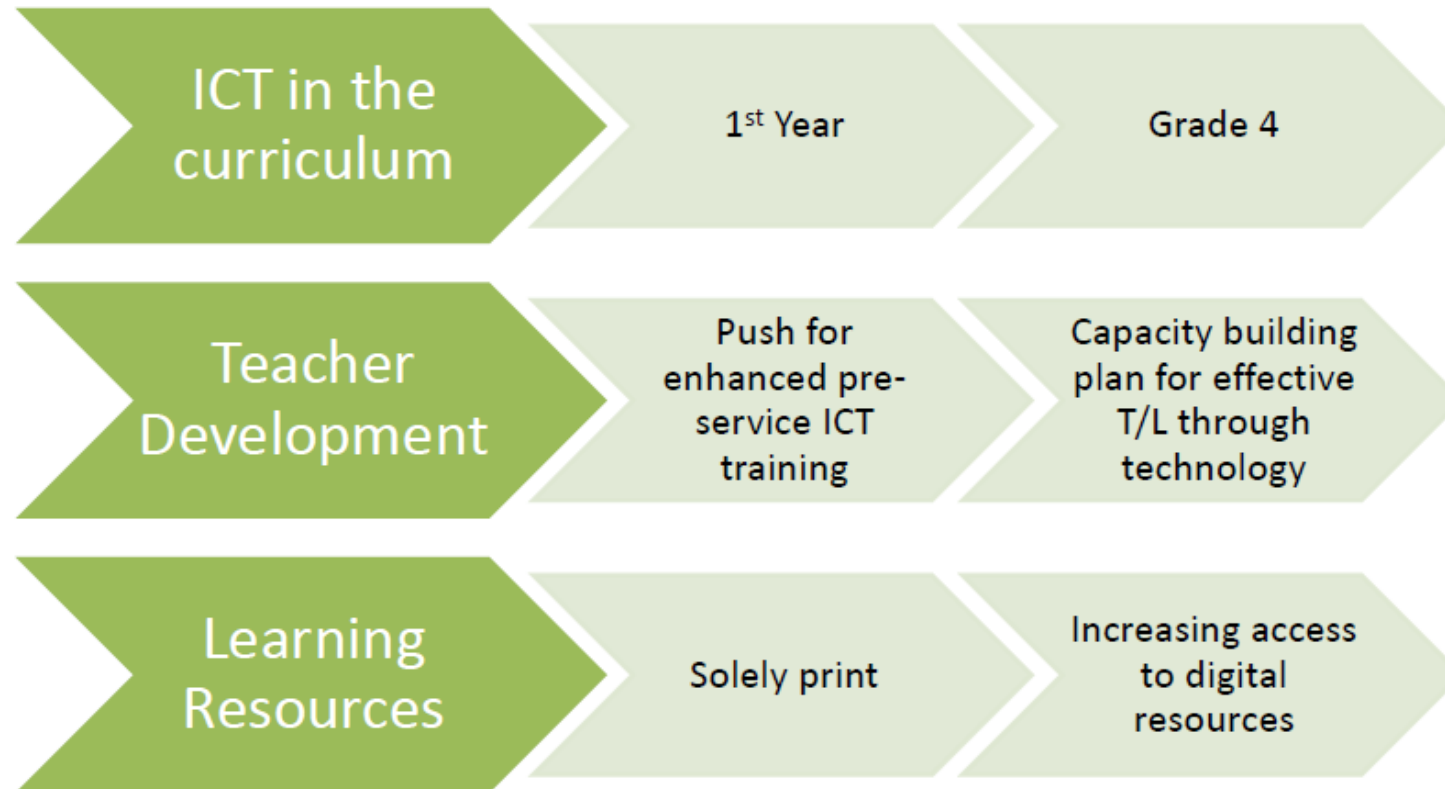
For enhancement during the project's next stage; dependent on CHED's approval of proposal

Training of teacher educators projected from 2016 to 2017

Next Phase: incorporation into qualification (LET) and accreditation processes

## DepEd's Plans

### Enhanced Teaching and Learning



DEPARTMENT OF EDUCATION

Source: DepEd presentation, GSIE 2015

# DepEd's Plans

## Teacher Development: ICT Skills



DEPARTMENT OF EDUCATION

Source: DepEd  
presentation,  
GSIE 2015



# DepEd's Plans

## Teacher Development: ICT Skills



**WRITESHOP**  
(w/representatives from the Region, Division,  
School, Programs, ICT, Resource persons)



**PILOT IMPLEMENTATION** of 1  
DIVISION (100 School ICT Coord.)



**LEVEL 1: TRAINING**  
OF 17 REGIONAL ITOs &  
220 DIVISION ITOs



**LEVEL 2: TRAINING** OF 46,000+  
SCHOOL ICT COORD.

**GOAL: ICT Skills**  
Professional Development  
through school-based learning  
action cells

Source: DepEd  
presentation,  
GSIE 2015

DEPARTMENT OF EDUCATION

# DepEd's Plans

## Learning Resources: The LRMDs Portal

LRMDS Learning Resource Management and Development System

Home Find Resources Search Keywords Register Login

### Find Resources

K to 12

The Catalogue

Structured Filter Coming Soon!

### WELCOME TO Learning Resources Portal

Search, download and use quality learning, teaching and professional development resources on this site.

K to 12 Teacher's Guides for Grades 1 to 4 and 7 to 10 are available on the DepEd Drive. Please log on with your DepEd email account to access these files. If you don't have a DepEd email account, you may get it [here](#). The DepEd email account is only available to all employees of the Department of Education.

### Create

Create your own resources using any of the over 5000 photos, illustrations, video and audio files in the Media Gallery.

### Learn

Access Open Education Resources and online learning programs including professional development and alternative delivery mode programs.

### Share

Ideas on learning and teaching resources and provide feedback.

### Latest Additions

**Math SIM**  
English | vnd.openxmlformats-officedocument  
This is a teacher-developed structured instructional material in Mathematics intended for Grade VI pupils which focuses on comparing

**Kan Koman 2**  
Ilokano | vnd.openxmlformats-officedocument  
Yaw | Istoria | Dino nga nappakan kan ay ayam kan koman

**Idley Bangkag**  
Ilokano | vnd.openxmlformats-officedocument  
This module describes a typical day of a boy in the farm

**R2 TRAINING\_NUEVA VIZCAYA**  
Ilokano | vnd.openxmlformats-officedocument  
This story portrays the kind of life a person experiences in farms.

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[lrmds.deped.gov.ph](http://lrmds.deped.gov.ph)

DEPARTMENT OF EDUCATION

Source: DepEd presentation, GSIE 2015

# Thank You.

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Mel Tan

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<http://www.unescobkk.org/ict>