



United Nations  
Educational, Scientific and  
Cultural Organization

Fengchun MIAO  
ED/PDE/PAD, UNESCO

# **UNESCO ICT Competency Framework for Teachers (ICT-CFT) and Institutional Strategy for Teacher Training on ICT-pedagogy Integration**

1. **ICT CFT: Outputs & Review**
2. **TPCK: Structure & Development**
3. **Teacher Training: Institutional Strategy**

# What's ICT CFT

## UNESCO ICT Competency **Framework** for Teachers (ICT CFT) – A reference framework



## Goal

ICT-CFT project aims **to provide guidelines for planning teacher education programmes and training offerings** that will prepare pre-service teachers or facilitate in-service teachers' professional development on effective ICT- pedagogy integration

## Latest Development

- **A Policy Framework:** the rationale, structure and approach
- **Competency Framework Components** (3 levels/approaches × 6 components) and the specification of the components
- Two exemplary expanded syllabi: syllabus on the specific techniques to be acquired by teachers within each set of components:  
Technology Literacy & Knowledge Deepening



United Nations  
Educational, Scientific and  
Cultural Organization

# How to understand the CFT Structure

Approach Components	TECHNOLOGY LITERACY	KNOWLEDGE DEEPENING	KNOWLEDGE CREATION
Understanding of ICT in Education	?	?	?
CURRICULUM AND ASSESSMENT	BASIC KNOWLEDGE	KNOWLEDGE APPLICATION	21 <sup>ST</sup> CENTURY SKILLS
PEDAGOGY	TECHNOLOGY INTEGRATION	COMPLEX PROBLEM SOLVING	SELF MANAGEMENT
ICT	BASIC TOOLS	COMPLEX TOOLS	PERVASIVE TOOLS
ORGANIZATION & ADMINISTRATION	STANDARD CLASSROOMS	COLLABORATIVE GROUPS	LEARNING ORGANIZATIONS
TEACHER PROFESSIONAL DEVELOPMENT	DIGITAL LITERACY	MANAGER AND COACH	TEACHER AS MODEL LEARNER

# How to understand the CFT Structure

- The structure is more appropriate for planning the national ICT in Education Master Plans. Some components, such as policy, and curriculum & assessment, are more related to governmental accountability or institutional capacity (policy background) than to teachers' competencies
- Understanding the relation of the ICT-CFT to national education policies, ICT-readiness, teacher development programmes, and teachers' professional and cultural environments is needed before any action

# How to apply the CFT: Localizing UNESCO's ICT-CFT or developing your own standard?

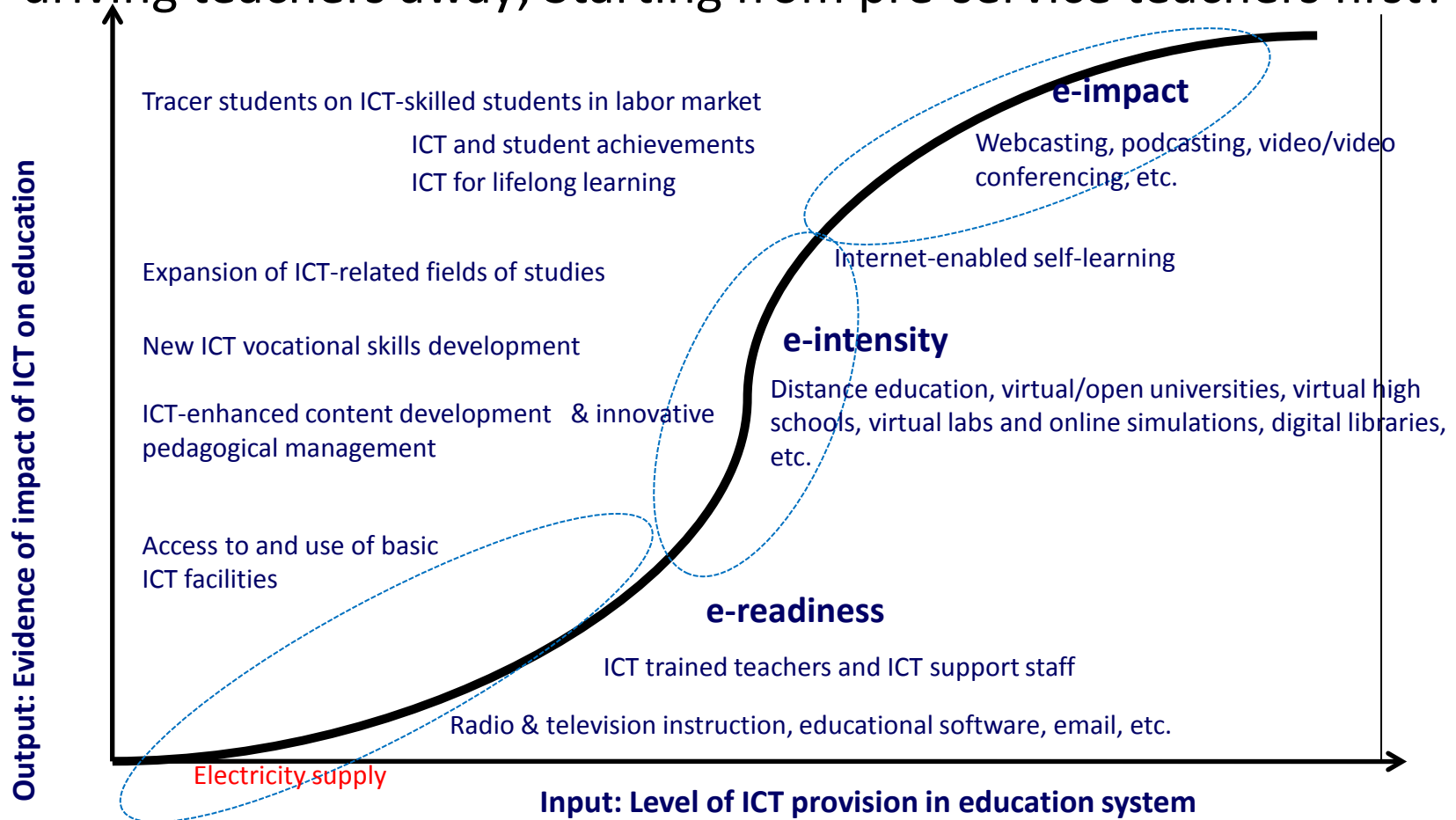
1. ICT-CFT and **E-Readiness**: ICT Competency Standards **should not be taken as mandatory standards** for teachers in developing countries without sufficient e-readiness
2. ICT CFT and **Teachers Pedagogical Content Knowledge**: Teachers' ICT qualifications should be pivoted around pedagogy.
3. Teachers' ICT competency is **not the determinant factor** for knowledge deepening and knowledge creation. Policy environment and other enabling factors are more critical.



United Nations  
Educational, Scientific and  
Cultural Organization

# E-Readiness

- Readiness of member states to adopt ICT(-pedagogy) competency standards: Gradualism is better than forcible deployment to avoid driving teachers away; Starting from pre-service teachers first?



# How to apply the CFT: Localizing UNESCO CFT or developing your own standard?

4. **Assumed pre-conditions** for knowledge deepening and knowledge creation are outside of the contextual realities of developing countries: the education level at which teachers work; the particular subject they teach and the methodologies are used; and the conditions of access to ICTs at schools by students and teachers.
5. Most **public teacher education institutions** in developing countries lack the capacity to design and provide training courses on ICT in education. Therefore the systematic improvement of ICT-CFT under these conditions remains a challenge. s

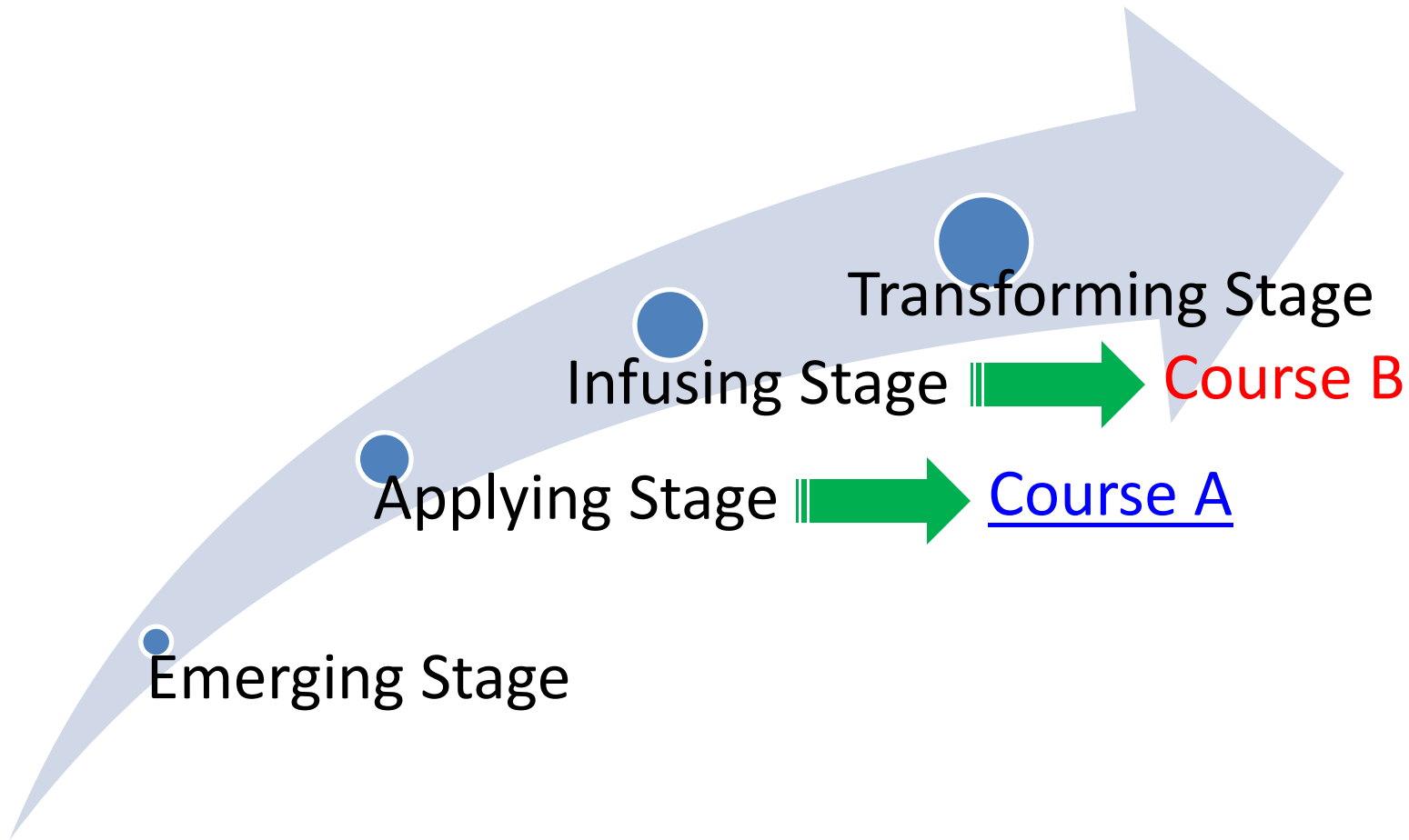
# China Educational Technology Standards: An example of self-developed standard

- **Step1 Standard Setting:** China Educational Technology Standards (CETS) was developed and endorsed at 2004
- **Step2 Standard Adoption:** CETS was adopted as a new set of compulsory criteria for **Teacher's Certificate**
- **Step3 Syllabus and Training Programme:** Government **invested in and monitoring** the development of in-service teacher training courses
- **Step4 Public Training Providers:** Government selected local training (and exam) centers through bidding process who are entitled funds and authorized certification
- **Step5 Coherent Teacher Education:** **Pre-service teacher** training courses reformed accordingly



United Nations  
Educational, Scientific and  
Cultural Organization

# CETS-based In-service Teacher Training Courses on ICT-pedagogy Integration



# Training Course (A) for Teachers at Applying Stage

## **Unit 1 Orientation**

Activity 1 Experiencing ICT in Education

Activity 2 Introduction to the Training Package

Activity 3 Collection and Management of Individual and Group Information

Unit Exercise and Reflection

## **Unit 2 Re-cap Educational Technology**

Activity 1 Key Concepts of Educational Technology

Activity 2 Concepts and Methodology of Instructional Design

Activity 3 PPT on *My Understanding of Educational Technology*

Unit Exercise and Reflection

## **Unit 3 Application of Teaching Media and Resources**

Activity 1 Understanding Values of Teaching Media

Activity 2 Processing and Compilation of Digital Learning Resources

Activity 3 Searching Educational Resources

Activity 4 Evaluating Educational Resources

Activity 4 Applying Digital Educational Resources Legally and Appropriately

Unit Exercise and Reflection

## **Unit 4 ICT-enhanced Expository-Based Learning**

Activity 1 Analysis of Sample Lessons

Activity 2 Design and Development of Lesson Plans

Activity 3 Peer Review on Lesson Plans

Activity 4 Understanding and Applying Learning Assessment

Unit Exercise and Reflection

# Training Course (A) for Teachers at Applying Stage (cont.)

## **Unit 5 ICT-enhanced Inquiry-Based Learning**

Activity 1 Analysis of Sample Lessons

Activity 2 Understanding and Applying Rubric

Activity 3 Design Inquiry-Based Learning Activities

Activity 4 Presentation and Peer Review on Lesson Plans

Unit Exercise and Reflection

## **Unit 6 Planning Facilitation and Organization of ICT-enhanced Lessons**

Activity 1 Analysis of Sample Plans

Activity 2 Creation of Implementation Plans

Activity 3 Peer Review on Implementation Plans

Activity 4 Evaluating Students' Performance

Activity 4 Management of Teaching and Learning Information (Portfolios)

Unit Exercise and Reflection

## **Unit 7 Infusing ICT across Curriculum**

Activity 1 Understanding Integration of ICT and Curriculum

Activity 2 Discussion on Key Issues and Strategies of Infusing ICT across Curriculum

Activity 3 Upgrading Integration of ICT in Lesson Planning

Unit Exercise and Reflection

## **Unit 8 Documentation and Sharing of Training Outcomes**

Activity 1 Compilation of e-Portfolios

Activity 2 Design and Development of Learning Webpages

Activity 3 Publication of Training Outcomes

Activity 4 Peer Review on Training Outcomes

Unit Exercise and Reflection

**Annex I Sample lessons or lesson plans; Annex II Related Resources**

# Training Course (B) for Teachers at Infusing Stage

## **Unit 1 Orientation**

Activity 1 Sharing of Stories on Using ICT in Teaching

Activity 2 Introduction to the Training Package

Activity 3 Team Building and e-Portfolio Creation

Unit Exercise and Reflection: Blog; Mind Mapping Tools

## **Unit 2 Seminar on Infusing ICT across Curriculum**

Activity 1 Understanding Integration of ICT and Curriculum

Activity 2 Diagnostic Study on Effectiveness of ICT-pedagogy Integration

Unit Exercise and Reflection

## **Unit 3 Integration of ICT in Unit Planning**

Activity 1 Understanding and Analysis of Unit Planning

Activity 2 Planning Integration of ICT in Unit-level Learning

Activity 3 Creation of Mind Map of Unit Planning

Activity 4 Finalization of Integration of ICT in Unit-level Learning

Activity 5 Unit Plan Sharing and Peer Review

Unit Exercise and Reflection

## **Unit 4 Design of Inquiry Based Learning**

Activity 1 Mapping Out Key Concepts

Activity 2 In-depth Analysis of Inquiry Based Learning

Activity 3 Design Inquiry Based Learning Activities

Activity 4 Presentation and Peer Review

Unit Exercise and Reflection

# Training Course (A) for Teachers at Applying Stage (cont.)

## **Unit 5 Development and Application of Thematic Learning Resources**

Activity 1 Understanding Thematic Learning Resources

Activity 2 Designing Thematic Learning Resources

Activity 3 Creating a Website of Thematic Learning Resources

Activity 4 Publication of Websites and Peer Review

Unit Exercise and Reflection

## **Unit 6 Designing Unit-based Learning Assessment**

Activity 1 Understanding Learning Assessment

Activity 2 Analysis of Unit-based Learning Assessment Plans

Activity 3 Applying Multiple Assessment in Evaluating Unit Learning Outcomes

Unit Exercise and Reflection

## **Unit 7 Organization and Facilitation of Unit-based Learning**

Activity 1 Creation of Unit Implementation Plans

Activity 2 Reflection on Lesson Implementation and Action Study

Unit Exercise and Reflection

## **Unit 8 Sharing of Outcomes and Reflection over Training Process**

Activity 1 Compilation of Training Outcomes

Activity 2 Publication of Training Outcomes

Activity 3 Reflection over Process

Unit Exercise and Reflection

## **Annex I Sample lessons or lesson plans**

## **Annex II Related Resources**

# UNESCO's roles in promoting ICT CFT

- ❑ Standard setter
- ❑ Capacity builder
- ❑ Laboratory of Ideas
- ❑ Clearing house
- ❑ Catalyst of international cooperation

→ the lead UN agency for e-learning



# UNESCO's roles in promoting ICT CFT

## →What UNESCO should and will do:

### ■ Standard setting and capacity building

- Strengthening the national capacity in localizing or **developing their own** ICT competency standards for teachers
- Capacity building for teacher training institutions in adapting curriculum and improving the capacity of teacher educators

### ■ Advocacy of enabling policy environment

## →What UNESCO should NOT do

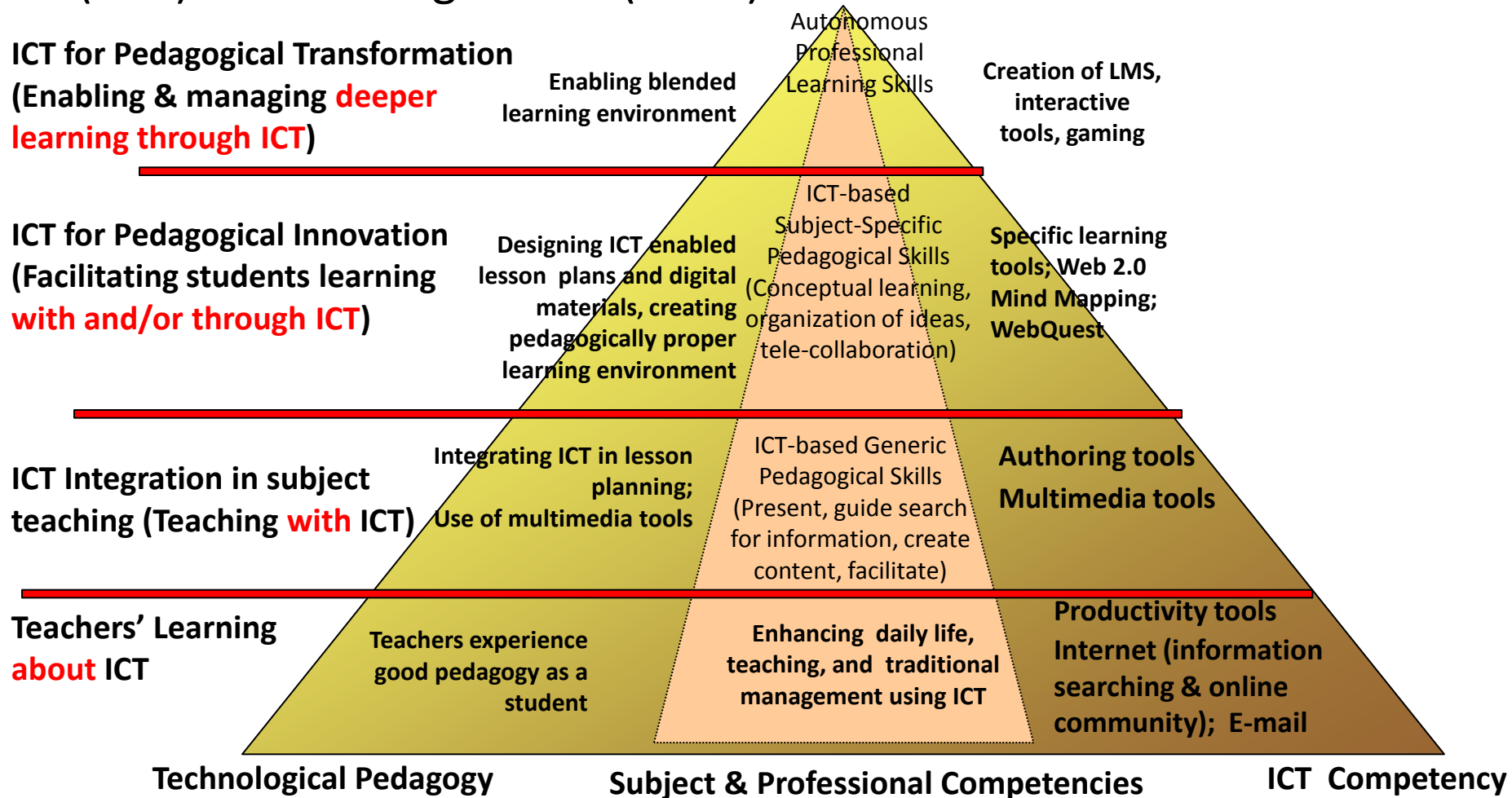
UNESCO will not provide a seal of alignment or certification, either directly or indirectly



United Nations  
Educational, Scientific and  
Cultural Organization

## 2. TPCK: Structure and Teachers' Development

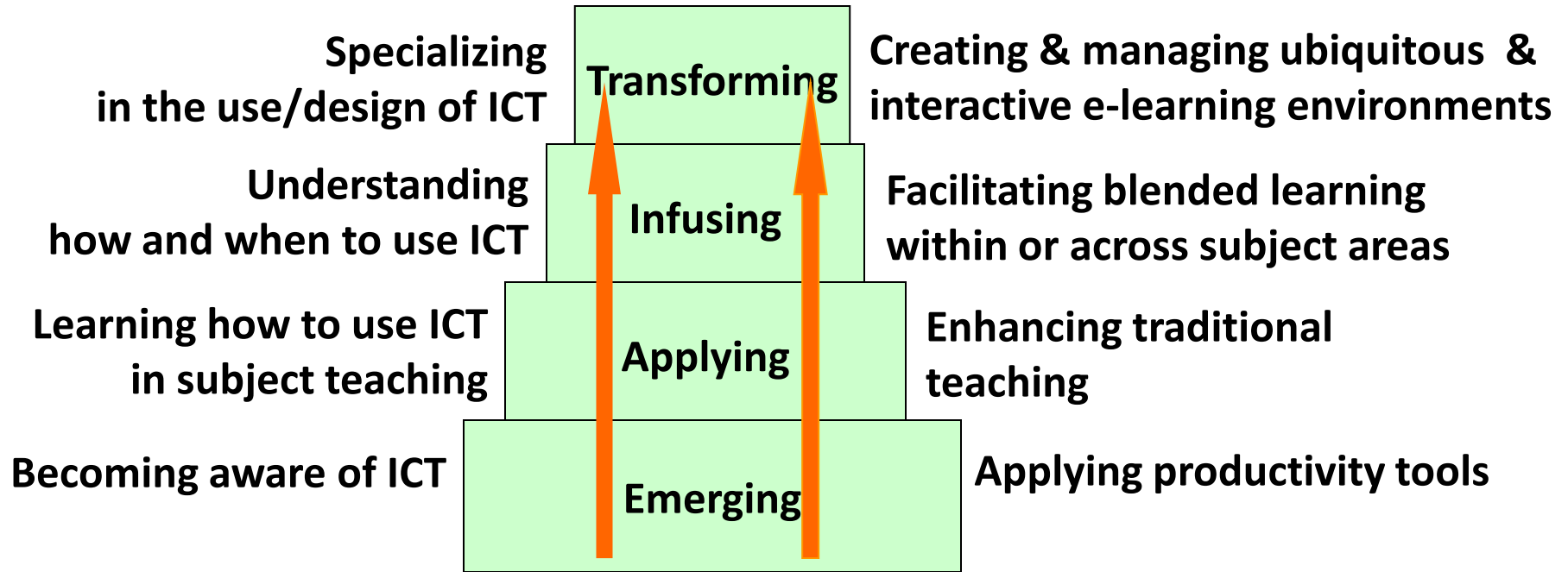
**Shift of teachers' qualification: Pedagogical content knowledge (PCK) → Technological PCK (TPCK)**





United Nations  
Educational, Scientific and  
Cultural Organization

# Four stages of Teachers' Development on ICT-pedagogy Integration



*(a) Stages of ICT usages*

*(b) Pedagogical Usages of ICT*

***ICT Transforming Education: A Regional Guide (UNESCO Bangkok)***

### 3. Teacher Training: Institutional Strategy

## Why Institutional Capacity of TEIs?

- Why pre-service teachers prioritized: More and more non-ICT-qualified new but not next-gen teachers are supplied to schools
- Are teacher education institutions ready to prepare the next generation of teachers who can apply ICT effectively?
  - A survey by UNESCO Bangkok:
    - Lack of institutional leadership and policy support
    - Teacher educators are lack of skills and technical support
    - Curriculum are out-of-date or insufficient



United Nations  
Educational, Scientific and  
Cultural Organization

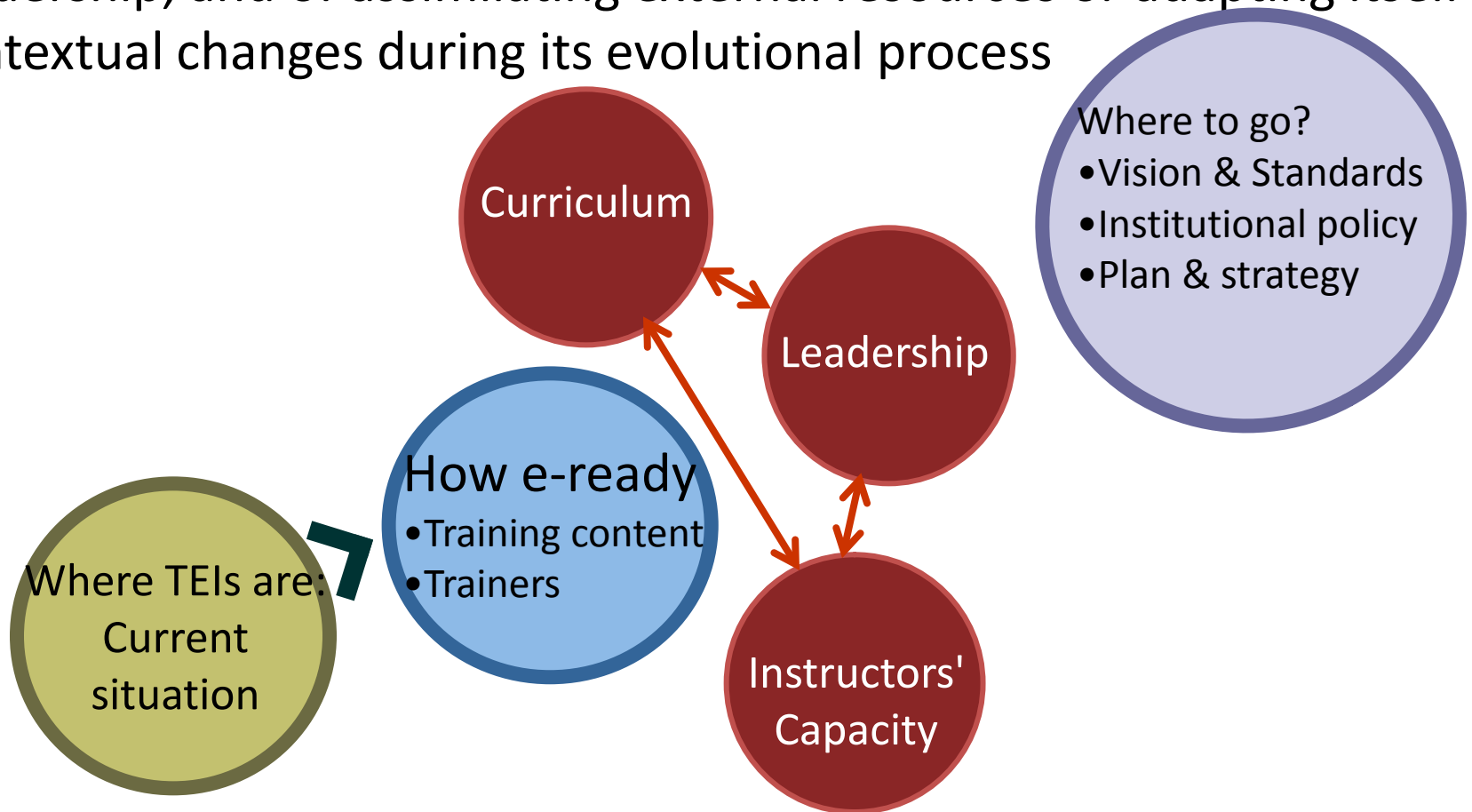
# What's the Institutional Capacity of TEIs

The institutional capacity is a systemic capability of coordinating **internal elements** toward the destination illuminated by a visionary leadership, and of **assimilating** external resources or **adapting** itself to contextual changes during its evolutionary process



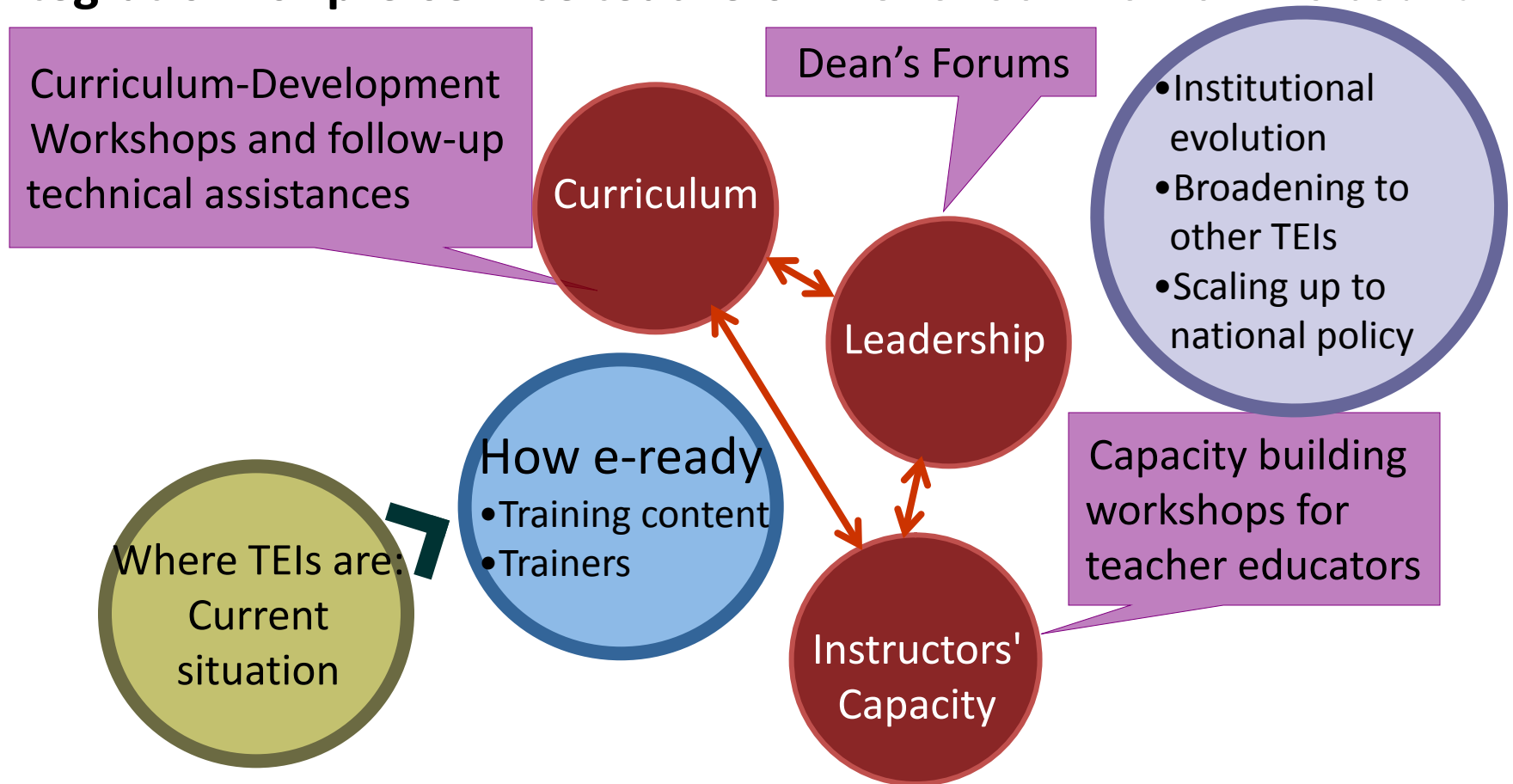
# What's the Institutional Capacity of TEIs

The institutional capacity is a systemic capability of coordinating internal elements toward the destination illuminated by a visionary leadership, and of assimilating external resources or adapting itself to contextual changes during its evolutionary process



# How to Build the Institutional Capacity?

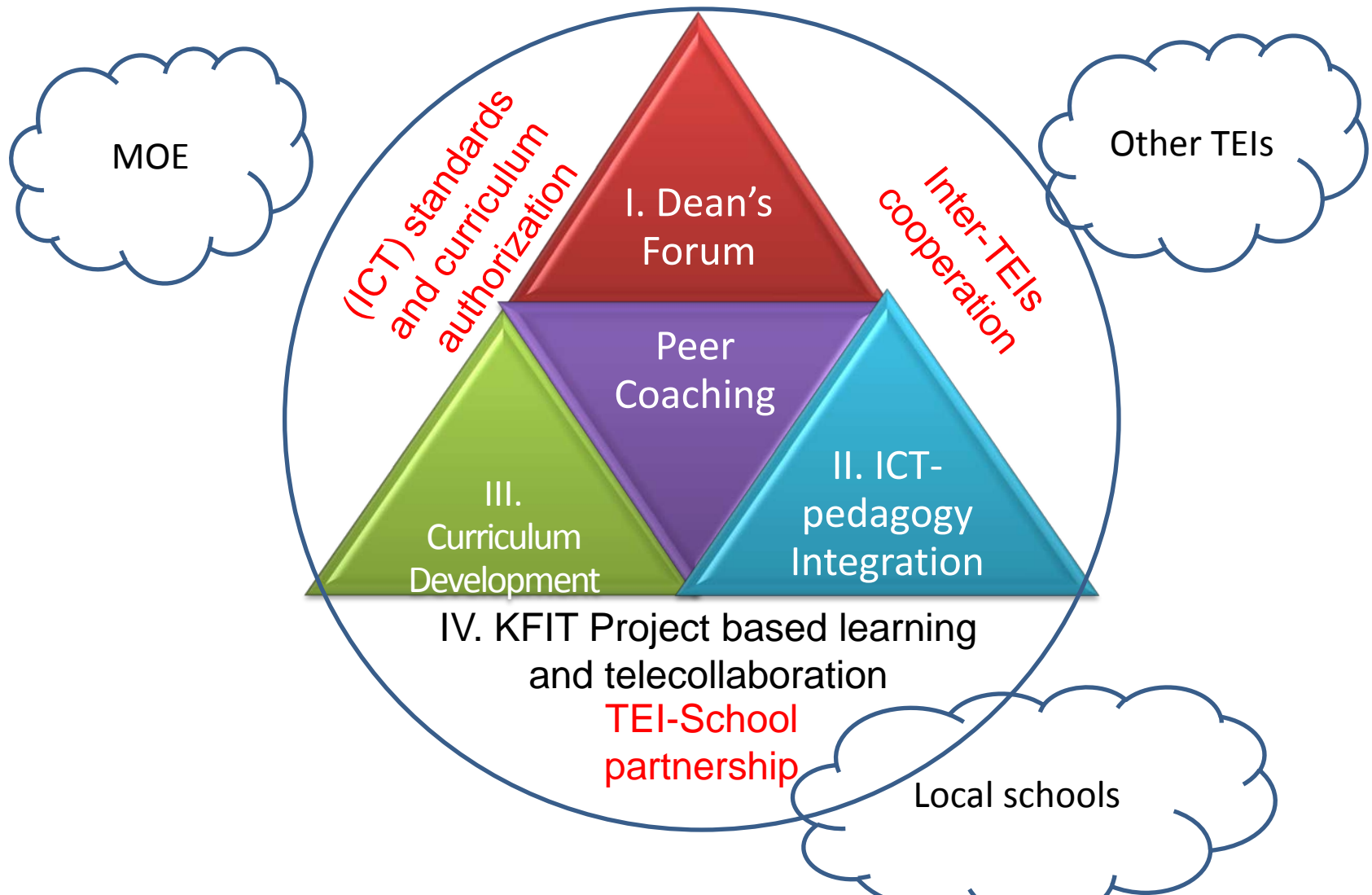
**UNESCO Next Generation of Teachers Project:** Building the institutional capacity of the TEIs in **designing and providing the training on ICT-integration for pre-service teachers** → Over 50 TEIs from 16 countries





United Nations  
Educational, Scientific and  
Cultural Organization

# Main deliverables of UNESCO in building institutional capacity of TEIs





United Nations  
Educational, Scientific and  
Cultural Organization

# I. Dean's Forum

**4 Forums:** 4 forums for 150 deans  
of 50+ TEIs from 16 countries

## Objectives

Setting  
vision;  
Building  
leadership,  
Action  
planning

Thematic or in-  
depth Dean's  
Forum

- Thematic discussion and experience sharing

National Forums  
or inter-TEI  
exchange

- Local follow-up
- Institutional actions

1<sup>st</sup> Regional  
Dean's Forum

- Systematic vision
- Training on leadership

**Institutionalization is a process  
of fossilization of best practices**



Example of results achieved-  
**Institutional Policy**

From: Filomena Dayagbil  
[ftdayagbil@yahoo.com](mailto:ftdayagbil@yahoo.com)

I am Filomena T. Dayagbil, Dean of the College of Teacher Education of Cebu Normal University (CNU). We have **institutionalized** our ICT training for graduating Education students in the university. For the past two years, all 4th year Education students ( 600 students every year) **cannot graduate without undergoing the training on ICT integration** into teaching and learning.

## II. Workshop on ICT-pedagogy Integration

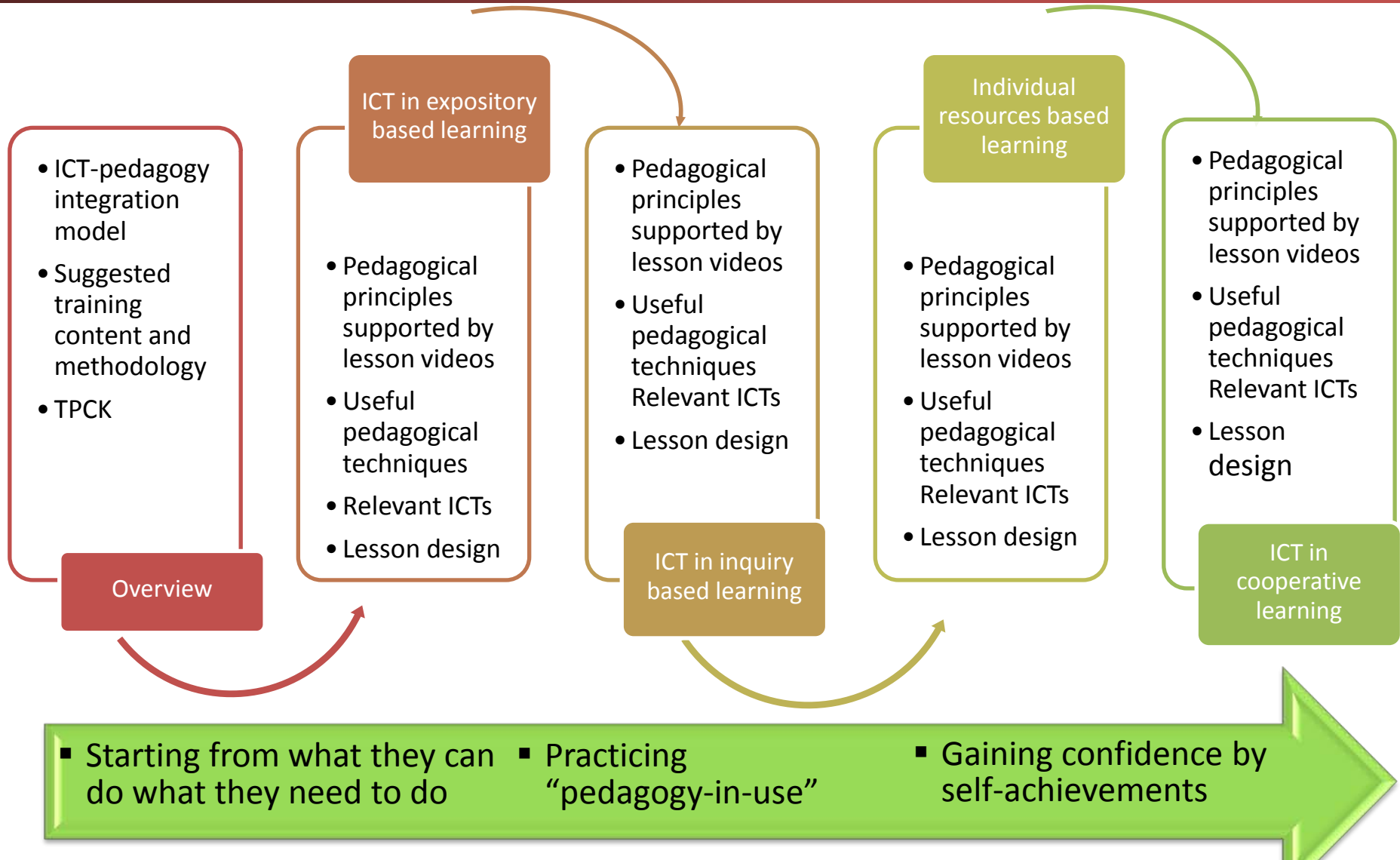
- A 5-day workshop for **teacher educators** on **ICT-pedagogy integration**
- Effective (training) strategies on how to use ICT into different pedagogy: Pedagogical principles, supporting examples, appropriate tools, etc.
- Hands-on practices of ICT-based unit/lesson design
- Achievement: 13 national Workshops on ICT-pedagogy Integration have been organized





United Nations  
Educational, Scientific and  
Cultural Organization

# ICT-pedagogy Workshop





United Nations  
Educational, Scientific and  
Cultural Organization

# Training FRAMEWORK on ICT-pedagogy integration

Introduction

Pedagogy Content Knowledge

ICT-facilitated

Hands-on

Instructional Design

■ **Expository based learning**

■ **Inquiry based learning**

■ **Individual learning**

■ **Cooperative learning**

**PBL on pedagogy:**

- Learning theory background;
- Key concepts;

**Key features**

- What ARE & ARE NOT

**Practical knowledge**

- General procedure
- Typical issues & coping strategies

**Further quest:**

- Key problems or key concepts
- Resources

■ **General principles and showcases**

- Key points showing relative advantage ICT for pedagogy

- Suggestions and principles

■ **Scenarios to read and analyze**

- Analyze their appropriateness, effectiveness, and efficiency
- Connected to real context

**Put all together For what?**

- Content and objectives

■ **To whom?**

- Student Ana.

■ **Match of ICT & pedagogy:**

- ICT-amplified existing ones & ICT-empowered emerging ones.

■ **Design and provision of ICT**

- Select; combine compile; create



United Nations  
Educational, Scientific and  
Cultural Organization

# III. Curriculum Development Workshops

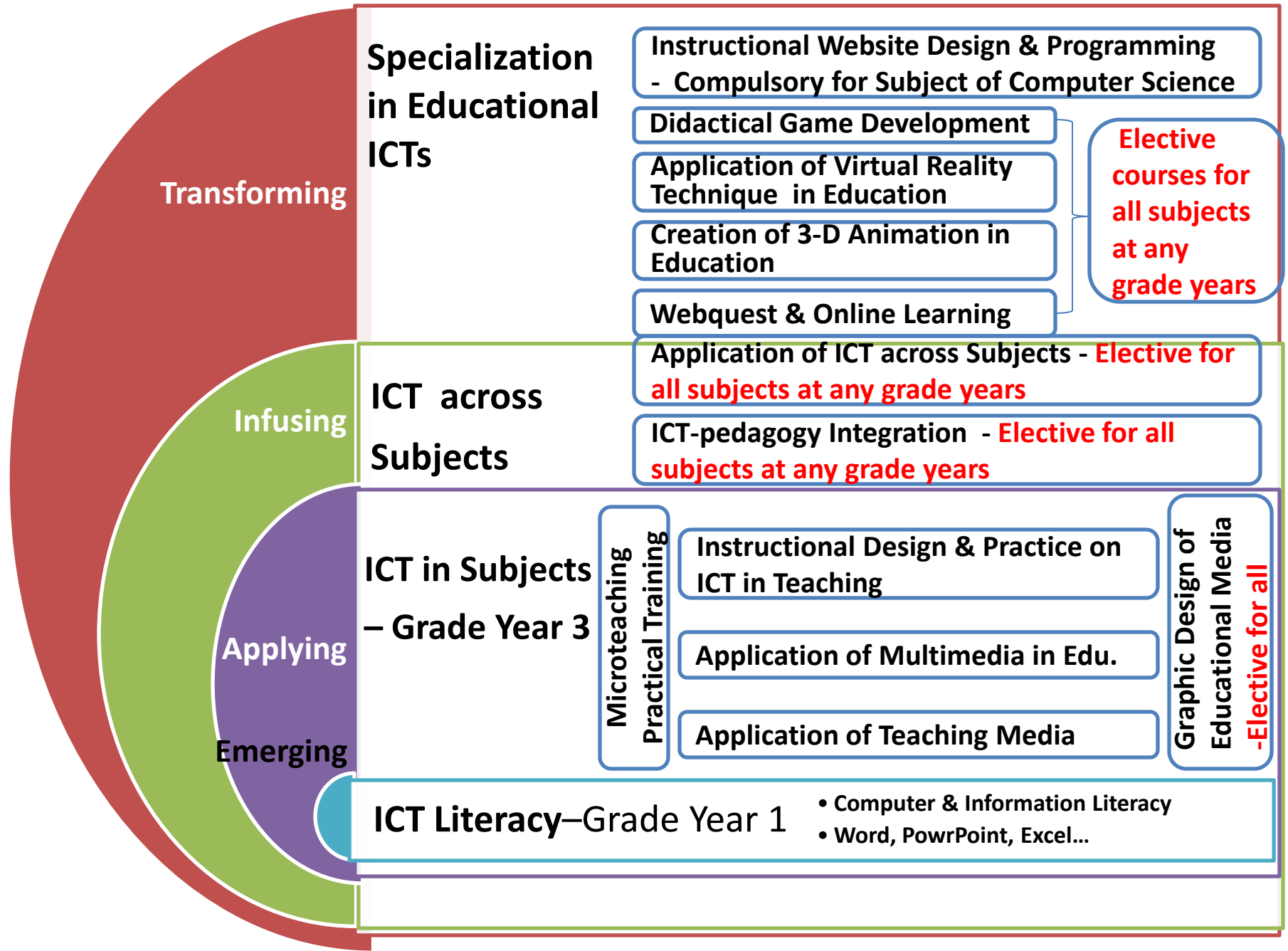
- Objectives: Building capacity in ICT-related course development
- Expected results: Existing training courses on ICT updated or new ones developed and authorized
- Activities: Curriculum-development workshops followed by technical assistances and wrapped up by curriculum authorization



# Main Categories of ICT-related Training Courses in TEIs

	Main Curricular <b>AREAS</b>			
Decision you need to make (authorization & resources)	<b>E. ICT-subject teacher training courses ...</b>			
	<b>A. Educational Technology</b> non-computer computer-based Other media	<b>B. ICT in Subjects</b> subject tools courseware design lesson design	<b>C. e-learning</b> Focusing on design & development of online environments	<b>D. ICT-pedagogy integration</b> Focusing on pedagogical design
1. Develop a <b>new course</b>			+	+
2. Upgrade the <b>content</b>		+		
3. Promote <b>methodology</b>	+		+	

# ICT-related Teacher Training Courses – East China Normal University



# Promoting Peer Coaching to Sustain School-based Professional Development

## Collective school-based professional development

- Objectives: Training of (master) trainers on ICT-pedagogy integration → peer coaching and institutional trainings
- Activities: 2 Peer Coaching workshops covering >60 master teacher educators
- Results: Peer coach adopted by TEIs training localized



# Thank you...

f.miao@unesco.org

<http://twitter.com/#!/UNESCOICTs>

<http://www.unesco.org/new/en/unesco/themes/icts>