ICT Competency Standards for Teachers’ Professional Development: The Case of Korea

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1.1. Framework of Teachers Professional Development

**Policy**

**Planning & Research**

- ICT Skill Standard
- ICT in Education Master Plan (I, II, III, IV, & V)
- Standard curriculum
- Develop training programs

**Development & Dissemination**

- Teacher ICT Use Certification
- Teacher ICT contest
- Teacher Community of practice
- e-Learning for training

**Diffusion & Establishing Roots**

- Investigate use of ICT in schools
- Quality Assurance
- Training program by targets
  - Policy makers
  - School principals
  - ICT lead teachers
  - ICT specialist by school level
  - Teacher
- Evaluation of training

**Monitoring & Evaluation**
1.2. Train Program by Target Group

**Group 1: Leaders**
- Officials from Ministry of Education and Metropolitan-Provincial Offices of Education
- School Principals and Vice Principals

**Group 2: Facilitators**
- ICT Supervisor from Metropolitan-Provincial Offices of Education
- Lead Innovative Teachers
- ICT Specialist at School Level

**Group 3: Enablers and Drivers**
- Teachers
1.3. Stakeholders in Teacher ICT Competency Training

**Teacher ICT Training**

- Policy planning & budgeting
- Administrative support
- Monitoring & evaluation

**Ministry of Education**

- Appoint training institutes
- Select trainees
- Manage training information
- Assessment

**17 Metropolitan - Provincial Offices of Education**

**KERIS**

- Develop curriculum and contents
- Nurture central level ICT lead innovative teachers
- Quality assurance support for training institutes

**Public Organizations**

- Support experts as trainers
- Conduct training

**Schools (K-12)**

- Support training facilities
- Conduct training

**Institutes**

- Coordinate training programs with higher education institutes
- Conduct training
2.1. Guiding Questions: Development of ICT Competency Standards

Please recall how standards were developed, whether stand-alone or embedded in general teacher competency standards:

• Positioned as critical element of teacher professional development policy (example: ISST in 2003 and SMART Education Competency 2013)
• The standards were included as part of ICT in Education Master Plan

Please specify whom such standards target:

• In-service teacher training
• It may also be considered to support pre-service teacher training medium term

How often are the standards reviewed or updated?

• Curriculum and modules are updated annually
• New curriculum was announced, coding and programming have been considered to include general subjects, new IT skills and competencies should also be taken into consideration in foreseeable future
Please describe how standards inform curriculum development of in-service teacher education

- Regional offices of education and training institutes develop training programs based on national standards
- Use of EDUNET (National Education Portal) to increase public awareness and ease access to information

Is curriculum development process centralized at National Level? Or, are teacher education institutions/training organizations given autonomy?

- MOE and KERIS (central level) provide guidelines that include conceptions of each module
- Curriculum can be developed by each regional educational authority and training organizations within local context

What specific steps were taken? How long did it take before the revised curriculum was actually delivered?

- Training content can be developed in 2 to 3 months (6 months for e-Learning training course)
- Use of regional teacher training center and information institutes under 17 Metropolitan-Provincial Offices of Education
Present the curriculum map and trajectory of ICT-related in-service teacher training programmes, if any (Please specify required # of hours or units per domain or level, and modes of delivery, if applicable)

<table>
<thead>
<tr>
<th>Depth 1</th>
<th>Depth 2</th>
<th>Standard(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Collection</td>
<td>Identify location, access &amp; reading</td>
<td>Able to use of secondary storage, access and read files</td>
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<td></td>
<td></td>
<td>Able to use of LAN to locate information, access and read files</td>
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<td></td>
<td>Able to use of web browser to access information</td>
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<td>Able to use of web portal to access information</td>
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<td></td>
<td>Collection &amp; self assessment</td>
<td>Able to collect information and transmit to PC</td>
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<td>Able to use of scanner and digital camera to transmit files to PC</td>
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<td>Able to select software and content for teaching</td>
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<td>Storing &amp; management</td>
<td>Able to manage websites information</td>
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<td>Able to manage information and file folders</td>
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<td></td>
<td>Able to use of compressed files and retrieval</td>
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<tr>
<td></td>
<td></td>
<td>Able to manage software installations and deletion</td>
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<td></td>
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<td>Able to manage troubleshooting related to hardware and software</td>
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<tr>
<th>Depth 1</th>
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<th>Standard(s)</th>
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<tbody>
<tr>
<td>Information</td>
<td>Word Processing</td>
<td>Able to edit text-based word processing</td>
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<tr>
<td>Analysis &amp;</td>
<td></td>
<td>Able to edit word processing including multimedia</td>
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<tr>
<td>Processing</td>
<td></td>
<td>materials</td>
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<td></td>
<td>Spreadsheet</td>
<td>Able to edit basic data of spreadsheet</td>
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<td></td>
<td>Able to calculate data using a function</td>
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<td></td>
<td></td>
<td>Able to create graph or table using data</td>
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<td></td>
<td>Multimedia</td>
<td>Able to modify and compile picture format</td>
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<td></td>
<td>Able to modify and compile sound format</td>
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<td>Presentation</td>
<td>Able to modify and compile text-based presentation file</td>
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<td></td>
<td>Able to modify and compile table &amp; image</td>
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<td></td>
<td></td>
<td>Able to modify and compile multimedia presentation</td>
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<tr>
<td></td>
<td>Web page</td>
<td>Able to create text-based web page</td>
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<tr>
<td></td>
<td></td>
<td>Able to create multimedia-based web page</td>
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<tr>
<td>EMIS (NEIS)</td>
<td></td>
<td>Able to understand major functions of NEIS</td>
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<td></td>
<td></td>
<td>Able to manage individual electronic authentication</td>
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<tr>
<td>Depth 1</td>
<td>Depth 2</td>
<td>Standard(s)</td>
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<tr>
<td>Information</td>
<td>Produce &amp; Share</td>
<td>Able to use output hardware such as projection TV, projector and printer</td>
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<tr>
<td>Processing &amp;</td>
<td></td>
<td>Able to find information using educational software</td>
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<td>Collaboration</td>
<td></td>
<td>Able to share files and printer over LAN</td>
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<td>Able to install plug-in software</td>
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<td></td>
<td>Communicate &amp; Collaborate</td>
<td>Able to use e-mail and web board for communication (Synchronous)</td>
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<td></td>
<td>Able to use e-mail and web board for communication (Asynchronous)</td>
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<td></td>
<td></td>
<td>Able to use messenger and chat for communication</td>
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<tr>
<td>Information</td>
<td>Information Society</td>
<td>Able to understand new trends of information society</td>
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<tr>
<td>Ethics &amp;</td>
<td>Harmful Information</td>
<td>Able to install filter software to block malicious web sites</td>
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<td>Security</td>
<td>Copyright</td>
<td>Able to understand and be aware of copyright issues</td>
</tr>
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<td></td>
<td>Privacy</td>
<td>Able to manage private authentication to protect private information</td>
</tr>
<tr>
<td></td>
<td>Internet Ethics</td>
<td>Able to comply with Internet ethic guidelines</td>
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Teacher Competencies for SMART Education: 13 Competencies and 61 Indicators

Required for teachers who perform effective education to promote key competencies of 21st century learners and to achieve educational innovation toward future education.
## Development of 28 Training Modules

Modules are like small Lego™ blocks, consisting of basic content units of training programs. Diverse training programs can be operated by combining modules per level or by theme considering training targets, directions and time.

<table>
<thead>
<tr>
<th>Concept of future education &amp; teacher's role</th>
<th>Concept of SMART education</th>
<th>Teacher competency for the practice of SMART education</th>
<th>Understanding 21C learner competencies &amp; strategies for competency promotion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participating in digital ecosystem</td>
<td>Class observing copyrights</td>
<td>Information &amp; communications ethics</td>
<td>SMART lesson design for digital natives</td>
</tr>
<tr>
<td>Building rapport with learners through SMART education</td>
<td>Organize creative SMART education programs</td>
<td>Constitute primary theme-centered SMART curriculum</td>
<td>Curricular plan by SMART education level</td>
</tr>
<tr>
<td>Learning smart learning tools</td>
<td>SMART learning environment design</td>
<td>Collaborative learning design for communication</td>
<td>Learning design for lively experience</td>
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<tr>
<td>Self-directed intelligence-type customized learning design</td>
<td>Using digital textbooks</td>
<td>Immersion in plethora of SMART contents</td>
<td>Comprehensive design for school SMART education system</td>
</tr>
<tr>
<td>SMART education design for outside school</td>
<td>Features &amp; methods of SMART education assessment</td>
<td>Learning process-centered evaluation for 21C competencies</td>
<td>SMART education &amp; on-site studies</td>
</tr>
<tr>
<td>Strategies for implementing &amp; facilitating SMART lessons</td>
<td>Methods to monitor learning process</td>
<td>How to cope with problems in SMART class</td>
<td>Constant cultivation of expertise for SMART education</td>
</tr>
</tbody>
</table>
Overview of Module Content Composition

Each module comprises: 1) purpose of module, 2) teacher competencies promoted by module, 3) learning objectives, 4) ways to use per level & by school level, 5) educational contents of module by lesson period, 6) educational methods, 7) tools used, 8) references, 9) evaluation methods, 10) training environment, & 11) instructor information.
How are trainers being accredited and monitored vis-à-vis quality standards?

- Mainly, training programs conducted through regional teacher training centers and research & information institutes under 17 Metropolitan-Provincial Offices of Education
- Training institutes received accreditation from regional educational authorities

How often is curriculum reviewed & updated?

- Revision and update should occur annually, particularly, when the affiliated system, such as the “We-Do-Rang” system (class level SNS) is updated

Is a mechanism in place to assess training needs and to provide teachers with a customized set of competency-based modules? If so, please describe.

- Consultation meetings with central level lead innovative teachers
- Teacher workshops organized by local educational authorities
- Conduct online surveys and use of SNS
Please describe how teachers’ acquired competencies are assessed and evaluated e.g. written exams, skills tests, observation, e-portfolios, interviews, self-assessments, etc. (please include exemplary instruments)

- Self diagnosis system in EDUNET
- Offline training: Training participation and observation
- Online training: Written test from item pool provided by regional educational authorities

What are the implications of teachers’ acquiring such competencies? (e.g. incentives, promotions, qualifications, etc.) Is there any mechanism in place to systematically assess, track and monitor teachers’ progress?

- Provide certificates of completion
- Incentives and promotion opportunities
Development & Distribution of Online Diagnostic Tools for Teacher Competencies

Web- & Mobile-based Online Diagnostic Tool Services

Used as tools for systematic & continuous diagnosis, management & development of teacher competencies

- Check personal scores per competency
- Compare with one’s own previous scores
- Compare with peers’ scores
  - Same school level, gender, career, teaching subject, & working area
- Feedback for necessary competency development
  - Provided with necessary educational contents & directions for self-development
2.3. Guiding Questions: Assessing & Evaluating Acquired ICT Competencies

Does the assessment & evaluation system undergo regular revision? If so, how often?
• Assessments are carried out at the end of every training program

What happens if a teacher fails the assessment & evaluation? What forms of intervention are available, if any?
• Make up opportunities (retesting)
Please include any evidence to support the effectiveness of reform or competency-based teacher training

- Support soft landing of new policies (SMART Education Plan and Digital Textbook)
- Diffusion of innovative practices by young teachers
- Spill-over effect: altered paradigms diffuse to pre-teacher institutes

Issues & Solutions: Please share any issues and challenges you faced during the process

- Induce voluntary participation
- Foster lead teachers
- Support teacher community of practice
- Diversify training modality
- Make training information available through EDUNET and SNS
- Central level guidelines vs. Local level flexibility
Teacher Professional Development

Central level
- HRD Planning
  - Policy planning

Regional level
- Teacher Training
- Implementation & diffusion
- Operation support
  - Training program by target group
  - Guideline for ICT use in teaching & learning

School level
- Take root
  - Link with school curriculum & Use of ICT in teaching & learning at school level

Policy
- Planning & Research
  - ICT Standards (National level)
  - ICT Curriculum Standard

Development & Dissemination
- Nurture central level lead teachers
  - Training program (Face-to-face, e-Learning)
  - ICT contest
  - Teacher Community
  - Certificate ICT literacy

Diffusion & Taking root
- School level training

Monitoring & Evaluation
- Develop evaluation criteria & Quality Assurance
  - Monitoring & Evaluation
  - Evaluation

Impact

Policy planning
ICT Standards (National level)
ICT Curriculum Standard
Nurture central level lead teachers
Training program (Face-to-face, e-Learning)
ICT contest
Teacher Community
Certificate ICT literacy
School level training
Evaluation

KERIS
Policy Agenda of Teacher ICT Professional Development

1st
ICT literacy
ICT literacy training
ICT literacy

2nd
ICT literacy
Cultivate lead teachers
Cultivate best practices
Public Awareness

3rd
Develop ISST Standard
Teachers self development
Establish e-Learning Training Center
Law and regulations for e-Learning Training Center

4th
Adopt ICT in teaching
Pedagogy training
Expand e-Learning training
Teachers Community of Practice
Foster favorable environment

Teacher training
Root in the ground
Infrastructure
3.1. Recommendations & Policy Implementations

Building League of Innovative Teachers

- League of innovative teachers, league of innovative schools, league of innovative communities and league of innovative citizens

Nurture and Support Teachers Community of Practice

- Teachers’ receptiveness and acceptance are key
- National e-Portal service for sharing teaching-learning materials (National OER portal)

Enhancing Responsible and Safe Use of ICT

- Transform education culture and environment: overcome test and cramming education orientation

Spill-over effect: from policy to practice, from education to socio-economic development and from cognitive learning outcomes to non-cognitive learning outcomes
3.1. Recommendations & Policy Implementations

Integrate new competencies into curricula and into assessment frameworks

- New skills and ICT literacy: coding and programming skills

Implement new forms of continuous professional development as a long-term national plan to nurture digital environments and lifelong learning

- Harmony and balance: between analogue and digital approaches, between long-term commitments to policy and gradual improvements, between radical innovation and systematic transformation and between top-down and bottom-up approaches