

# Future Competences in IEA's Studies

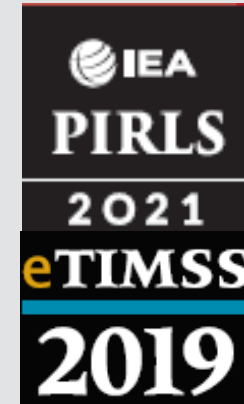
Moscow, February 21, 2018

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**IEA**

*Researching education, improving learning*



# Overview

- IEA's study curricular model
- Example on ICT use in education
- IT impact on learning & assessment
- Foundational skills matter
- Using IT in assessment
- Directions to future competences
- Cautious conclusion

# IEA's Study Curricular MODEL

- Intended Curriculum
- Implemented Curriculum
- Achieved Curriculum



**IEA strives in achieving consistency between instruction and assessment (testing).**

## Example (using the model for ICT in education)

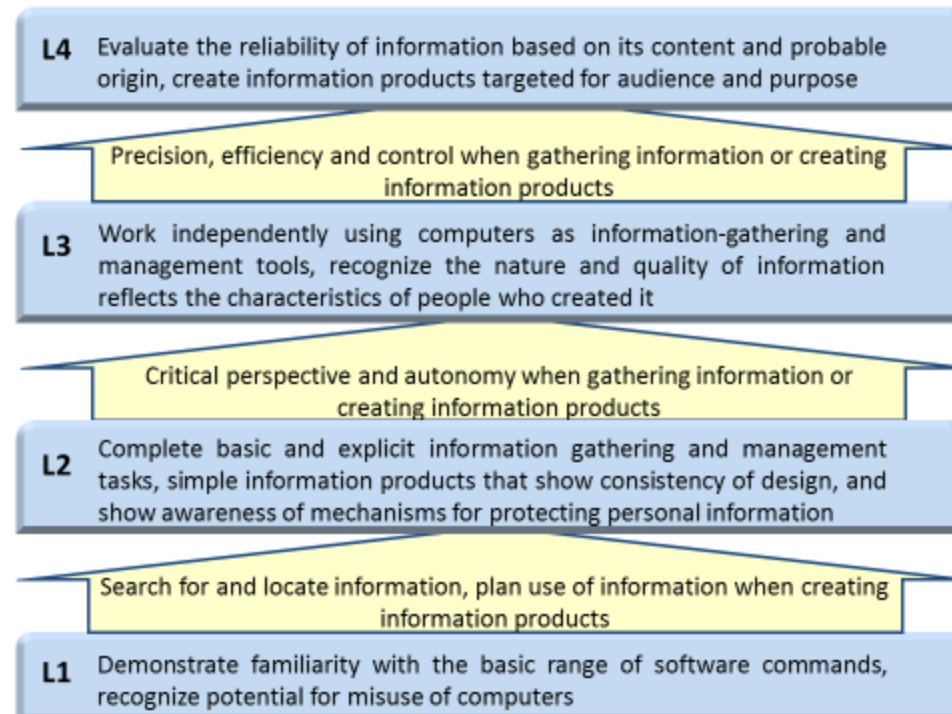
- Computers in Education Study (**COMPED**) described and analyzed various aspects of the introduction and use of computers in schools in the participating countries (Stage 1 in **1989** and Stage 2 in **1992**).
- Second Information Technology in Education Study (**SITES** – Modules 1 to 3) ranged from a basic comparative statistics, via a qualitative study of innovative pedagogical practices, towards examination how teachers and students were using ICT in 2006, and investigated the extent to which certain pedagogical practices considered conducive to the development of “21st century” skills were present.

## Example (using the model for ICT in education)

- *How well are students prepared for study, work, and life in the digital age? (ICILS 2013 & 2018)*
- The study measured international differences in students' computer and information literacy (CIL).
- This type of literacy refers to students' ability to use computers to investigate, create, and communicate in order to participate effectively at home, at school, in the workplace, and in the community.
- Mapping between **Digital Competence** and ICILS by JRC B4 (Riina Vuorikari) showed their compatibility
- Computational Thinking added in ICILS 2018 edition

## Example (using the model for ICT in education)

CIL - Competency Levels provided answer to this question: ***Digital natives or just kids with smartphones?***



Although students have grown up in the digital age, it does not necessarily imply that they are digital natives. In all the participating countries, on average 17% of the students did not achieve a level 1. On average, only 2% of the students achieved a level 4 with a maximum of 5% in Korea.

# IT Impacts Learning & Assessment

- MORE MEDIA-RICH and DATA-INTENSE
- HOW superior to WHAT (type & search is the must)
- Instruction & assessment **CAN** be personalized (*adaptive*)
- Workforce vs. AI (AI does not READ with comprehension, AI compares and goes with the most frequent option)

# Foundational Skills Matter

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- Reading, Mathematics & Science (PIRLS & TIMSS)
- Social and Civic Competences (ICCS)
- Digital Competence (ICILS)



- Communication & languages (mother & foreign)
- Cultural Awareness and Expression
- Agency (sense of initiative and entrepreneurship)
- Ability to keep **LEARNING** (*alone & in a group*)



# Using IT in Assessment (by IEA)

## ICILS 2013

- 1) ePIRLS 2016 (reading online – reading for information)
- 2) eTIMSS 2019 (PSIs improving coverage of the TIMSS science framework; plus the P&P items transferred to a format suitable for CBA)

All digital  
PIRLS & TIMSS  
(from 2021)

The screenshot displays the ePIRLS Online Reading 2016 interface. The main content area features an article titled "Mars Exploration Program" with a sub-section "The Rover Called Curiosity". The article text states: "Like a person, Curiosity has different body parts. These help the rover explore the surface of Mars almost like a person would." Below the text is an image of the Curiosity rover with its parts labeled: ARM and HAND, BODY, EYES, and WHEELS and LEGS. A sidebar on the right contains a "Class Project" section titled "ePIRLS Class Project" by Mr. Webster. The project includes a reading task (16) that asks students to match parts of the rover with their functions. The task is presented as a matching exercise with four options (A, B, C, D) and a list of functions to be assigned to each part.

**ePIRLS Online Reading 2016**  
http://www.mars-exploration-program.org/rover-called-curiosity

The Solar System Mars Exploration Program

**Mars Exploration Program**

Home Getting to Mars Missions Seeking Signs of Life Rover Called Curiosity

**The Rover Called Curiosity:** Like a person, Curiosity has different body parts. These help the rover explore the surface of Mars almost like a person would.

**Take a Walk**

ARM and HAND BODY EYES WHEELS and LEGS

Curiosity has a robot arm and hand. It holds and uses tools so it can collect samples of rocks and dirt.

**And See the World**  
Life On A

**ePIRLS Class Project**  
Mr. Webster  
Click on the body parts of Curiosity to read about what each part does.

**16.**  
Match each part of Curiosity with something that the part does. Click on the drop-down menus.

Student

**A. Arm and Hand**  
What does this part do?

**B. Body and Instruments**  
What does this part do?

**C. Eyes**  
What does this part do?

**D. Wheels and Legs**  
What does this part do?

take pictures  
send data to Earth  
analyze rocks  
use the Sun's energy  
maintain balance  
collect rocks

# Directions to FUTURE COMPETENCES

## OLD CHALLENGES

- FOUNDATIONS (the old foundational skills in the new & ever-changing technology rich environment)
- SELF-AWARENESS & SELF-EFFICACY (dealing with emotions, gaining GRIT)

## New CHALLENGES

- *Disconnect* from our social & natural origin (while connected online, social media +/-)
- Continuous changes/*disruption*

# Cautious Conclusions

- **WHY comes first (what & how will follow)**
- **The FUTURE is drafted NOW**
- **Innovations can be observed & scaled up**
- **Coalitions, agreement & accountability can (and must) be built across ALL the stakeholders engaged in education**
- **Teachers' assignment & engagement is a KEY to future changes**

Thank you!

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(Questions and comments  
are WELCOME!)



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