



# International Computer and Information Literacy Study (ICILS):

## Development of digital skills in the school system: An international glance

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Education and students' digital competencies: an international glance

# Aim

- ICILS aims to:
  - investigate, in a range of countries, the ways in which young people are developing computer and information literacy (CIL) to support their capacity to participate in the digital age.

# Summary Research Questions

1. What variations exist between countries, and within countries, in student computer and information literacy?
2. What aspects of schools and education systems are related to student achievement in computer and information literacy?
3. What characteristics of students' technological backgrounds are related to student achievement in computer and information literacy?
4. What individual/personal student characteristics are related to student achievement in computer and information literacy?

# Participating Countries

- Australia, Canada (selected provinces), City of Buenos Aries (Argentina), **CHILE**, Czech Republic, Denmark, Germany, Hong Kong SAR, Croatia, Republic of Korea, Lithuania, Netherlands, Norway, Poland, Russian Federation, Slovak Republic, Slovenia, Switzerland, Thailand and Turkey.

# Population & Sampling

- Population
  - Grade 8 (~14 year olds)
- Sample
  - Two stage PPS sample of schools
  - Minimum 150 schools per country
  - 20 students randomly selected from each grade
  - 15 randomly selected teachers of the target grade in each school

# What is Computer and Information Literacy?

- CIL is the student achievement construct being measured in ICILS
- CIL > (technical competence + intellectual capacity) because of relationship to context and communicative purpose
- CIL focuses on *real world* uses
- Stronger (slightly) emphasis on understanding computer use than many described ICT or Digital Literacy constructs

# What is CIL?

Computer and information literacy refers to **an individual's 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.**

## Strand 1

*Collecting and managing information*

### Aspect 1.1

Knowing about and understanding computer use

### Aspect 1.2

Accessing and evaluating information

### Aspect 1.3

Managing information

## Strand 2

*Producing and exchanging information*

### Aspect 2.1

Transforming information

### Aspect 2.2

Creating information

### Aspect 2.3

Sharing information

### Aspect 2.4

Using information safely and securely

# Strand 1: Collecting and managing information

## Aspect 1.1: Knowing about and understanding computer use

- What are computers, what do they do, how do they do it, what uses do we have for them, what different softwares exist for different purposes?... NOT PROGRAMMING
- Execute basic commands (generic)
- Becoming more prominent in ICT-related construct definitions



# Strand 1: Collecting and managing information

## Aspect 1.2: Accessing and evaluating information

- Technical and cognitive processes of investigation *using known research questions* (different to the broader sense of *investigation*)
- Unique challenges in computer-based rich contexts
- Filtering, evaluating usefulness, evaluating integrity
- Selecting information, explaining decisions

# Strand 1: Collecting and managing information

## Aspect 1.3: Managing information

- Relates to student use of information as a commodity (independent of detailed content)
- What can be done with information, how is it organised, what architectures work for different information types, how is an information structure best managed?
- Establishing file structures, sorting and filtering data, designing data structures

# Strand 2: Producing and exchanging information

## Aspect 2.1: Transforming information

- Altering the way information is presented (to make it easier to understand)
- Text to graphics, data to tables/charts, ideas to video

# Strand 2: Producing and exchanging information

## Aspect 2.2: Creating information

- Design (and make) a new information product for a specified purpose and audience.
- Make a poster using graphics software, make a presentation, edit together film clips and add captions to communicate a message.

# Strand 2: Producing and exchanging information

## Aspect 2.3: Sharing information

- Interaction with others
- Collaborative workspaces, social networking, email, messaging etc.
- Purposeful communication with consideration of audience

## Strand 2: Producing and exchanging information

### Aspect 2.4: Using information safely and securely

- information security (e.g. passwords, phishing or other techniques of deception)
- consequences of publicly available personal information
- internet advertising techniques

**SIMCE ICT SUB  
DIMENSION AND SKILLS**

**ICILS SASPECTS**

**SIMCE ICT SUB  
DIMENSION AND SKILLS**

**Information as a source:**

- Define the information required
- Search for information
- Select information
- Assess information
- Organize digital information

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- Integrate information
- Understand information
- Analyze information
- Represent information
- Create new information

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**Communication:**

- Know how to transmit information to others

**Social impact:**

- Responsible use of ICTs

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# ICILS Instruments: Student test

- Computer based
- Four 30 minute modules
- Each student completes two modules
- Fully balanced rotated design
- Authentic tasks: small and large
- School-based contexts (subject-based and other)
- Emulated and 'live' software applications

# ICILS Instruments

## Student questionnaire

- Background characteristics
- Computer use audit (in and out of school)
  - Experience and frequency
  - Operating systems
  - ‘Study-related’ software use and activities
  - Social communications
  - Recreation
  - In subjects in school (frequency)

# ICILS Instruments

## Student questionnaire

- Computer use perceptions and attitudes
  - Information literacy skills (using a computer) learned at school
  - Who taught students different computer uses
  - Proficiency completing different tasks
  - Enjoyment/confidence



# ICILS Instruments

## Teacher questionnaire

- Teacher questionnaire
  - Background characteristics (including what they teach)
  - Confidence in using computers
  - Use of computers in teaching (software types, student and teacher activities)
  - Attitudes to the usefulness of computers in teaching/learning
  - Impediments to computer use
  - Collaborative work practices
  - Participation in professional learning specific to ICT use in teaching

# ICILS Instruments

## School questionnaires

- ICT-coordinator
  - Role and experience with ICT
  - Technology and software resources available for teaching and learning
  - School ICT infrastructure
  - Technical support in school
  - Pedagogical support for teaching with ICT available
  - Obstacles to use of ICT in school

# ICILS Instruments

## School questionnaires

- Principal questionnaire
  - Principal characteristics and ICT experience/use
  - School characteristics
  - Perception of value of ICT use for learning
  - Locus of decision-making for ICT aims in school
  - Monitoring ICT use in school
  - Responsibility for school ICT resources
  - School ICT policies
  - Extent of teacher participation in professional learning

# ICILS Instruments

## System data

- National Context Survey
  - System-level policy for ICT in schools
  - System-level practices for ICT in schools

# Publications

- Assessment Framework – Late 2013
- International Report – Late 2014
- Technical Report and International Database – Late 2014

# Further Information

- Project website: [icils.acer.edu.au](http://icils.acer.edu.au)
- IEA secretariat: <http://www.iea.nl/>
- Contacts: [frailon@acer.edu.au](mailto:frailon@acer.edu.au), [icils@acer.edu.au](mailto:icils@acer.edu.au)

Thank you