

IEA studies

NAGB meeting
Washington, November 2017

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Researching education, improving learning

Overview

- IEA
- TIMSS
- PIRLS
- ICILS
- ICCS

The IEA

- Non-governmental research organization
- Independent, international cooperative of national research institutions and governmental research agencies
- Founded in 1958, more than 30 research studies of cross-national achievement
- Large-scale comparative studies of educational achievement and other aspects of education
- More than 60 member country institutions, nearly 100 participating countries in IEA studies

IEA studies

- Enable countries to review the achievement of their students in an international context
- Compare their students' achievement to achievement of students in other countries
- Evaluate the relationship of students' achievement with other factors
 - student background (SES, gender,...),
 - their teachers' background (education, teaching style,...),
 - school background (school SES, school infrastructure, leadership style,...)
 - Community background (rural/urban,...)
- International large scale assessments complement national assessments and system monitoring activities



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TIMSS

Trends in International Mathematics
and Science Study

TIMSS 2015 and TIMSS Advanced 2015

IEA's TIMSS assesses trends in mathematics and science achievement every four years in countries around the world.

Nearly 60 countries

**TIMSS
Advanced
2015**

9 Countries
• Final Year of

7 Benchmarking Participants

- Grades 4 and 8
- Mathematics and Science

3 grade levels

30,000 Students
assessed around the world in 2015

20 Years of Achievement Trends

4th Grade
17 Countries



For 20 years

Keeping TIMSS up to date

- But changes in the curriculum also pose a challenge to the assessment since TIMSS is based on the curriculum model (intended – implemented –achieved)
- Usually: If you want to measure trends, don't change the measure
- BUT if an assessment is not changed but the curricula are, do we really measure the same?
- So, for each cycle the countries' curricula are reviewed and the study framework slightly adapted

eTIMSS 2021

- TIMSS is offered in the current cycle also electronically
- Will include Problem Solving and Inquiry items which are scenario based



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PIRLS

Progress in International Reading
Literacy Study

PIRLS

International Results in Reading Coming in 2017: A Guide to PIRLS & ePIRLS 2016

Nearly 50
countries

IEA's PIRLS assesses trends in reading comprehension at Grade 4 every five years in countries worldwide.

**PIRLS
2016**

Since 15
years

15 years of
Measurement Trends

50 Countries

11 Benchmarking
Participants

- **Reading Achievement:**
Literary and informational



- **Online Reading:**
Read, interpret, and critique information



- 15,000 teachers and 11,000 schools participated

Results com
out on
December 5th

ePIRLS



In this class project, you will be doing an online study of rainforests. You are going to research how a rainforest is an environment that supports an amazing community of special plants and animals.



In this class project, you will be doing an online study of scientists' efforts to explore the planet Mars, Earth's neighbor in the solar system.



In this class project, you will be doing an online study about the ancient city of Troy.



In this class project, you are going to do an online study of how some animals need to migrate, or move from place to place, in order to find food and water. You are going to research how zebras and wildebeests migrate thousands of miles each year to survive.



In this class project, you will be doing an online study of the interesting life and history of the first female doctor, Elizabeth Blackwell.

Taking the ePIRLS Assessment

Included on Website December 5

Two ePIRLS tasks – Mars, Elizabeth

- Blackwell ePIRLS Teacher Avatar
- Interactive Passages
- PIRLS questions
- Scoring guide to see how you did

The screenshot displays the ePIRLS Online Reading 2016 interface. The main content area shows a page titled "Mars Exploration Program" with a sub-header "The Rover Called Curiosity". The text reads: "Like a person, Curiosity has different body parts. These help the rover explore the surface of Mars almost like a person would." Below this is an image of the Curiosity rover with its arm and hand highlighted in red. The interface includes a progress bar on the left (1-20) and a "TIME LEFT 00:00" indicator. On the right, a "Class Project" section titled "Mr. Webster" asks the user to match parts of Curiosity with functions. The task is numbered 16 and includes a student avatar and a list of options for 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.

ARM and HAND BODY EYES WHEELS and LEGS

Take a Walk

And See the World

Life On A

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

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



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LaNA

Literacy and Numeracy Assessment

LaNA: IEA's Literacy and Numeracy Assessment

- Assessment of literacy and numeracy at end of primary school (4th – 6th grades)
- Provides literacy and numeracy achievement results that can be compared internationally
- Designed for countries where TIMSS and PIRLS as well as PIRLS Literacy and TIMSS numeracy are too difficult



LaNA

Literacy

- Short vocabulary test
- Reading comprehension – read passages and answer questions about them
- Passages from PIRLS Literacy 2016 assessment
- Only multiple choice items

Numeracy

- Short test of basic facility with number
- Items based on TIMSS Numeracy
- Only multiple choice items



Brave Charlotte

By Anu Stohner
Illustrated by Henrike Wilson

Charlotte was different from all the other sheep right from the start. When all the other lambs just stood shyly by their mothers, Charlotte was leaping around, ready for adventure.

Charlotte lived with all the other sheep on a hillside far from the farm. They had a shepherd to look after them and he had an old dog named Jack. Jack tried to keep Charlotte under control, but she wasn't scared of him.



1. Why was Charlotte different?
 - (A) She stood by her mother.
 - (B) She was shy.
 - (C) She was ready for adventure.
 - (D) She was on the hillside.

2. Who was Jack?
 - (A) A sheep
 - (B) A shepherd
 - (C) An old dog
 - (D) A farmer



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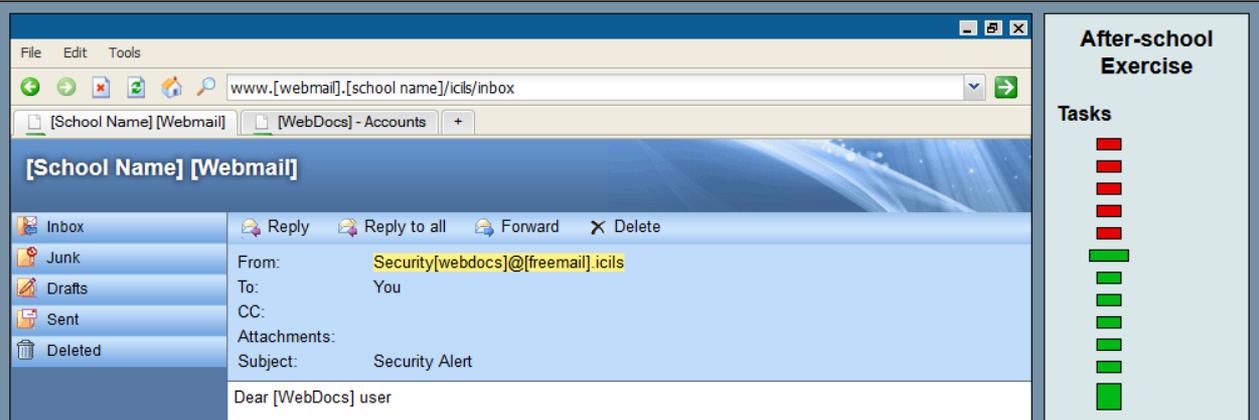
ICILS

International Computer and Information
Literacy Study

ICILS

- Assesses computer literacy competencies of grade 8 students
- First time conducted in 2013 (without US participating)
- ICILS 2018 on its way (this time with US participating!)
- ICILS also assess students' computational thinking abilities

ICILS 2013: Sample items



The screenshot shows a webmail interface. The address bar displays `www.[webmail].[school name]/icils/inbox`. The left sidebar shows folders: Inbox, Junk, Drafts, Sent, and Deleted. The main content area shows an email with the following details:

- From: Security[webdocs]@[freemail].icils
- To: You
- CC:
- Attachments:
- Subject: Security Alert

The email body begins with "Dear [WebDocs] user". The "From" field and the "Subject" line are highlighted in yellow. To the right of the email is a sidebar titled "After-school Exercise" with a "Tasks" section containing a vertical stack of ten red progress bars.

The email is trying to trick you into giving your [WebDocs] password to the sender.

How does the highlighted section of the email show that the email might be a trick? Explain your answer.

ICILS 2013: Sample items

File Edit Tools

www.[webdocs].icils/documents/after-school-exercise-template

[WebDocs] - Documents [HealthyLiving]

[WebDocs] - Documents Documents | Edit Profile | Sign Out

Settings

Sharing

Tools

Done

Start [WebDocs] - D...

After-school Exercise

Tasks

Create a poster to advertise the after-school exercise program at your school. Your poster should make people want to participate in the program.

Choose the most suitable exercise program from the websites provided. The program should take about 30 minutes and it should be suitable for school students over the age of 12.

You must include the information shown with the assessment criteria.

Click on to review the assessment criteria.

Click on when you have completed this task.

ICILS 2013: Selected results

- Girls scored higher in almost all countries
- Boys' self efficacy was higher in almost all countries
- Computers were frequently used by students in schools
 - BUT mostly for simple tasks (using word, power point, search for information,...) but not for innovative learning
 - BUT students were rarely taught how to use computers → student's achievement differed by SES background more than in other subjects
- IN ALL COUNTRIES the major obstacle to use computers and teach how to use them was teachers not feeling comfortable and self confident in the usage and teaching of computer skills (reported by students, principals, technical coordinators and TEACHERS)



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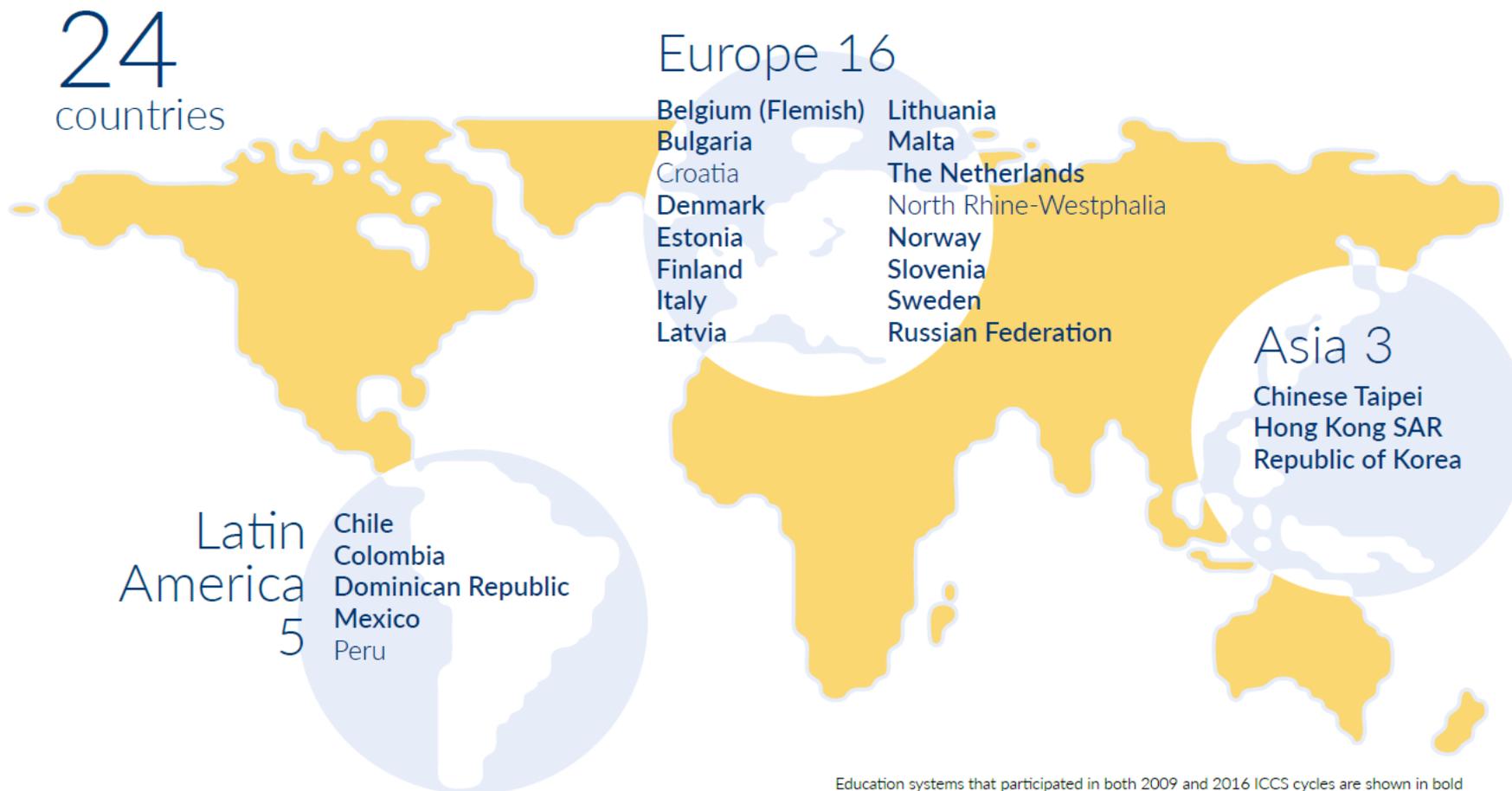
ICCS

International Civic and Citizenship Education Study

ICCS

- ICCS investigates 8th grade student's civic knowledge, civic attitudes and the level of their civic engagement
- Fourth IEA study on civic and citizenship after 1971, 1999, and 2009
- Next cycle launches in 2018 with the main survey to be conducted in 2022
- ICCS 2022 will also emphasize global citizenship competencies

ICCS 2016



ICCS 2016

Table 3.9: Country averages for civic knowledge, years of schooling, average age, Human Development Index, and percentile graph

Country	Years of schooling	Average Age	Civic Knowledge					Average scale score	HDI
			250	350	450	550	650		
Denmark†	8	14.9							586 (3.0) ▲ 0.93
Chinese Taipei	8	14.1							581 (3.0) ▲ 0.74
Sweden ¹	8	14.7							579 (2.8) ▲ 0.91
Finland	8	14.8							577 (2.3) ▲ 0.90
Norway (9) ¹	9	14.6							564 (2.2) ▲ 0.95
Estonia ¹	8	14.9							546 (3.1) ▲ 0.87
Russian Federation	8	14.8							545 (4.3) ▲ 0.80
Belgium (Flemish)	8	13.9							537 (4.1) ▲ 0.90
Slovenia	8	13.8							532 (2.5) ▲ 0.83
Croatia	8	14.6							531 (2.5) ▲ 0.89
Italy	8	13.8							524 (2.4) ▲ 0.89
Netherlands†	8	14.0							523 (4.5) 0.92
Lithuania	8	14.7							518 (3.0) 0.85
Latvia ¹	8	14.8							492 (3.1) ▼ 0.83
Malta	9	13.8							491 (2.7) ▼ 0.86
Bulgaria	8	14.7							485 (5.3) ▼ 0.79
Chile	8	14.2							482 (3.1) ▼ 0.85
Colombia	8	14.6							482 (3.4) ▼ 0.73
Mexico	8	14.1							467 (2.5) ▼ 0.76
Peru	8	14.0							438 (3.5) ▼ 0.74
Dominican Republic	8	14.2							381 (3.0) ▼ 0.72
ICCS 2016 Average		14.4	Below D	D	C	B	A		517 (0.7)

ICCS 2016

Students' trust in public institutions and the media

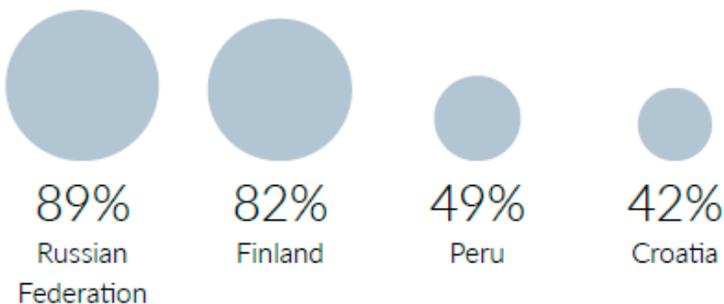


National Government

TREND

2016	↗	67%
2009		63%

Latvia	↗	+ 27%
Belgium (Flemish)	↗	+ 21%
Chile	↘	- 15%
Italy	↘	- 17%

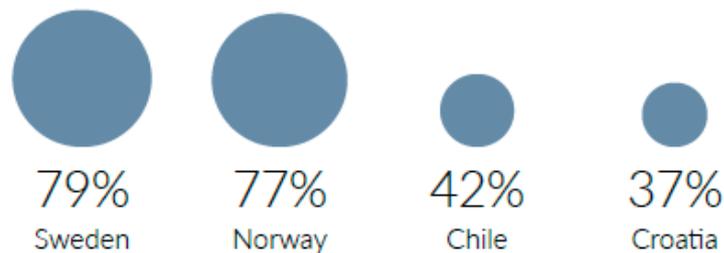


Parliament

TREND

2016	↗	62%
2009		56%

Latvia	↗	+ 26%
Belgium (Flemish)	↗	+ 20%
Italy	↘	- 9%
Chile	↘	- 12%



ICCS 2016

Students' trust in public institutions and the media



Political Parties

TREND

2016	↗	46%
2009		42%

Chinese Taipei	↗	+ 21%
Lithuania	↗	+ 20%
Colombia	↘	- 7%
Italy	↘	- 8%



66%
Finland



61%
Sweden



28%
Colombia



27%
Croatia

Traditional Media (TV, radio, newspapers)

TREND

2016	↘	59%
2009		62%

zero to minor gains	↗	+ 0-2%
Bulgaria	↘	- 9%
Chile	↘	- 12%
Latvia	↘	- 14%



82%
Finland



78%
Dominican
Republic



44%
Chinese
Taipei



41%
Russian
Federation

ICCS 2016

The majority of global threats perceived by the students are environment-related

related to
environment



Pollution

ICCS 2016 Average 76%

Top-scoring in

Chile 88%
Lithuania 86%

Water Shortages

ICCS 2016 Average 65%

Top-scoring in

Colombia 88%
Chile 85%

Food Shortages

ICCS 2016 Average 62%

Top-scoring in

Colombia 88%
Chile 55%

Climate Change

ICCS 2016 Average 55%

Top-scoring in

Belgium 72%
Sweden 68%



Terrorism

ICCS 2016 Average 66%

Top-scoring in

Croatia 81%
Russian Federation 78%



Infectious diseases

ICCS 2016 Average 59%

Top-scoring in

Chile 74%
Lithuania 73%



Poverty

ICCS 2016 Average 53%

Top-scoring in

Chile 73%
Slovenia 65%

49%

of the students view making personal efforts to protect the **environment** as a "very important" part of responsible citizenship.

ICCS 2016 – further selected results

- Students' civic knowledge is in all countries associated with
 - Expected electoral participation
 - Expected participation in illegal activities (negatively!)
- Generally, across participating countries students had positive perceptions of the openness of their classroom climates for discussions of political and social issues. This degree of openness was positively associated with students' interest in political and social issues, students' expected level of education and their civic knowledge.

Thank you!

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