The importance of soft and cross-subject skills

Moscow Global Forum
"City for Education“, August 2019

Dirk Hastedt

www.iea.nl

IEA

Researching education, improving learning

Overview

- Introduction to IEA
- Soft skills – what are they?
- How IEA measures soft skills

Introduction to IEA

International Association for the Evaluation of Educational Achievement

Non-governmental research organization, founded in 1958.

Independent, international cooperative of national research institutions and governmental research agencies.

Conducts large-scale comparative studies of educational achievement and other aspects of education.

More than 60 member country institutions, nearly 100 education systems participate in IEA studies.

What IEA measures

IEA

Softskills – what are they?

Soft skills are a combination of people skills, social skills, communication skills, character or personality traits, attitudes, career attributes, social intelligence and emotional intelligence quotients, among others, that enable people to navigate their environment, work well with others, perform well, and achieve their goals with completing hard skills.
WIKIPEDIA

A set of intangible personal qualities, traits, attributes, habits and attitudes that can be used in many different types of jobs. Examples of soft skills include: empathy, leadership, sense of responsibility, integrity, self-esteem, self-management, motivation, flexibility, sociability, time management and making decisions
UNESCO IBE

Skills that are cross-cutting across jobs (see Job-specific skills) and sectors (see Sector-specific jobs) and relate to personal competences (confidence, discipline, self-management) and social competences (teamwork, communication, emotional intelligence)
EU COMMISSION

Examples of soft skills include: empathy, leadership, sense of responsibility, integrity, self-esteem, self-management, motivation, flexibility, sociability, time management and making decisions
OECD

IEA

Soft skills: what are they?

- Definitions vary, no common understanding
- Agreement: Importance of soft skills! In school and in later life
- But are they new or just more important than ever?
- I argue: Good educators around the world have always paid attention to soft skills and taught them to their students
- Soft skills are usually learned and applied within a specific context or content domain

Cognitive domains in TIMSS

Trends in International Mathematics and Science Study

TIMSS assesses student skills in:

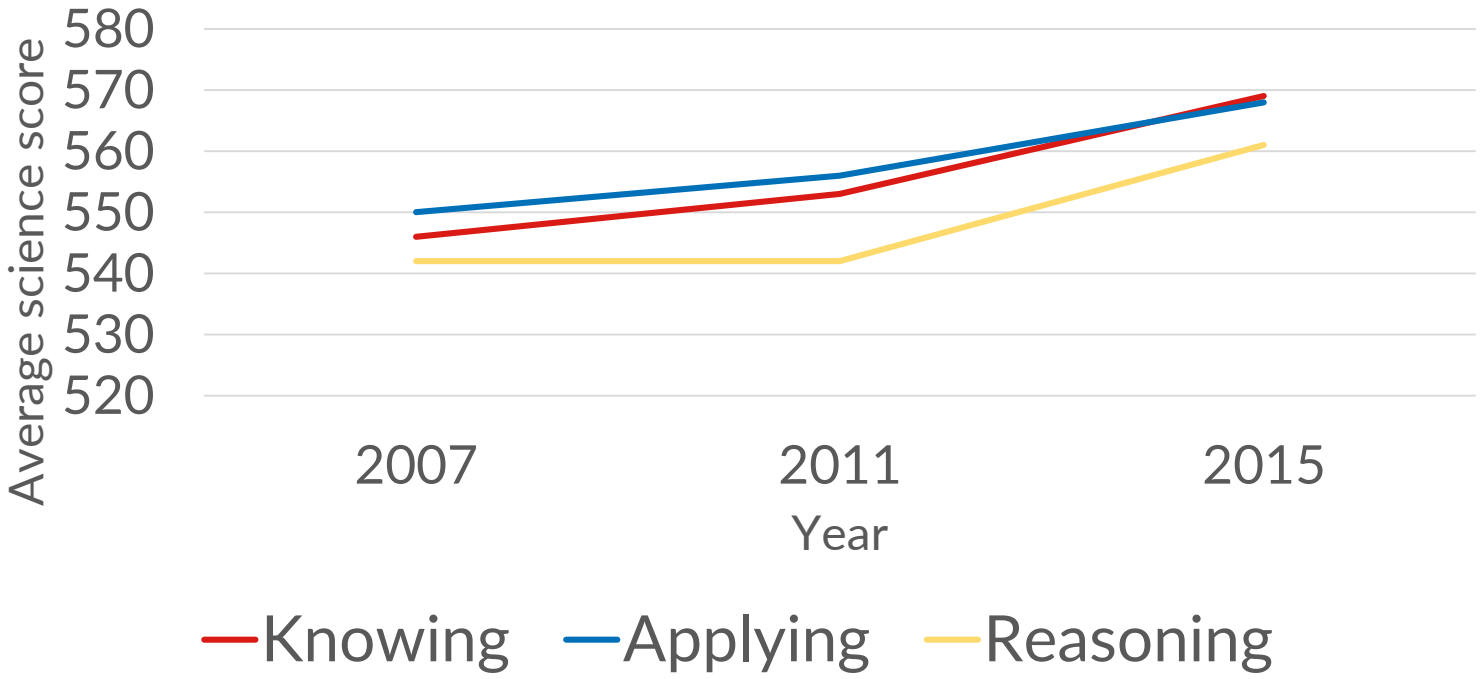
- Knowing
- Applying
- Reasoning

In the context of mathematics and science

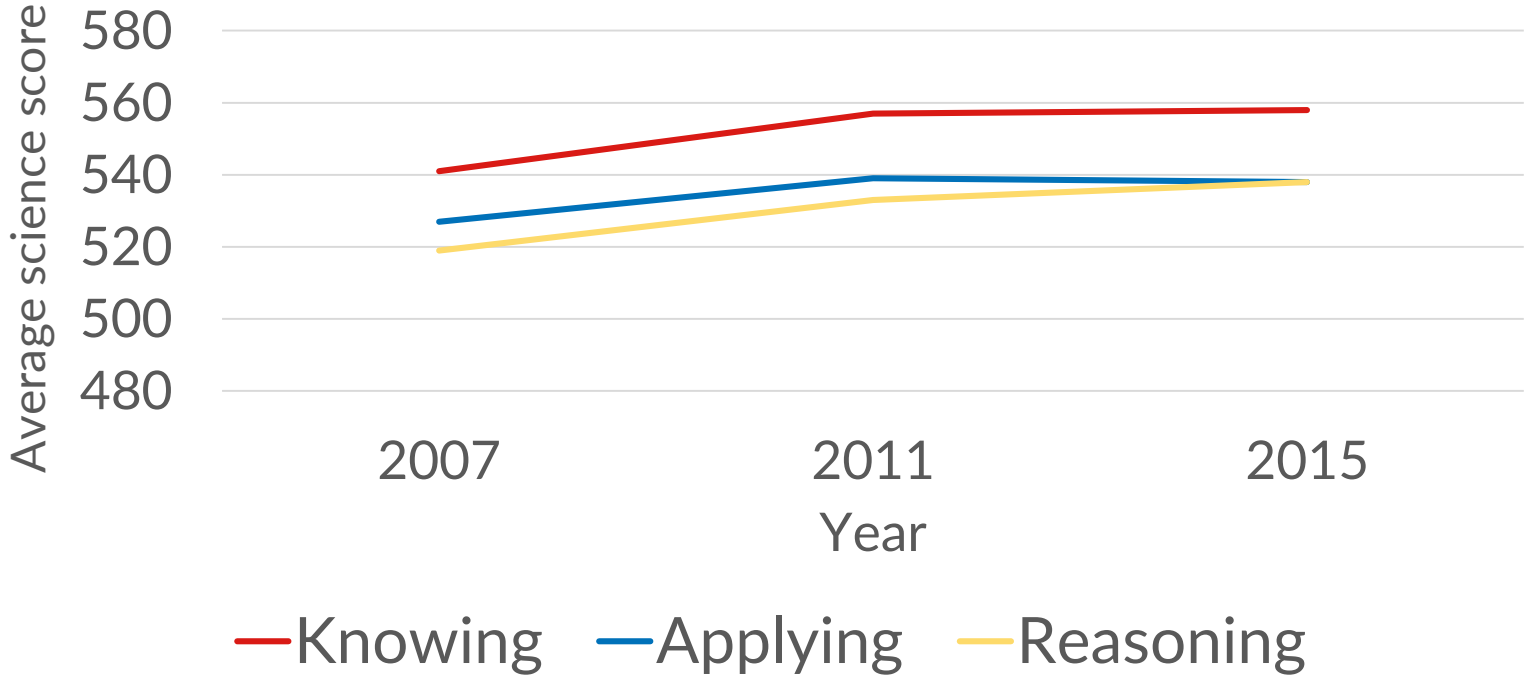
TIMSS Science cognitive domain: Reasoning

Analyze	Identify the elements of a scientific problem and use relevant information, concepts, relationships, and data patterns to answer questions and solve problems.
Synthesize	Answer questions that require consideration of a number of different factors or related concepts.
Formulate Questions/ Hypothesize/Predict	Formulate questions that can be answered by investigation and predict results of an investigation given information about the design; formulate testable assumptions based on conceptual understanding and knowledge from experience, observation, and/or analysis of scientific information; and use evidence and conceptual understanding to make predictions about the effects of changes in biological or physical conditions.
Design Investigations	Plan investigations or procedures appropriate for answering scientific questions or testing hypotheses; and describe or recognize the characteristics of well-designed investigations in terms of variables to be measured and controlled and cause-and-effect relationships.
Evaluate	Evaluate alternative explanations; weigh advantages and disadvantages to make decisions about alternative processes and materials; and evaluate results of investigations with respect to sufficiency of data to support conclusions.
Draw Conclusions	Make valid inferences on the basis of observations, evidence, and/or understanding of science concepts; and draw appropriate conclusions that address questions or hypotheses, and demonstrate understanding of cause and effect.
Generalize	Make general conclusions that go beyond the experimental or given conditions; apply conclusions to new situations.
Justify	Use evidence and science understanding to support the reasonableness of explanations, solutions to problems, and conclusions from investigations.

Russian Federation Science Grade 4



Russian Federation Science Grade 8

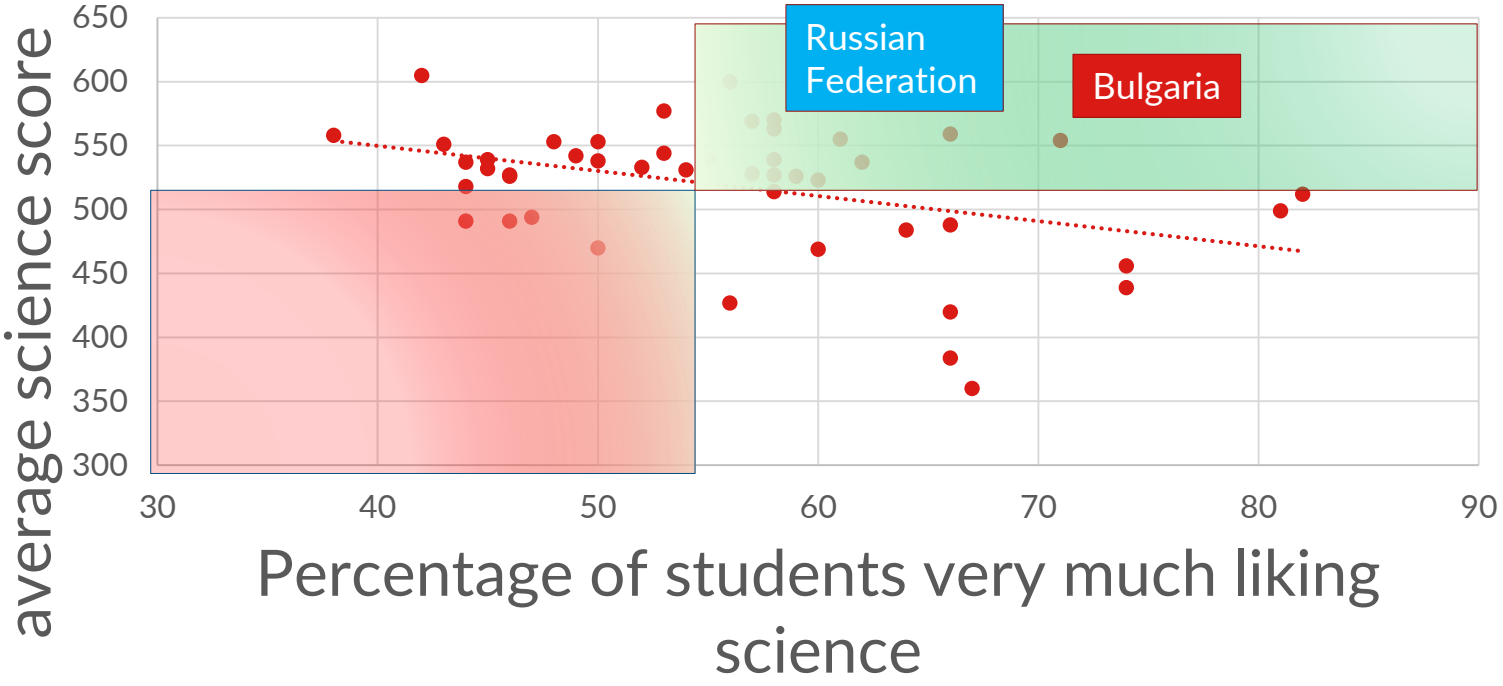


TIMSS background scales

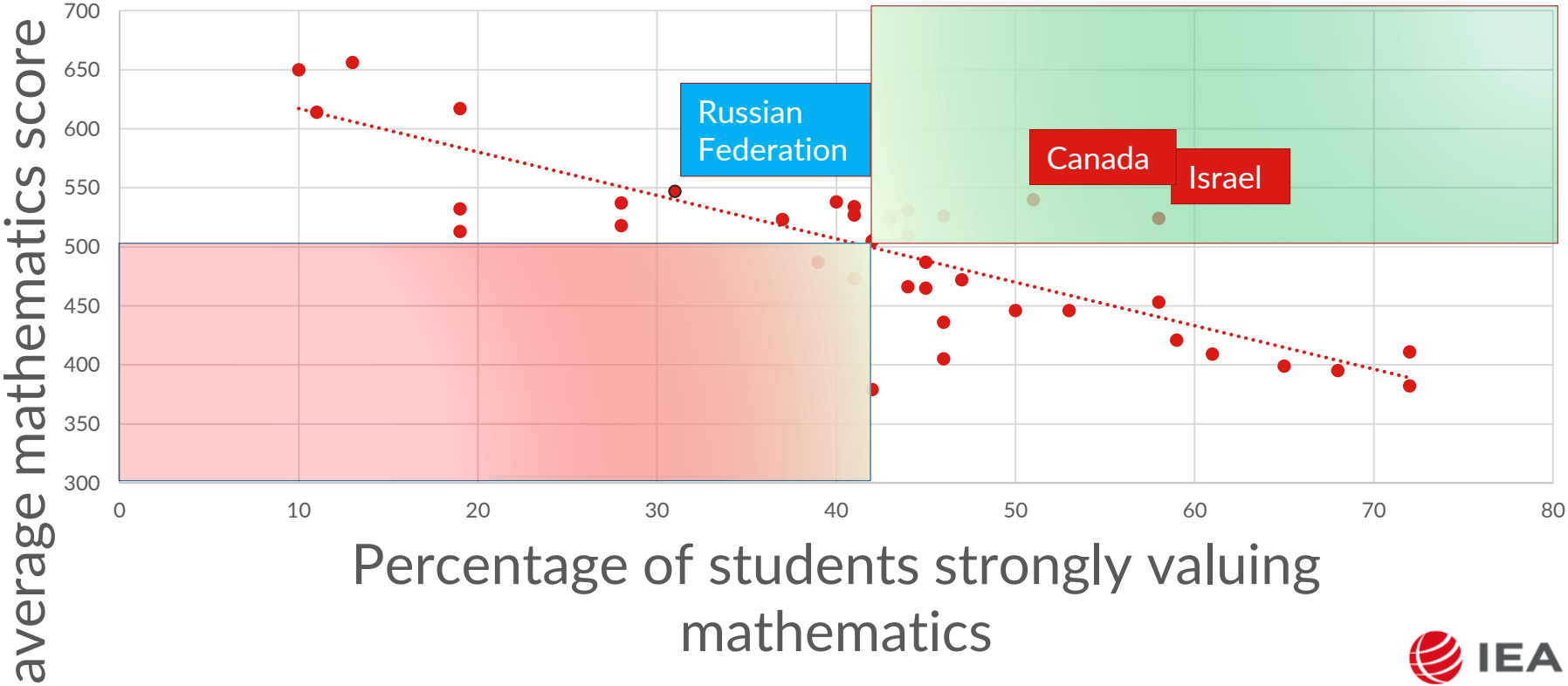
TIMSS also has scales on

- **Valuing mathematics and science**
  ("It is important to learn mathematics to get ahead in the world"; "It is important to do well in mathematics"; "I think mathematics will help me in me in my daily life")
- **Enjoyment of learning mathematics and science**
  ("I enjoy learning mathematics"; "I like to solve mathematics problems"; "I look forward to mathematics lessons")
- **Self confidence in mathematics and science**
  ("I usually do well in mathematics"; "I am good at working out difficult mathematics problems")

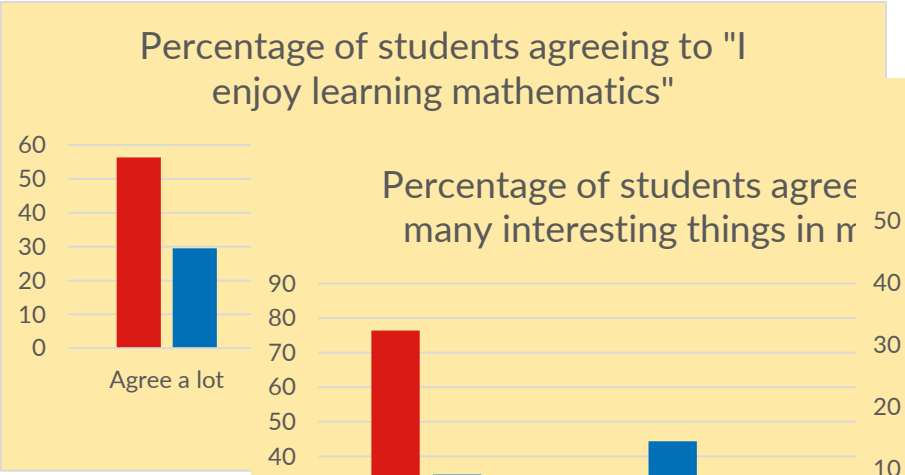
Students like learning science and their achievement

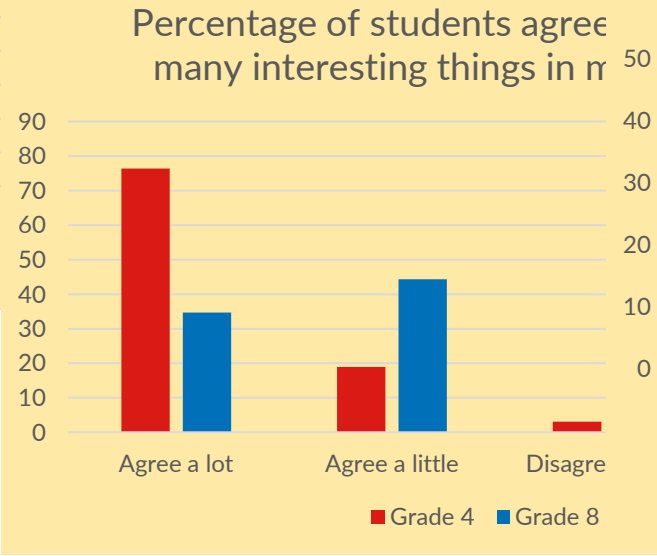


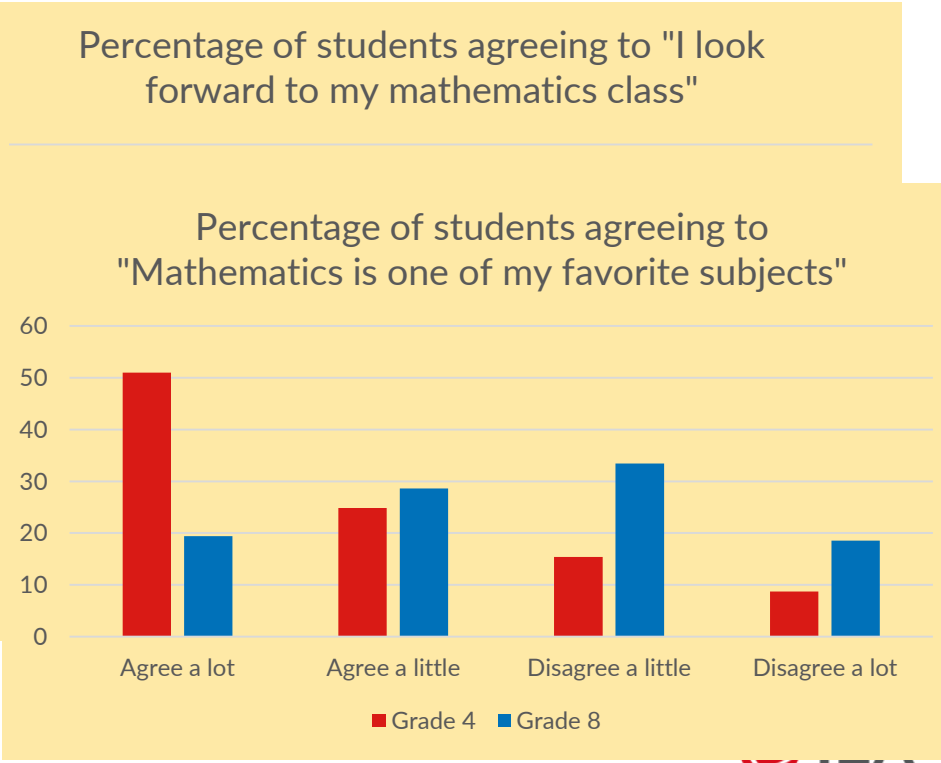
Students value mathematics and average achievement



Attitudes towards mathematics







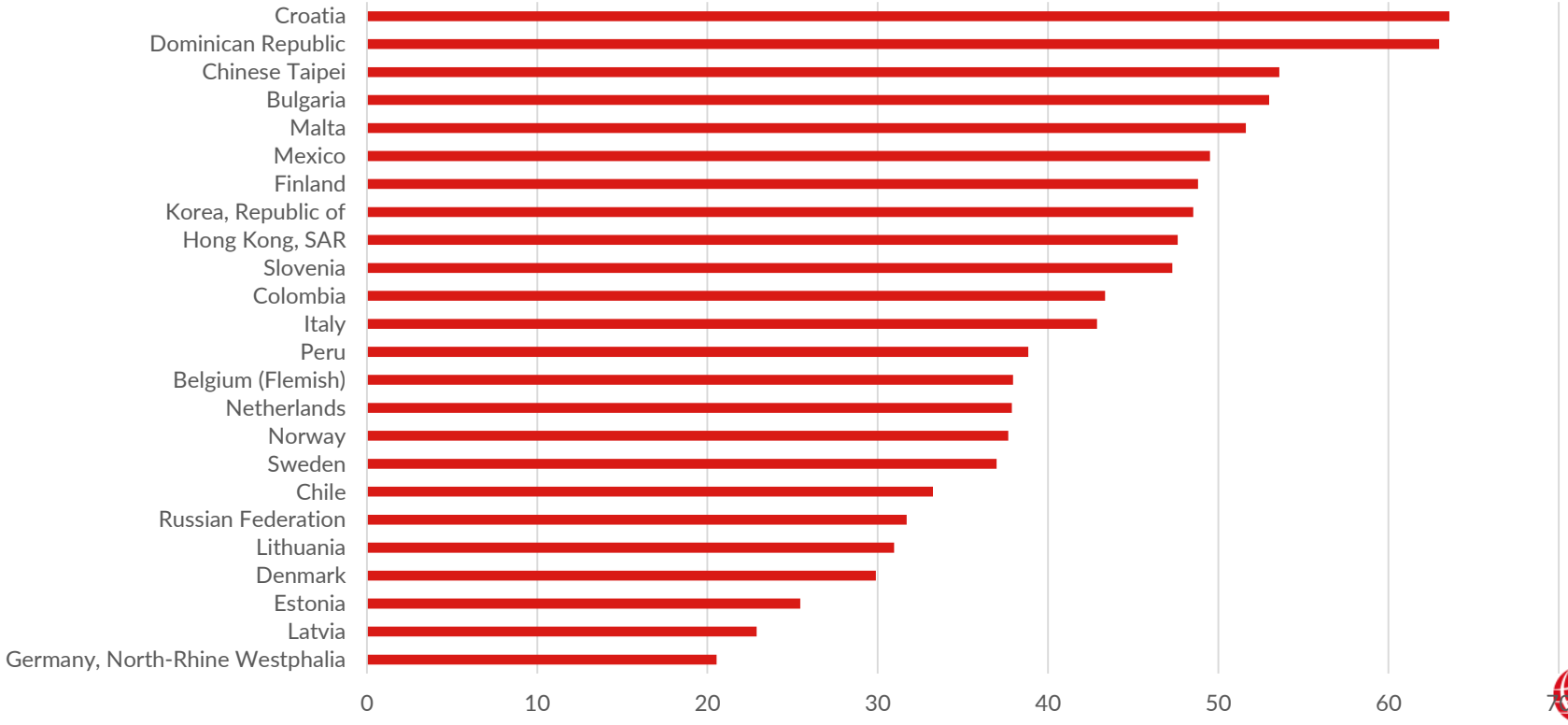
ICCS

The International Civics and Citizenship Education Study investigates students' knowledge and understanding of civics and citizenship, as well as students'

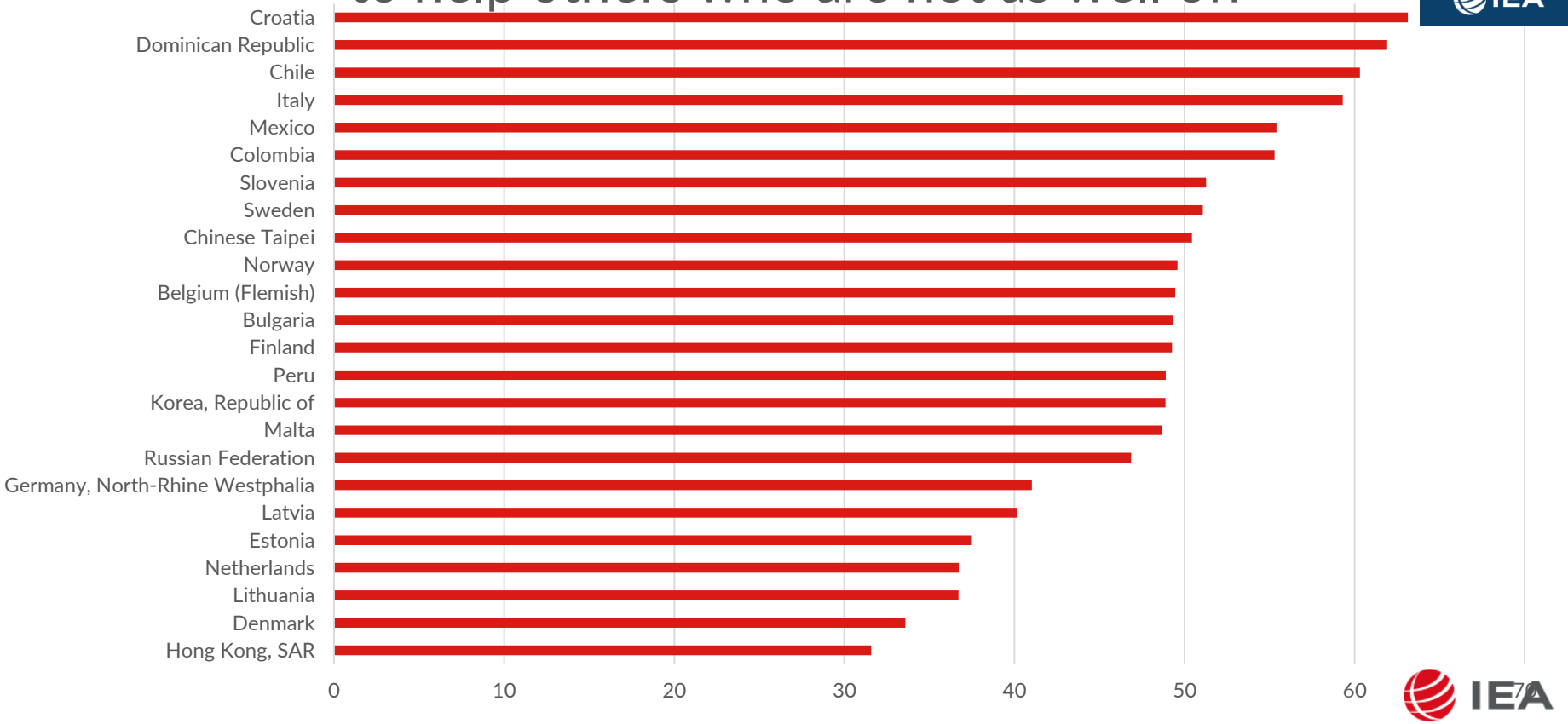
- attitudes,
- perceptions, and
- activities related to civics and citizenship.

This also clearly related to soft skills needed in many areas of life

Percentage of students who think that it is very important to work hard



Percent of students who think it is very important to help others who are not as well off



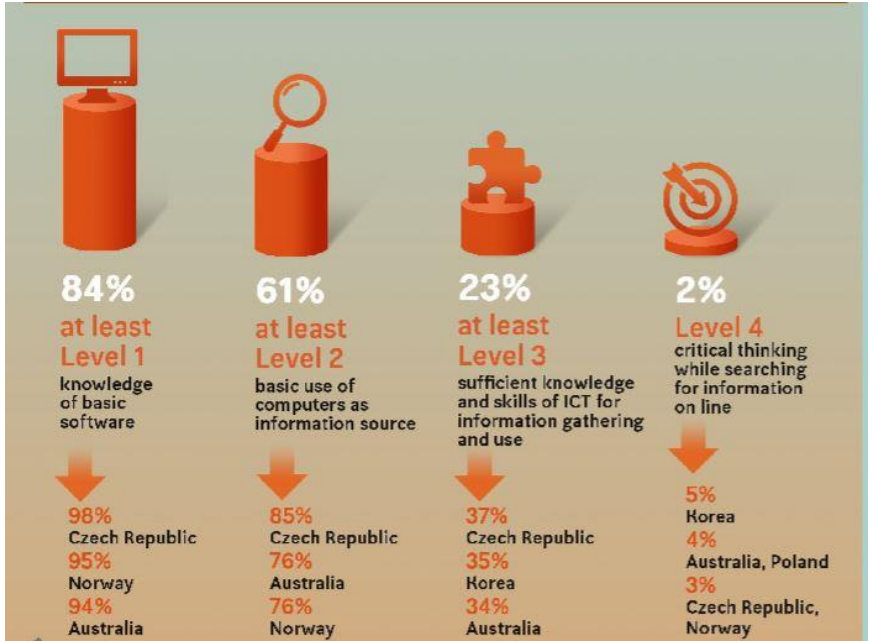
ICILS: International Computer and Information Literacy Study

How well are students prepared for study, work, and life in a digital world?

ICILS assesses students' computer and informal literacy skills and collects contextual data on students' home and school environments.

Computer literacy requires competencies that are usually considered as soft skills

The importance of critical thinking



ICILS measures students' abilities on a computer and information literacy scale

ICILS 2013 revealed that only 2 % of students use their critical thinking whilst searching for information online

ICILS 2018

ICILS 2018 measured students' computer and information literacy skills and their computational thinking skills

Computational thinking requires students to demonstrate their skills in procedural thinking and understanding and developing algorithms

Twelve countries and two benchmarking entities participated in ICILS 2018, including the city of Moscow

ICILS 2018

The International Computer and Information Literacy Study (ICILS) was designed to respond to a question of critical interest today:

How well are students prepared for study, work, and life in a digital world?

More than *46,000* students and *26,000* teachers from *12 countries* and two benchmarking education systems participated in the study.

Save *the date!*

Release of
ICILS 2018 results

When | 5th of November 2019
10:00 - 12:30

Where | Carnegie Institution for Science,
Washington D.C., USA

IEA

Thank you!

Dirk Hastedt

d.hastedt@iea.nl

www.iea.nl

IEA

Researching education, improving learning