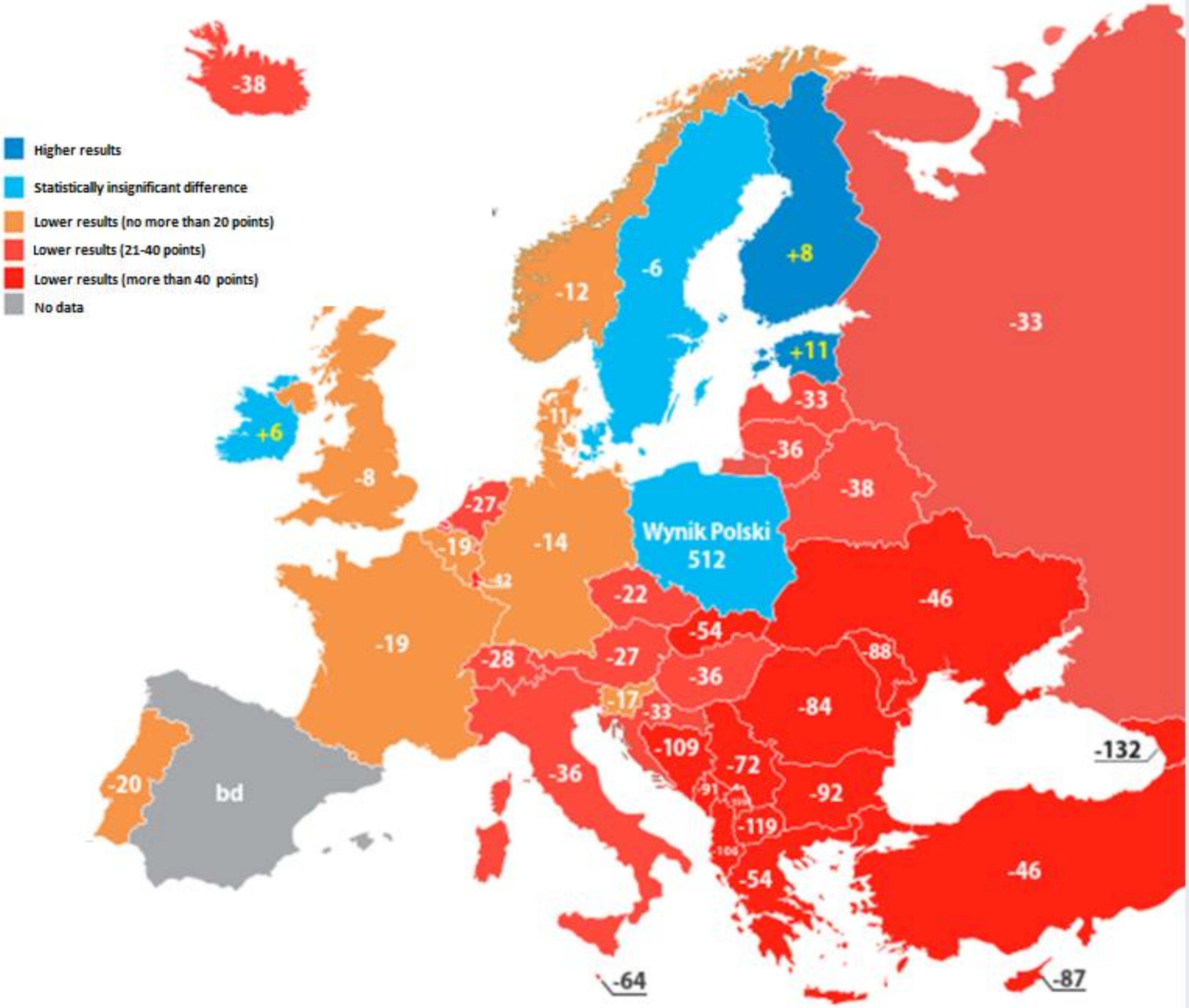
IBE INSTYTUT BADAŃ EDUKACYJNYCH

PISA

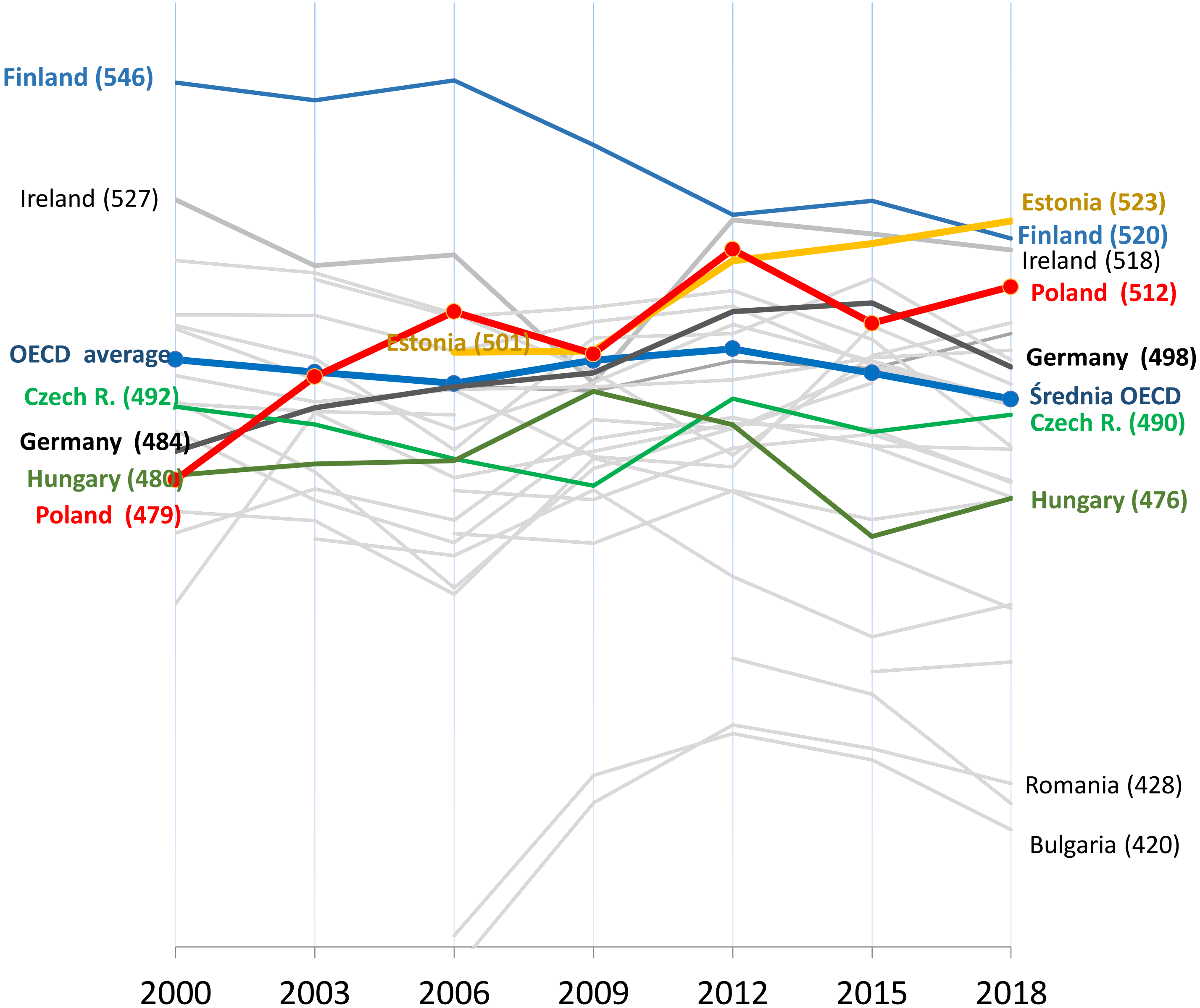
PISA results in Poland

OECD Better Life Index



INSTYTUT
BADAŃ
EDUKACYJNYCH

Zmiana wyników rozumienia czytanego tekstu w krajach Unii Europejskiej (2000–2018)

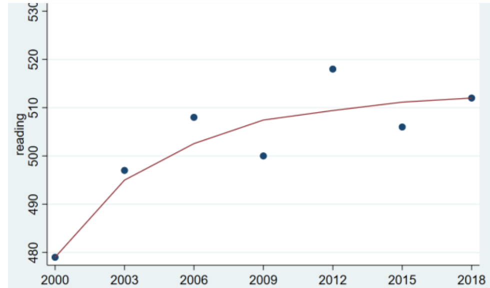


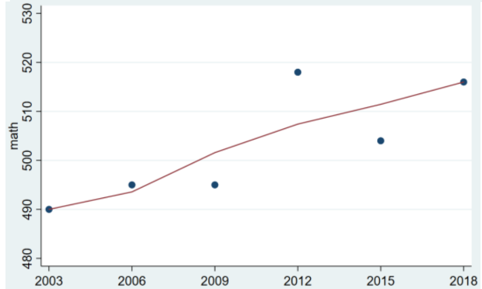
Instytut Badań Edukacyjnych
ul. Górczewska 8, 01-180 Warszawa | +48 22 241 71 00 | www.ibe.edu.pl

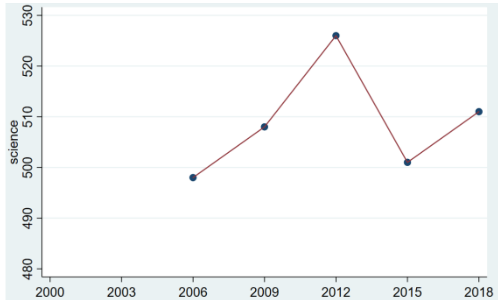
IBE INSTYTUT BADAŃ EDUKACYJNYCH

Trends i reading, mathematics and science performance

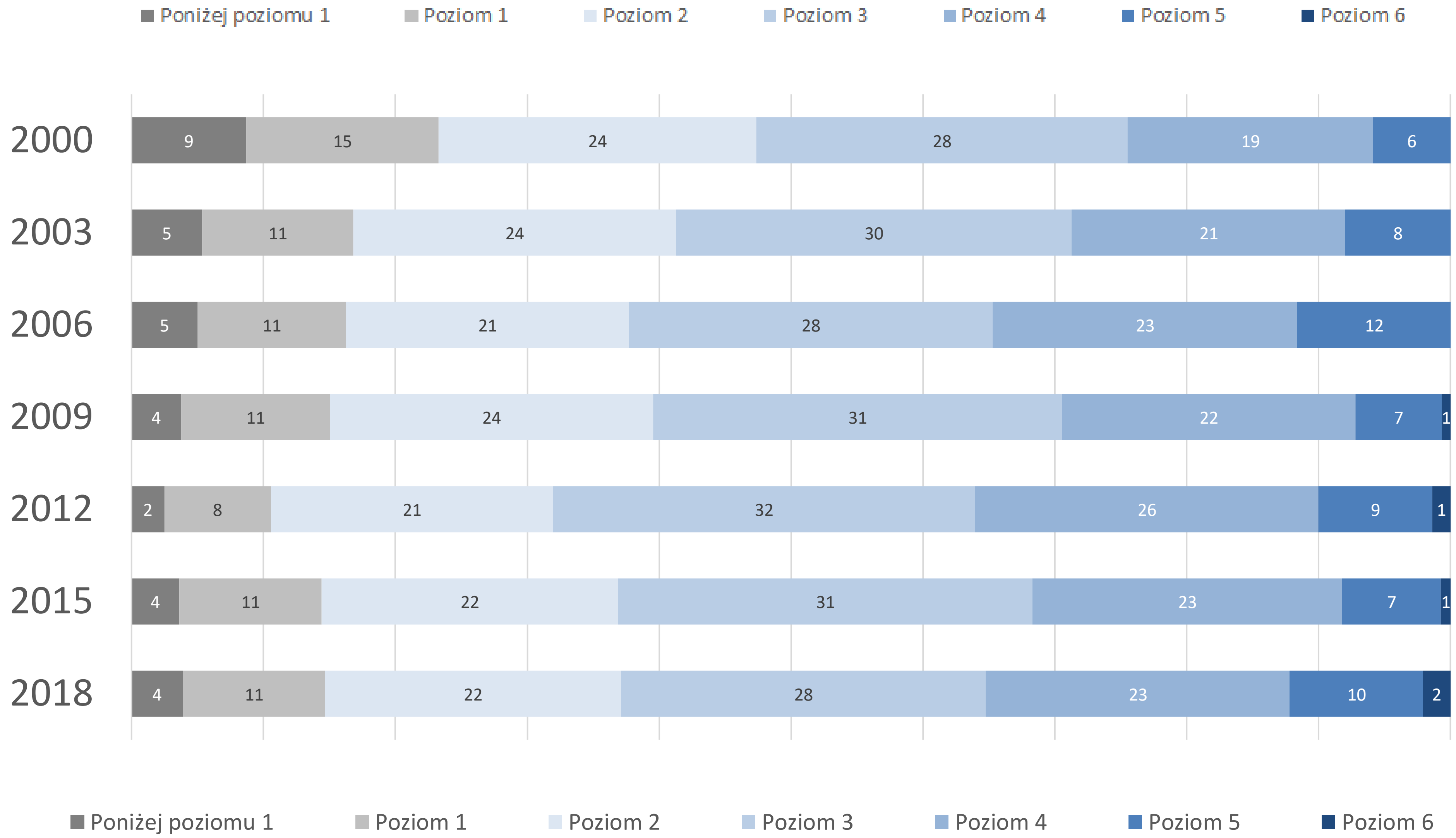
Rok	2000	2003	2006	2009	2012	2015	2018	Average trend
Reading	479	497	508	500	518	506	512	+4.5
Mathematics		490	495	495	518	504	516	+5.1
Science			498	508	526	501	511	+2.1







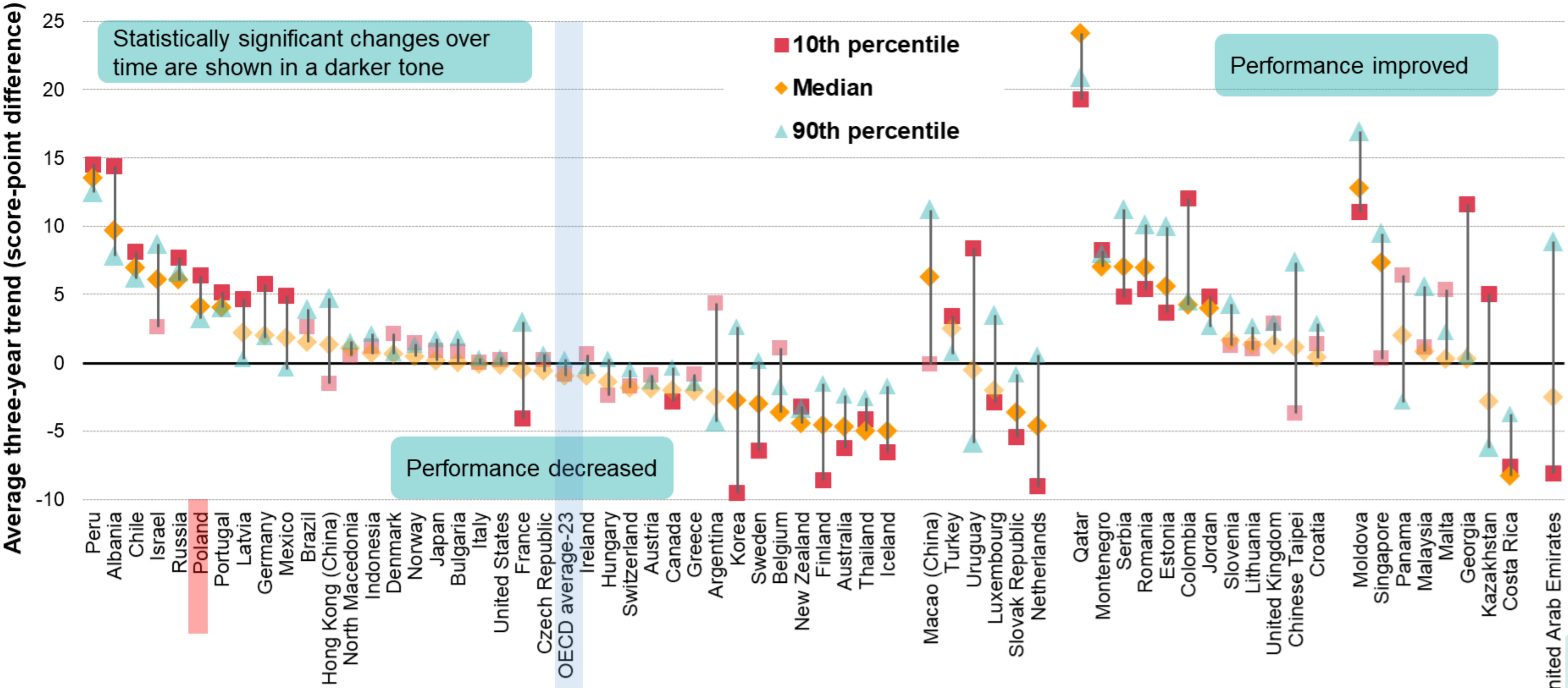
Percentage of student reaching the proficiency levels



Average three-year trend at different points in the reading proficiency distribution

Trends in median performance and at the top (90th percentile) and bottom (10th percentile) of the performance distribution

Fig I.9.2



Source: PISA results presentation by Andreas Schleicher

Rapa Nui
Question 3 / 7

Refer to the Review of Collapse on the right. Click on the choices in the table to answer the question.

Listed below are statements from the Review of *Collapse*. Are these statements facts or opinions? Click on either **Fact** or **Opinion** for each statement.

Is the statement a fact or an opinion?	Fact	Opinion
In the book, the author describes several civilizations that collapsed because of the choices they made and their impact on the environment.	○	○
One of the most disturbing examples in the book is Rapa Nui.	○	○
They carved the moai, the famous statues, and used the natural resources available to them to move these huge moai to different locations around the island.	○	○
When the first Europeans landed on Easter Island in 1722, the moai were still there, but the trees were gone.	○	○
The book is written well and deserves to be read by anyone who is concerned about the environment.	○	○

Blog | Book Review | Science News

www.academicbookreview.com/Collapse

Review of *Collapse*

Jared Diamond's new book, *Collapse*, is a clear warning about the consequences of damaging our environment. In the book, the author describes several civilizations that collapsed because of the choices they made and their impact on the environment. One of the most disturbing examples in the book is Rapa Nui.

According to the author, Rapa Nui was settled by Polynesians sometime after 700 CE. They developed a thriving society of, perhaps, 15 000 people. They carved the moai, the famous statues, and used the natural resources available to them to move these huge moai to different locations around the island. When the first Europeans landed on Rapa Nui in 1722, the moai were still there, but the trees were gone. The population was down to a few thousand people who were struggling to survive. Mr. Diamond writes that the people of Rapa Nui cleared the land for farming and other purposes and that they over-hunted the numerous species of sea and land birds that had lived on the island. He speculates that the dwindling natural resources led to civil wars and the collapse of Rapa Nui's society.

The lesson of this wonderful but frightening book is that in the past, humans made the choice to destroy their environment by cutting down all the trees and hunting animal species to extinction. Optimistically, the author points out, we can choose **not** to make the same mistakes today. The book is written well and deserves to be read by anyone who is concerned about the environment.

PISA

Chicken Forum
Question 6 / 7

Refer to the Chicken Health Forum on the right. Click on a choice and then type an explanation to answer the question.

Who posted the most reliable answer to Ivana_88's question?

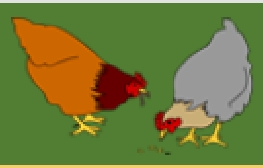
- ○ NellieB79
- ○ Monie
- ○ Avian_Deals
- ○ Frank

Give a reason for your answer.

www.chickenhealth.com/forum/aspirin-chickens

Chicken Health

Your online resource for healthy chickens



About | Forum | Pictures

Giving Aspirin to Chickens

Ivana_88 THREAD STARTER — Posted 28 October 18:12

Hello everyone!
Is it okay to give aspirin to my hen? She is 2 years old and I think she hurt her leg. I can't get to the veterinarian until Monday, and the vet isn't answering the phone. My hen seems to be in a lot of pain. I'd like to give her something to make her feel better until I can go to the vet. Thank you for your help.

NellieB79 — Posted 28 October 18:36

I don't know if aspirin is safe for hens or not. I always check with my vet before giving my birds medicine. I know that some drugs that are safe for humans can be very dangerous for birds.

Monie — Posted 28 October 18:52

I gave an aspirin to one of my hens when she was hurt. There was no problem. The next day I went to the vet but she was already better. I think it might be dangerous if you give too much, so don't exceed the dose limits! I hope she feels better!

Avian_Deals — Posted 28 October 19:07

Hi! Don't forget to check out my super low deals on all bird supplies. I'm having a great sale right now!

Bob — Posted 28 October 19:15

Can someone please tell me how to know if a chicken is sick? Thanks.

Frank — Posted 28 October 19:21

Hello Ivana,
I am a veterinarian, specializing in birds. It is okay to give injured chickens aspirin if they

PISA 2015

Running in Hot Weather
Question 2 / 5

▸ **How to Run the Simulation**

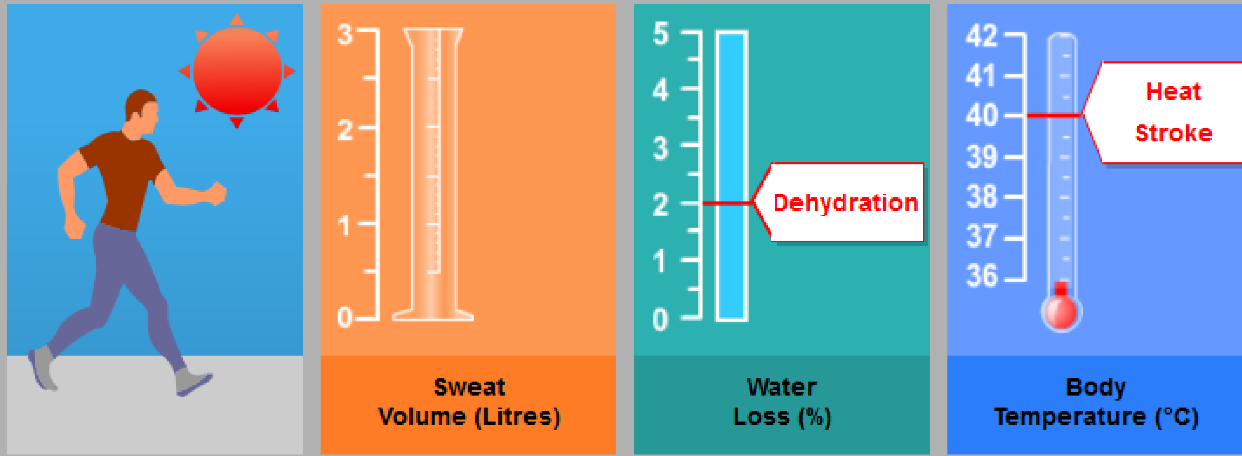
Run the simulation to collect data based on the information below. Click on a choice and then select data in the table to answer the question.

A runner runs for an hour on a hot and humid day (air temperature 35°C, air humidity of 60%) without drinking any water. This runner is at risk of both dehydration and heat stroke.

What would be the effect of drinking water during the run on the runner's risk of dehydration and heat stroke?

- ○ Drinking water would reduce the risk of heat stroke but not dehydration.
- ○ Drinking water would reduce the risk of dehydration but not heat stroke.
- ○ Drinking water would reduce the risk of both heat stroke and dehydration.
- ○ Drinking water would not reduce the risk of either heat stroke or dehydration.

Select two rows of data in the table to support your



Air Temperature (°C) 20 25 30 35 40

Air Humidity (%) 20 40 60

Drinking Water ◉ Yes ○ No

Run

Air Temperature (°C)	Air Humidity (%)	Drinking Water	Sweat Volume (Litres)	Water Loss (%)	Body Temperature (°C)

http://www.oecd.org/pisa/test/pisa2015/#d.en.537240

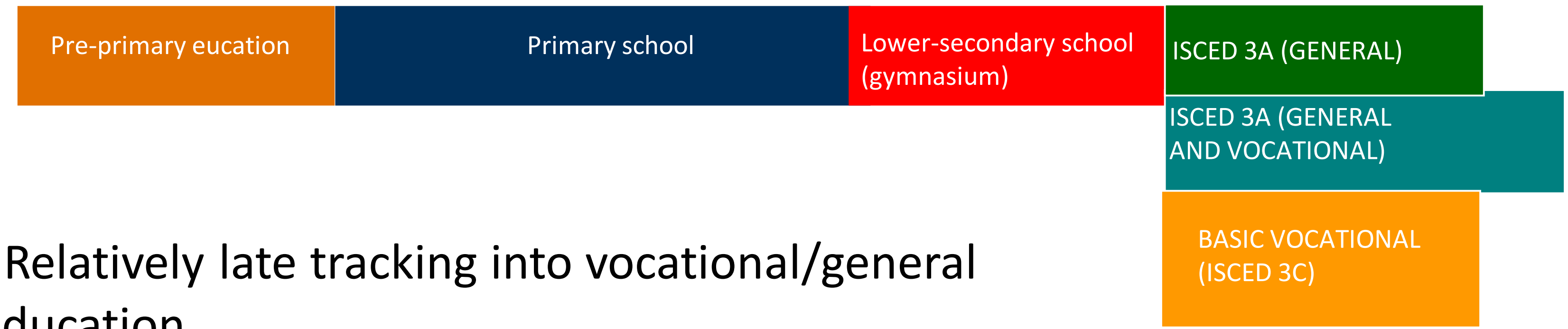
New school type - ISCED 2 was introduced in 1999 and general (comprehensive) education was extended by one year – this was reversed in 2017

School structure before 2000 (and after 2016)

PISA 15 years' olds
2000, 2021

School structure between 2001 and 2016

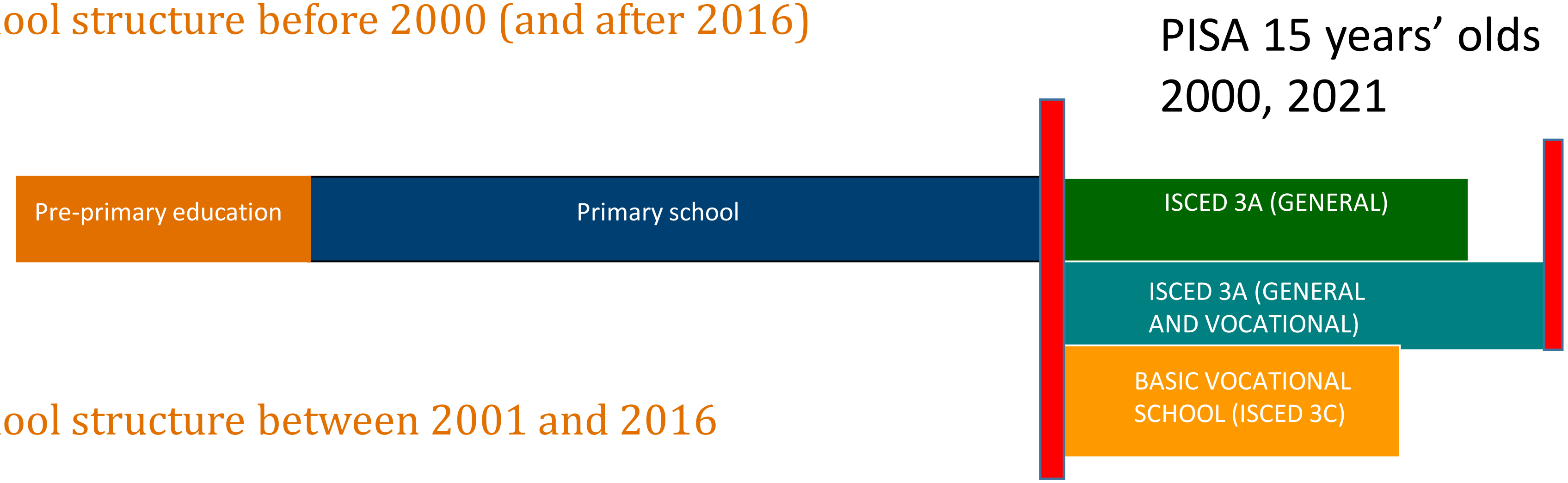
2003-2018



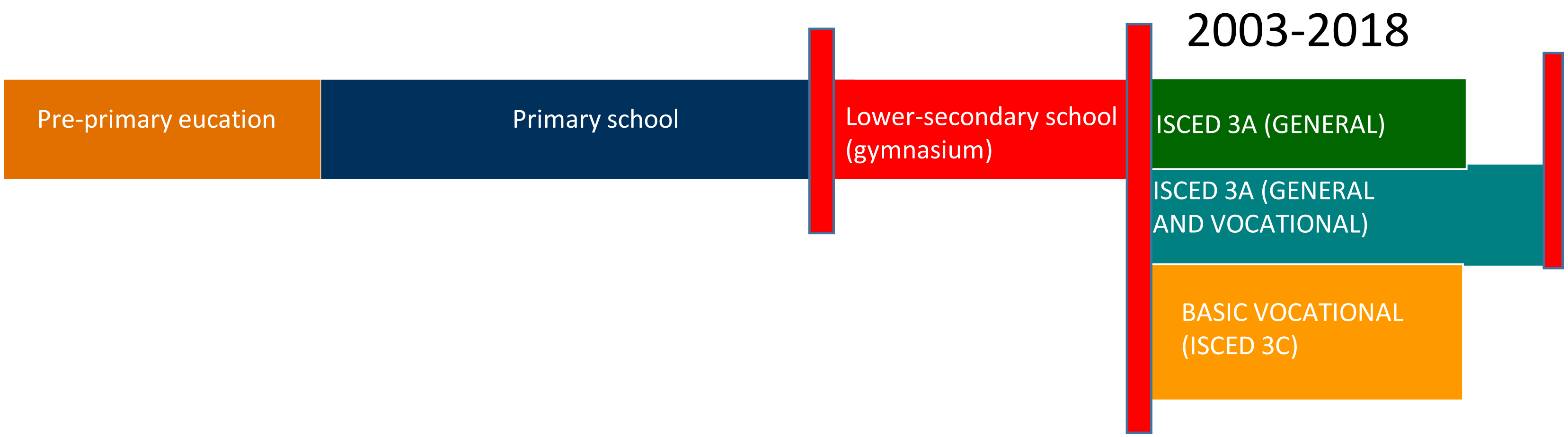
- Relatively late tracking into vocational/general education
- Critical role of this transition in shaping educational inequalities

National assessments and central exams

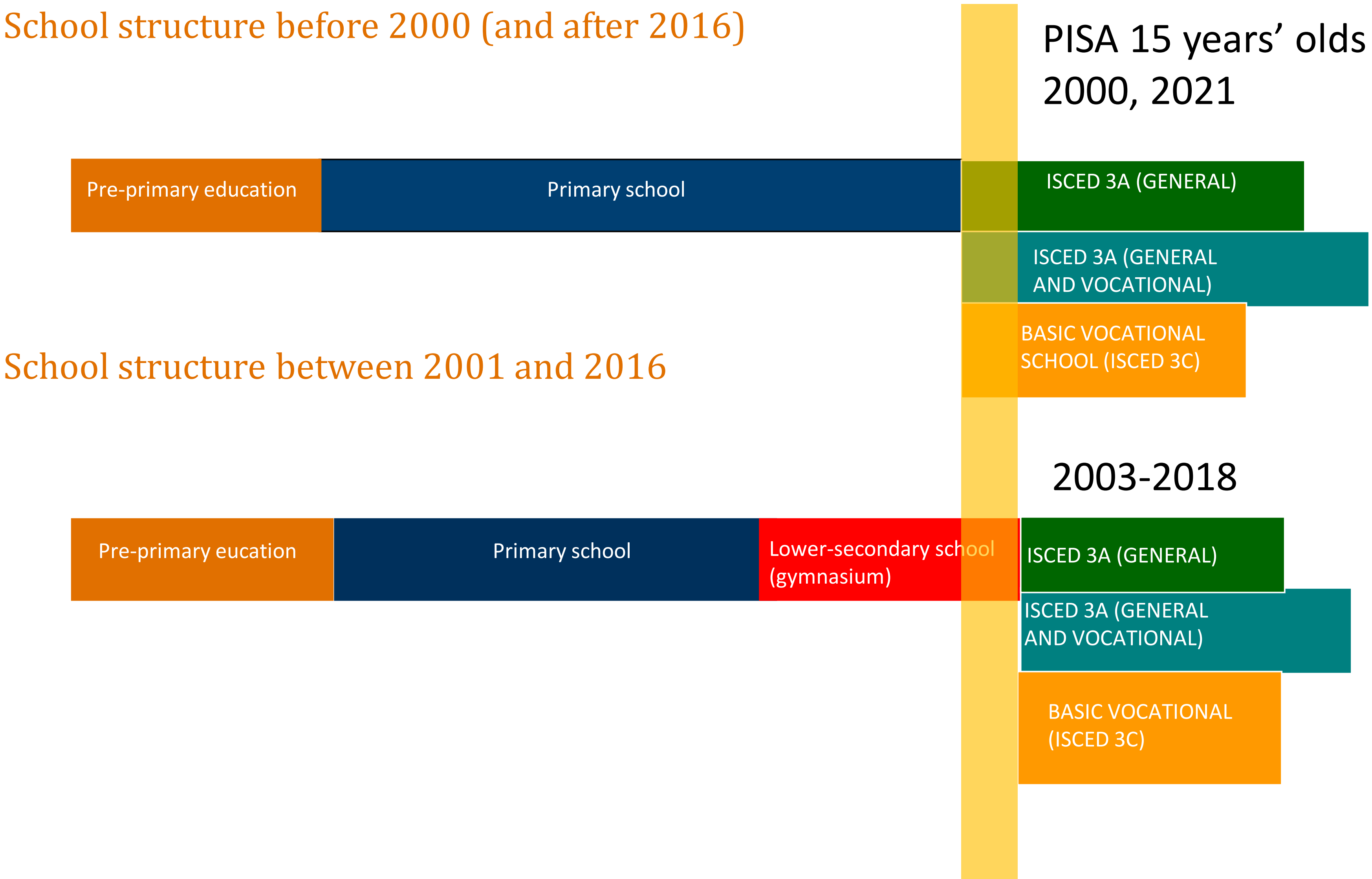
School structure before 2000 (and after 2016)



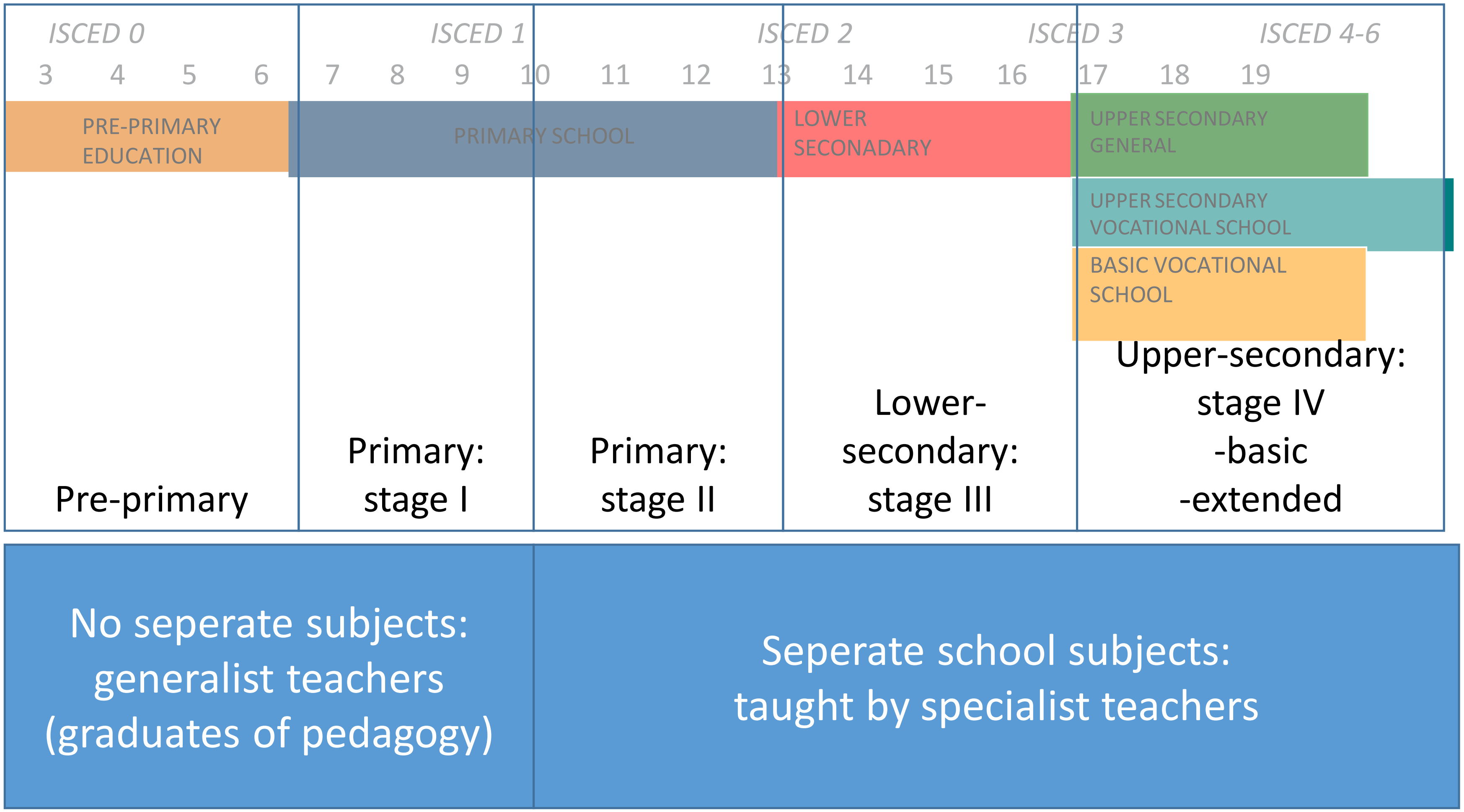
School structure between 2001 and 2016



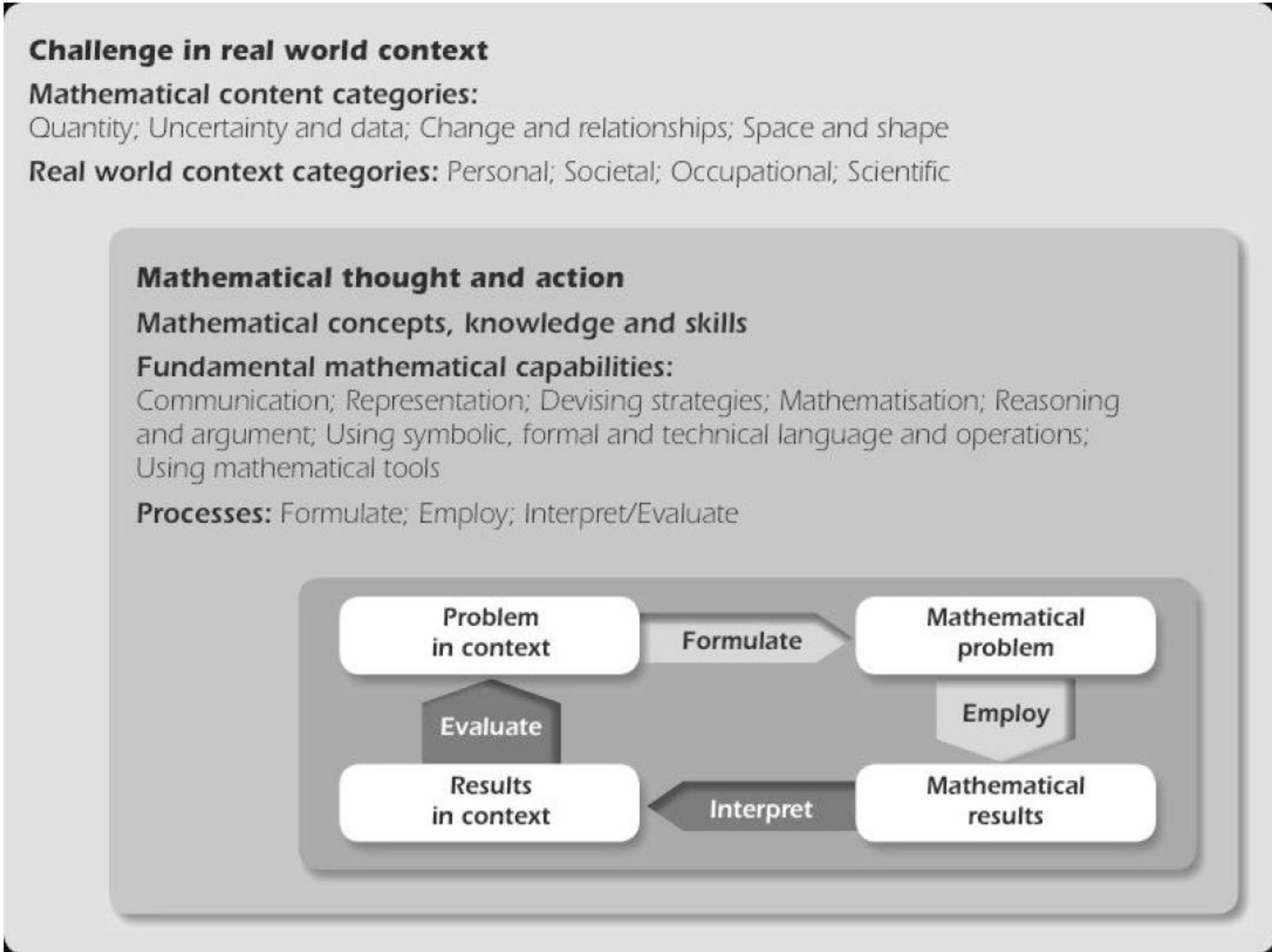
PISA students



The curriculum defines the learning outcomes for 3-years long educational stage



Mathematics 2018 framework



PISA 2021 MATHEMATICS FRAMEWORK

Explore the main sections below, click on the interactive framework components, or download the full PISA 2021 Mathematics Framework Draft in PDF format.

Overview

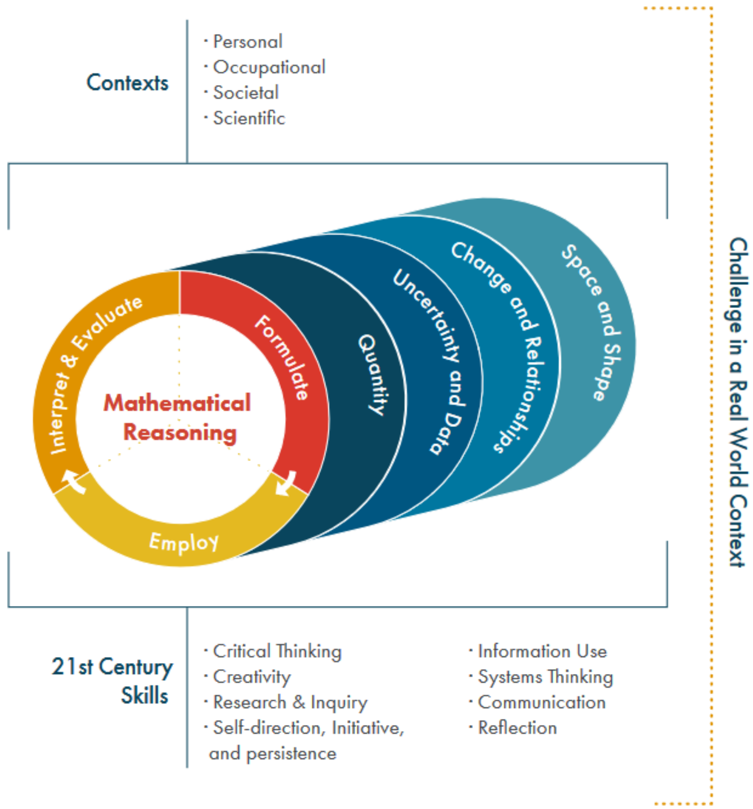
Mathematical Reasoning

Content Knowledge

Contexts

21st Century Skills

Examples



Polish curriculum in mathematics is based on a similar philosophy

Teaching objectives for mathematics in lower secondary education

III ETAP EDUKACYJNY

Cele kształcenia – wymagania ogólne

I. Wykorzystanie i tworzenie informacji.
Uczeń interpretuje i tworzy teksty o charakterze matematycznym, używa języka matematycznego do opisu rozumowania i uzyskanych wyników.

II. Wykorzystywanie i interpretowanie reprezentacji.
Uczeń używa prostych, dobrze znanych obiektów matematycznych, interpretuje pojęcia matematyczne i operuje obiektami matematycznymi.

III. Modelowanie matematyczne.
Uczeń dobiera model matematyczny do prostej sytuacji, buduje model matematyczny danej sytuacji.

IV. Użycie i tworzenie strategii.
Uczeń stosuje strategię jasno wynikającą z treści zadania, tworzy strategię rozwiązania problemu.

V. Rozumowanie i argumentacja.
Uczeń prowadzi proste rozumowania, podaje argumenty uzasadniające poprawność rozumowania.

The practical problem is, however, how to make teachers focus on general objectives, rather than on specific ones

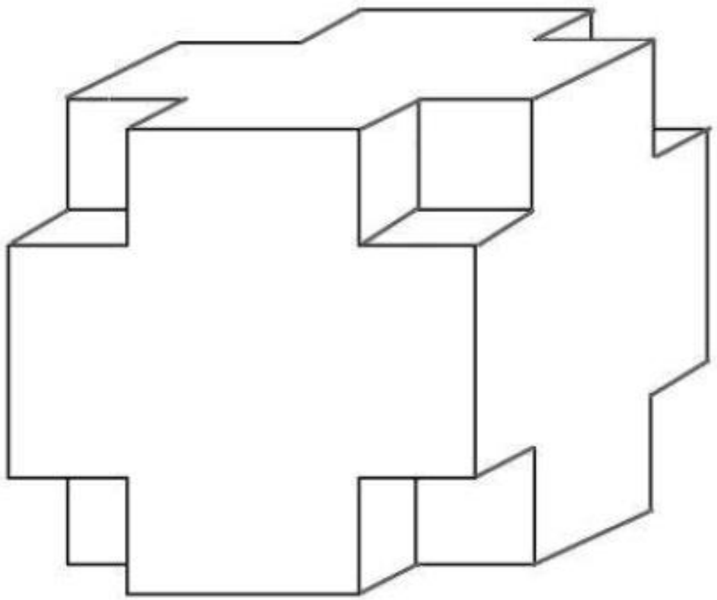
4. Funkcje. Uczeń:

1) określa funkcje za pomocą wzoru, tabeli, wykresu, opisu słownego;
2) oblicza ze wzoru wartość funkcji dla danego argumentu. Posługuje się poznanymi metodami rozwiązywania równań do obliczenia, dla jakiego argumentu funkcja przyjmuje daną wartość;
3) odczytuje z wykresu własności funkcji (dziedzinę, zbiór wartości, miejsca zerowe, maksymalne przedziały, w których funkcja maleje, rośnie, ma stały znak; punkty, w których funkcja przyjmuje w podanym przedziale wartość największą lub najmniejszą);
4) na podstawie wykresu funkcji $y=f(x)$ szkicuje wykresy funkcji $y = f(x + a)$, $y=f(x) + a$, $y= -f(x)$, $y=f(-x)$;
5) rysuje wykres funkcji liniowej, korzystając z jej wzoru;
6) wyznacza wzór funkcji liniowej na podstawie informacji o funkcji lub o jej wykresie;
7) interpretuje współczynniki występujące we wzorze funkcji liniowej;
8) szkicuje wykres funkcji kwadratowej, korzystając z jej wzoru;
9) wyznacza wzór funkcji kwadratowej na podstawie pewnych informacji o tej funkcji lub o jej wykresie;
10) interpretuje współczynniki występujące we wzorze funkcji kwadratowej w postaci kanonicznej, w postaci ogólnej i w postaci iloczynowej (o ile istnieje);
11) wyznacza wartość najmniejszą i wartość największą funkcji kwadratowej w przedziale domkniętym;
12) wykorzystuje własności funkcji liniowej i kwadratowej do interpretacji zagadnień geometrycznych, fizycznych itp. (także osadzonych w kontekście praktycznym);
13) szkicuje wykres funkcji $f(x) = a/x$ dla danego a, korzysta ze wzoru i wykresu tej funkcji do interpretacji zagadnień związanych z wielkościami odwrotnie proporcjonalnymi;
14) szkicuje wykresy funkcji wykładniczych dla różnych podstaw;
15) posługuje się funkcjami wykładniczymi do opisu zjawisk fizycznych, chemicznych, a także w zagadnieniach osadzonych w kontekście praktycznym.

Curriculum and national exams allignment

One of the tasks on the lower secondary exam (2014)

Zadanie 23. (0–3)
Z sześcianu zbudowanego z 64 małych sześcianów o krawędzi 1 cm usunięto z każdego narożnika po jednym małym sześcianie (patrz rysunek). Oblicz pole powierzchni powstałej bryły i porównaj je z polem powierzchni dużego sześcianu. Zapisz obliczenia.



What is the surface area of this figure?

Conclusions

Explaining improvement of PISA results in Poland is not straigtfoward: many factors might have influenced results important

- Introduction of lower secondary schools seem to improved the outcomes of lowest-performing students (extending general education)
- Introducing examinations helped to re-focus attention to lowest-performing students
- New curriculum emphasized simiar skills to the ones emphasized by PISA
- This started to reflected in textbooks and examinations
- mostly with the EU funds increased implementation of ICT: programming introduced to curricula, e-textbooks, interactive whiteboards

Many of the above changes started to be reversed in 2017: more conservative education, less focus on skills more content added in curricula.

IBE INSTYTUT BADAŃ EDUKACYJNYCH

Instytut Badań Edukacyjnych
Zespół Badań Międzynarodowych
ul. Górczewska 8, 01-180 Warszawa
tel.: (22) 241 71 00, e-mail: ibe@ibe.edu.pl