
IEA
ICILS

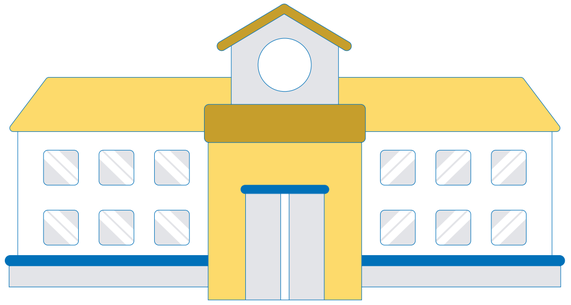
Results of the International Computer and Information Literacy Study (ICILS) 2018

ICILS 2018 assessment sample

More than

26 000

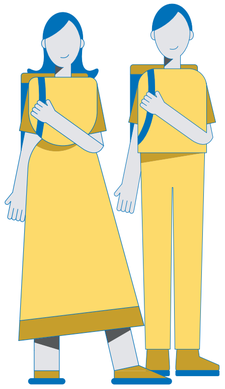
teachers



More than

2200

schools



More than

46 000

students

In

14

countries &
educational systems

Computer and Information Literacy (CIL) 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 society

C I L

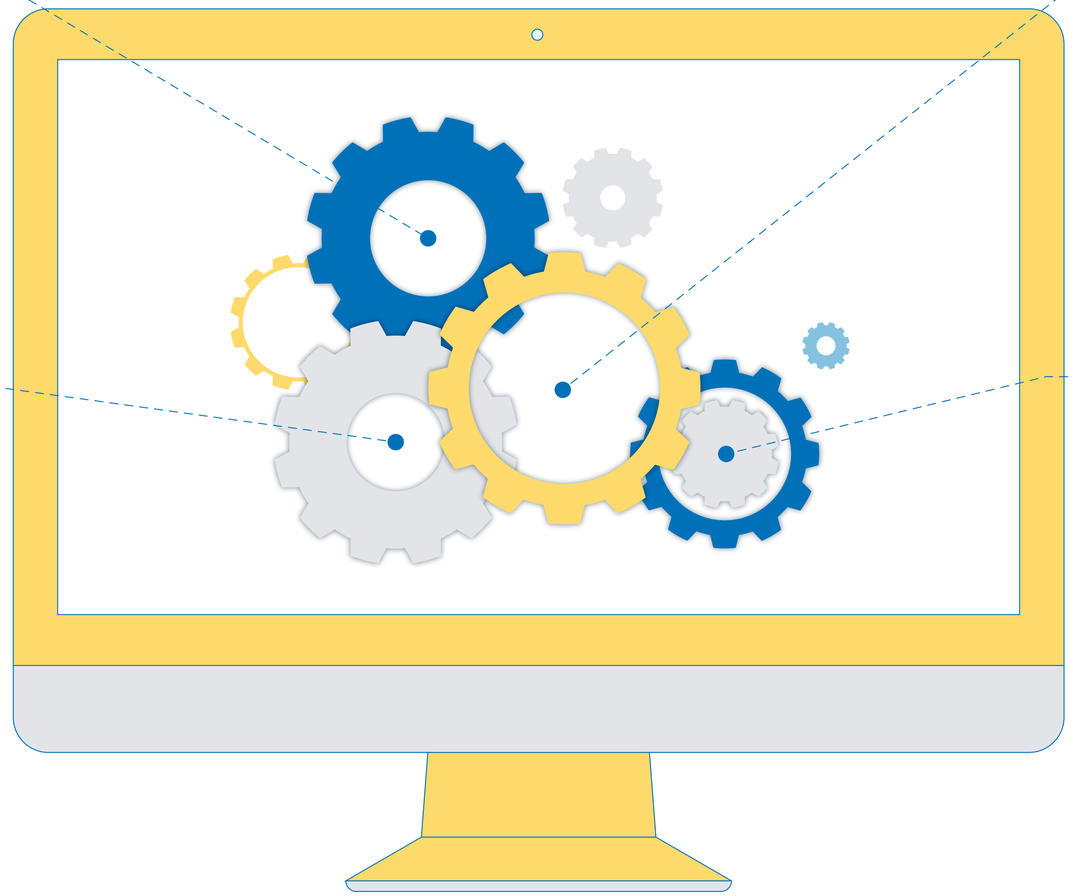
Computer & Information Literacy

2. GATHERING INFORMATION

The investigative processes that enable a person to find, retrieve, and make judgments about the relevance, integrity, and usefulness of computer-based information and the processes of organizing and storing working with information that has been gathered

1. UNDERSTANDING COMPUTER USE

The fundamental technical knowledge and skills that underpin the operational use of computers as tools for working with information



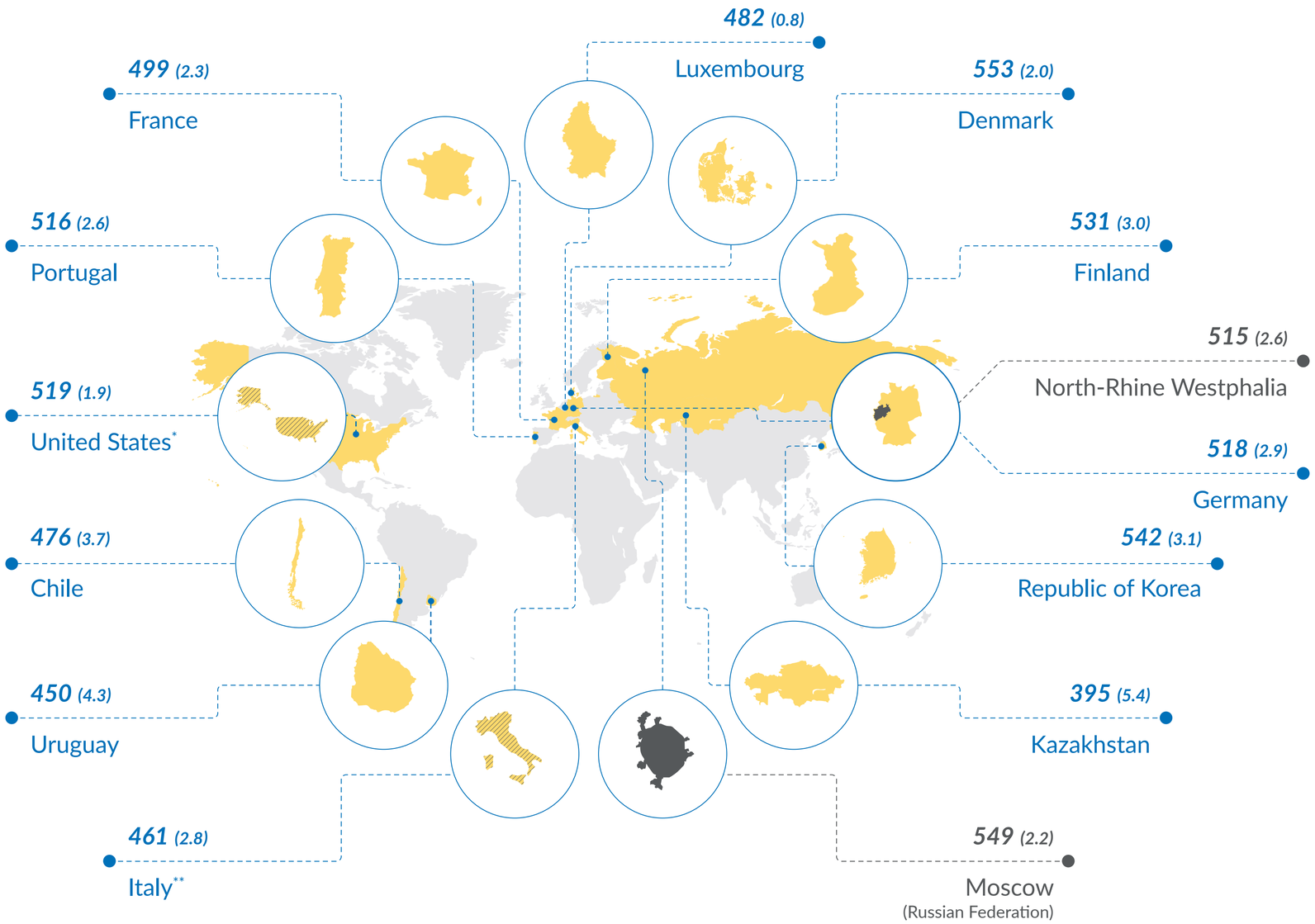
3. PRODUCING INFORMATION

Using computers to adapt information display and to design, and generate information products for specified purposes and audiences

4. DIGITAL COMMUNICATION

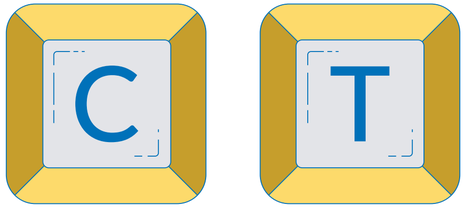
Competencies associated with information sharing in social networking (and broader web-based information sharing space) together with the social, legal and ethical responsibilities associated with information sharing

Students' average computer and information literacy (CIL) scores



() Standard errors
* Did not meet sample participation requirements
** Tested at the beginning of the school year
• Benchmarking participant

Computational thinking is a way of approaching problems, relevant for many areas of education (not just computer programming)



Computational thinking

2. PATTERN RECOGNITION

Analyse & look for a repeating sequence

3. ABSTRACTION

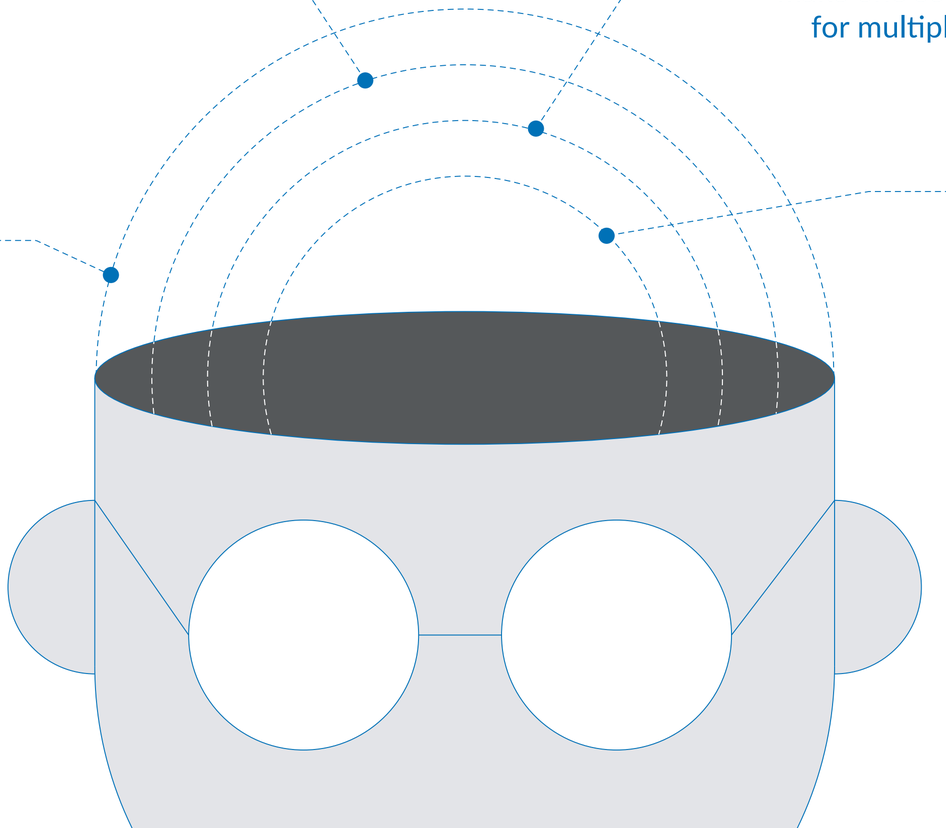
Remove parts of a problem that are unnecessary & make one solution work for multiple problems

1. DECOMPOSITION

Breaking big problems into smaller, easier to manage problems

4. ALGORITHMS

Step-by-step sequenced instructions on how to complete a task



Key Messages

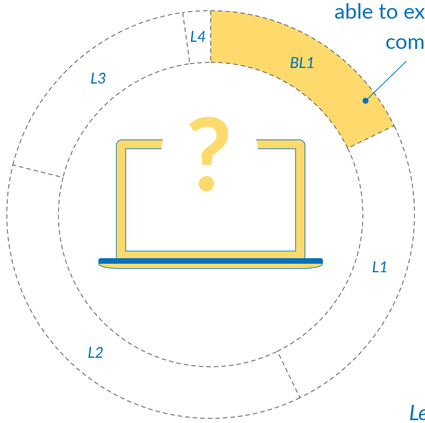
1.

Digital natives are not digital experts:
Young people do not develop sophisticated digital skills
just by growing up using digital devices

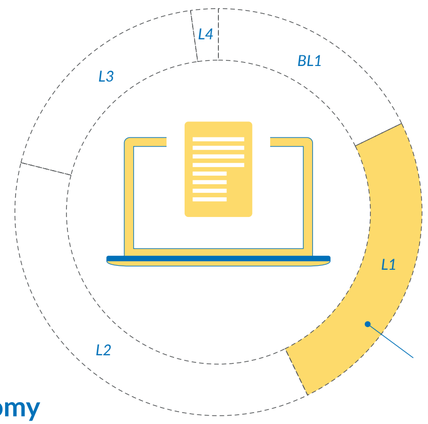
Students' scores on the computer and information literacy (CIL) scale were divided across four levels

Below Level 1: **Undeveloped**
(below 407 scale points):

Students may be able to execute some simple commands ***(18%)***



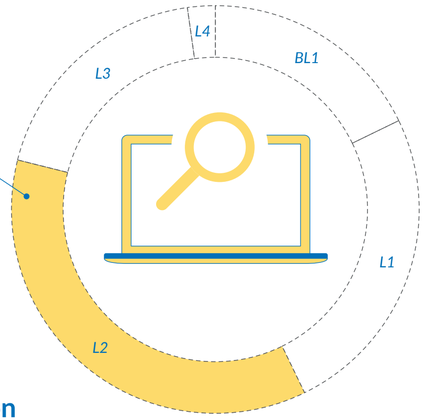
Level 1: **Basic/Functional**
(407-491 scale points):



Students demonstrate a functional working knowledge of computers as tools ***(25%)***

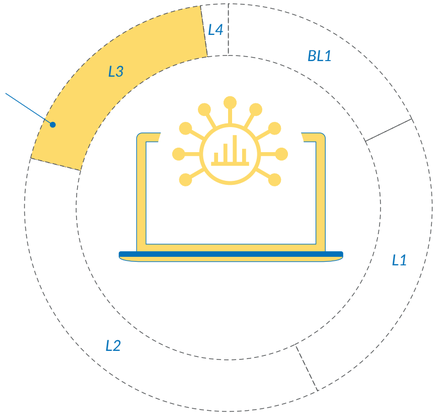
Level 2: **Need support**
(492-576 scale points):

Students use computers, under direct instruction, to complete basic and explicit information-gathering and management tasks ***(36%)***



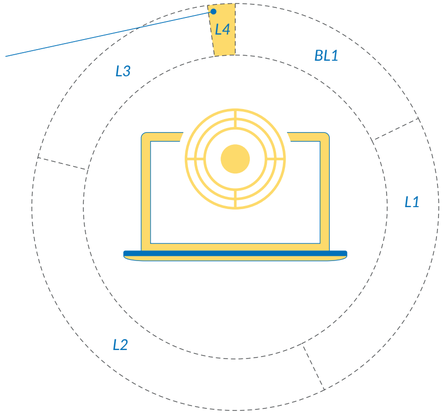
Level 3: **Independence/Autonomy**
(577-661 scale points):

Students demonstrate the capacity to work independently when using computers as information gathering & management tools ***(19%)***



Level 4: **Precision**
(above 661 scale points):

Students execute control & evaluative judgment when searching for information & creating information products ***(2%)***



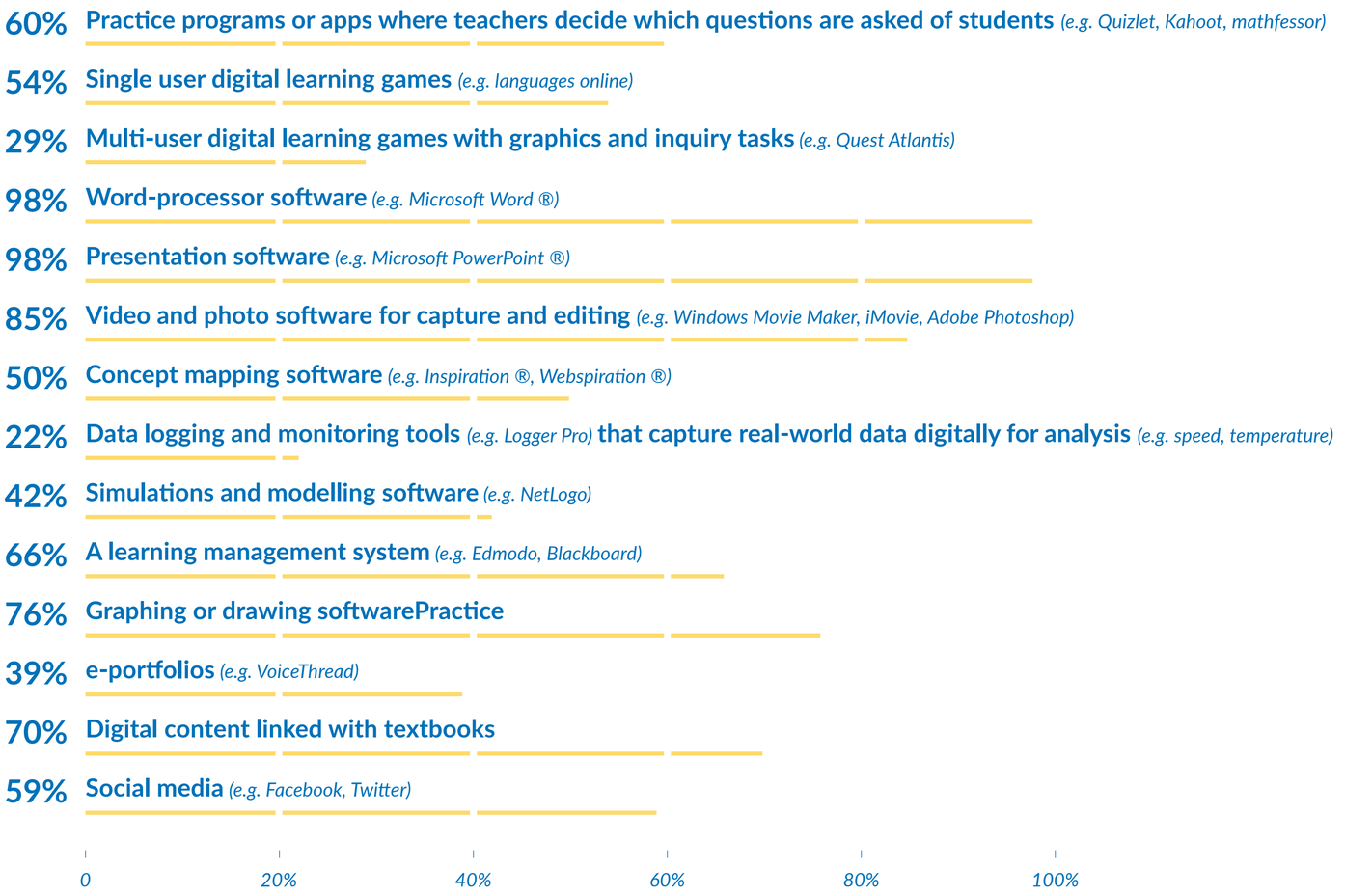
Students' scores on the computer and information literacy (CIL) scale. In most countries, the majority of students scored in level 2. On average, across all countries, the proportion of students above level 2 is lower than the proportion below level 2.

2.

Providing students or teachers with Information and Communications Technology (ICT) equipment alone is not enough to improve their digital skills. Students need to be taught how to use computers effectively and teachers need support in their use of ICT in teaching

Most students have access to software-related resources for teaching and learning

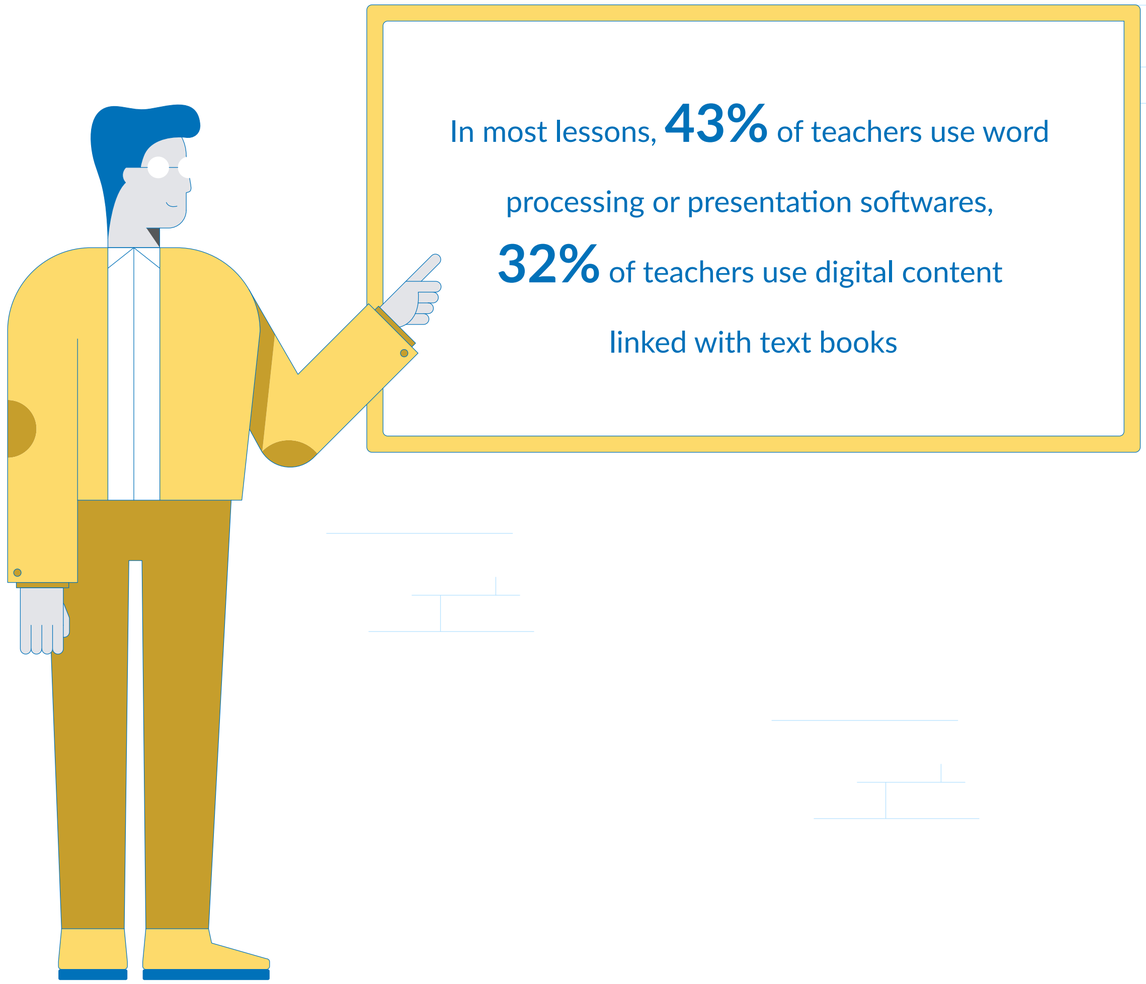
Percentages of students at schools where ICT-Coordinators indicate that the following software-related resources are available for both teaching and learning



Most students attended schools with access to word processing, presentation, video/photo and graphic/drawing software

But less than half of teachers reported using general ICT in most lessons

Less than half of teachers reported using general Information and Communications Technology (ICT) in most lessons.



In most lessons, **43%** of teachers use word processing or presentation softwares,

32% of teachers use digital content linked with text books

How ICT is used at school

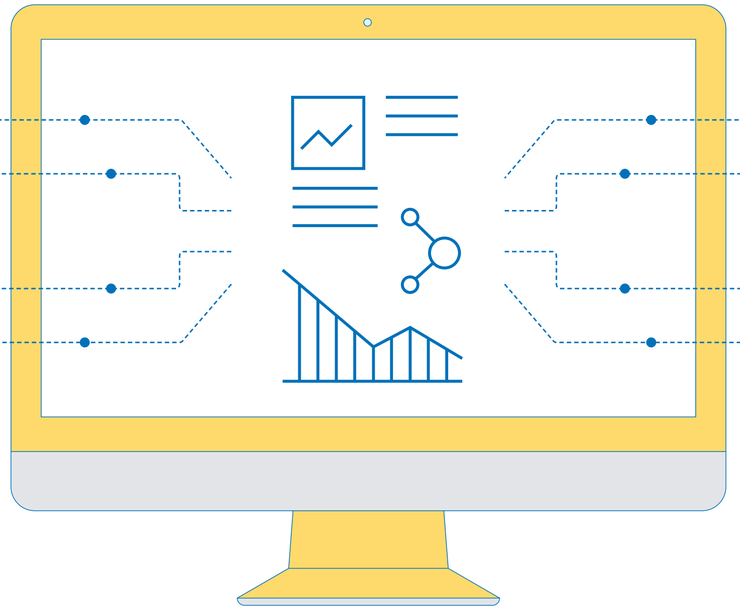
Students report being taught at school to...

...provide references to internet sources
68%

...search for information using ICT
74%

...present information for a given audience or purpose using ICT
66%

...work out whether to trust information from the Internet
65%



...decide what information obtained from the internet is relevant to include in school work
68%

...organize information obtained from internet sources
68%

...decide where to look for information on the internet about an unfamiliar topic
67%

...use ICT to collaborate with others
60%

*CIL = Computer and Information Literacy
* ICT = Information and Communications Technology

Most students report learning about Computer and Informational Literacy (CIL) related issues at school

Percentages of students reporting use of Information and Communications Technology (ICT) at least once a week during lessons to access:

Most frequent use of ICT:

29% **Computer-based information resources**

28% **Word-processing software** *(e.g. using Microsoft Word ®)*

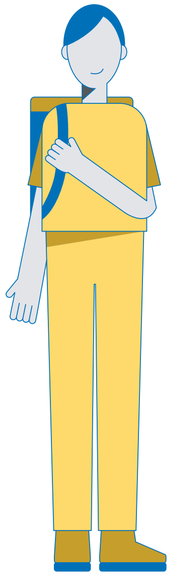
26% **Presentation software** *(e.g. using Microsoft PowerPoint ®)*

Least frequent use of ICT:

10% **Tools that capture real-world data** *(e.g. speed, temperature)* **digitally for analysis**

9% **Concept mapping software** *(e.g. Inspiration ®, Webspiration ®)*

8% **Simulations and modelling software**



0 *10%* *20%* *30%* *40%* *50%*

Percentages of teachers reporting use of Information and Communications Technology (ICT) in most lessons for:

Most frequent use of ICT:

64% The presentation of information through direct class instruction

45% The communication with parents or guardians about students' learning

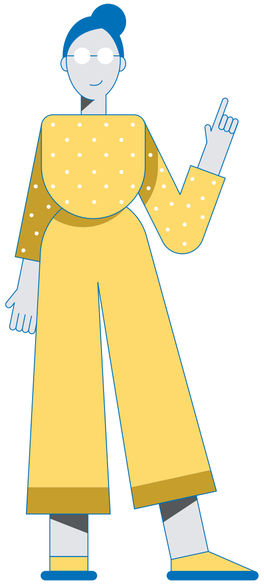
43% The support of student-led whole-class discussions and presentations

Least frequent use of ICT:

32% The provision of feedback to students on their work

31% The support of collaboration among students

26% The mediation of communication between students and experts or external mentors



0 20% 40% 60% 80%

3.

Teachers are more likely to promote Computer and Informational Literacy (CIL) and Computational Thinking (CT) in their teaching if they are confident users of ICT; they have positive views towards ICT; they feel their school has a collaborative approach to the use of ICT in teaching

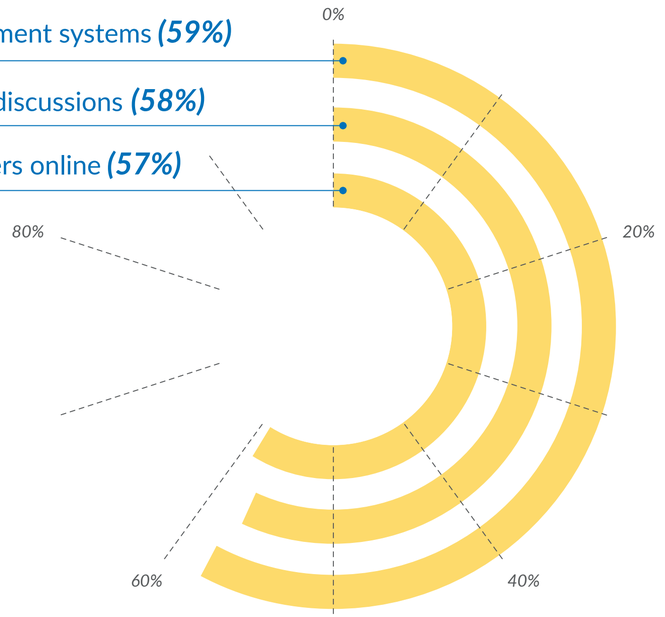
Teachers are confident undertaking a large number of ICT-related tasks but they lack confidence in some areas

The tasks teachers are least confident to complete using ICT are.....

...using learning management systems ***(59%)***

...contributing to online discussions ***(58%)***

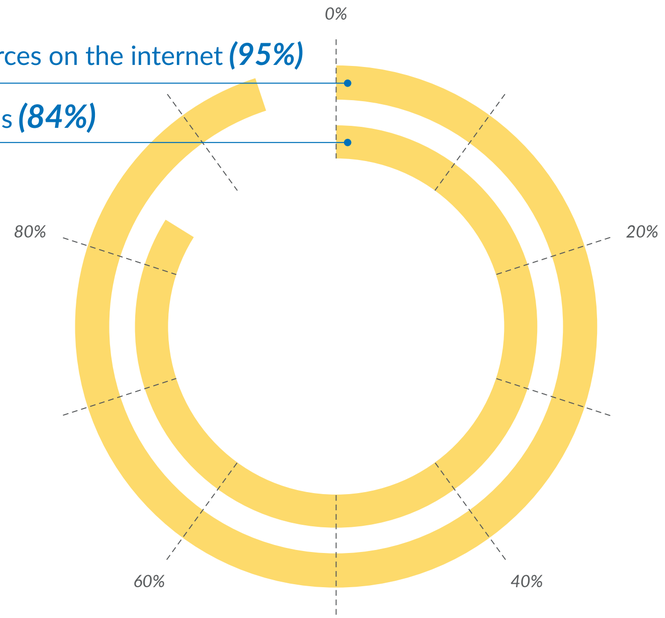
...collaborating with others online ***(57%)***



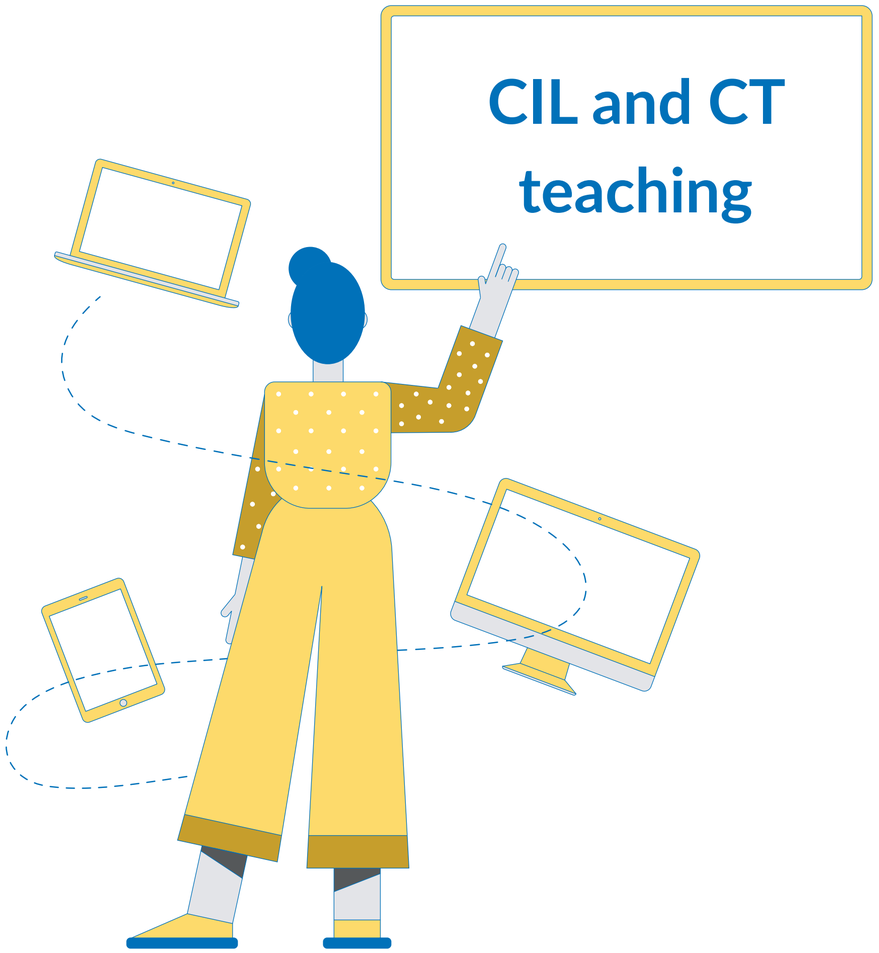
The tasks teachers are most confident to complete using ICT are...

...finding teaching resources on the internet ***(95%)***

...producing presentations ***(84%)***



* ICT = Information and Communications Technology



*CIL = Computer and Information Literacy
*CT = Computational Thinking
*ICT = Information and Communications Technology

Teachers who are confident in their own CIL abilities who have a positive perception of ICT use in teaching and learning and teachers who feel they work in a collaborative professional environment are more likely to emphasise CIL and CT in their teaching

4.

There is a digital divide relating to the socioeconomic status, home access to devices and years of experience of using devices

SES: Socioeconomic status

Books in the home:

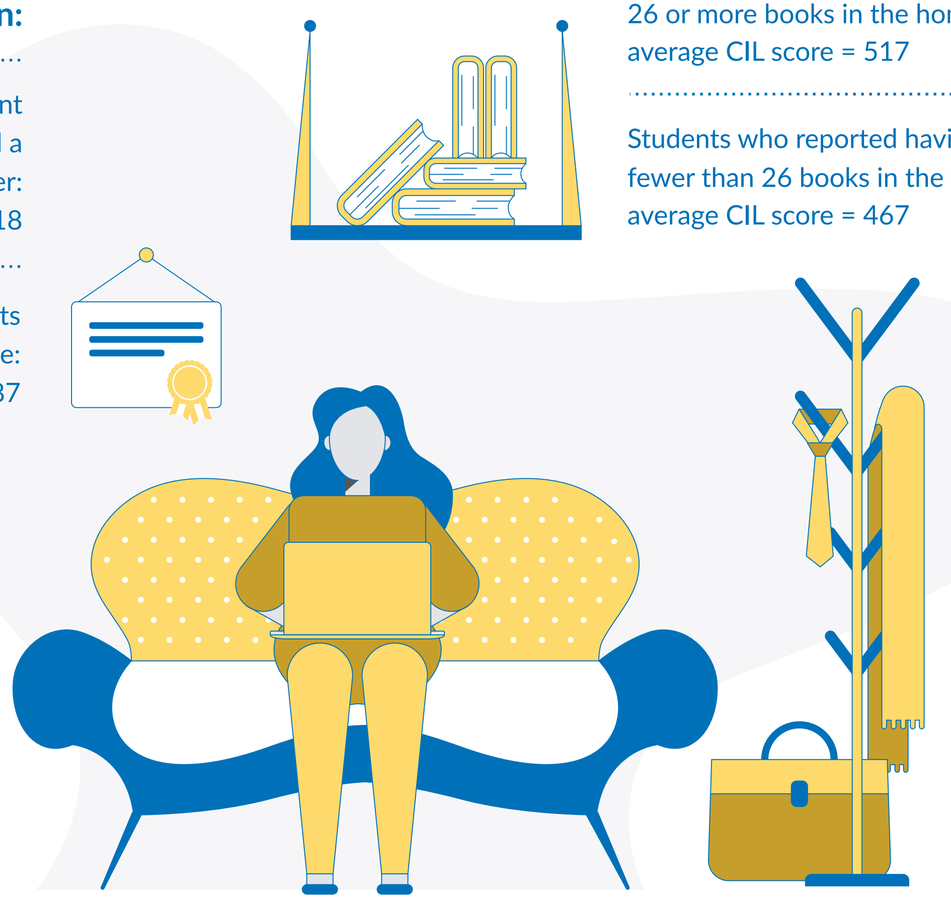
Students who reported having 26 or more books in the home: average CIL score = 517

Students who reported having fewer than 26 books in the home: average CIL score = 467

Parental education:

Students with a parent who had completed a Bachelor's degree or higher: average CIL score = 518

Students without parents who hold a degree: average CIL score = 487



Parental occupation:

Students of a parent with medium - high occupational status: average CIL score = 522

Students of parents with low - medium occupational status: average CIL score = 485

Students from higher socioeconomic backgrounds (measured by parental occupation, parental education and number of books in the home) had significantly higher Computer and Information Literacy (CIL) scores.

Parental education:

Students with a parent who had completed a Bachelor's degree or higher: average CT score = 521

Students without parents who hold a degree: average CT score = 490

Books in the home:

Students who reported having 26 or more books in the home: average CT score = 517

Students who reported having fewer than 26 books in the home: average CT score = 461

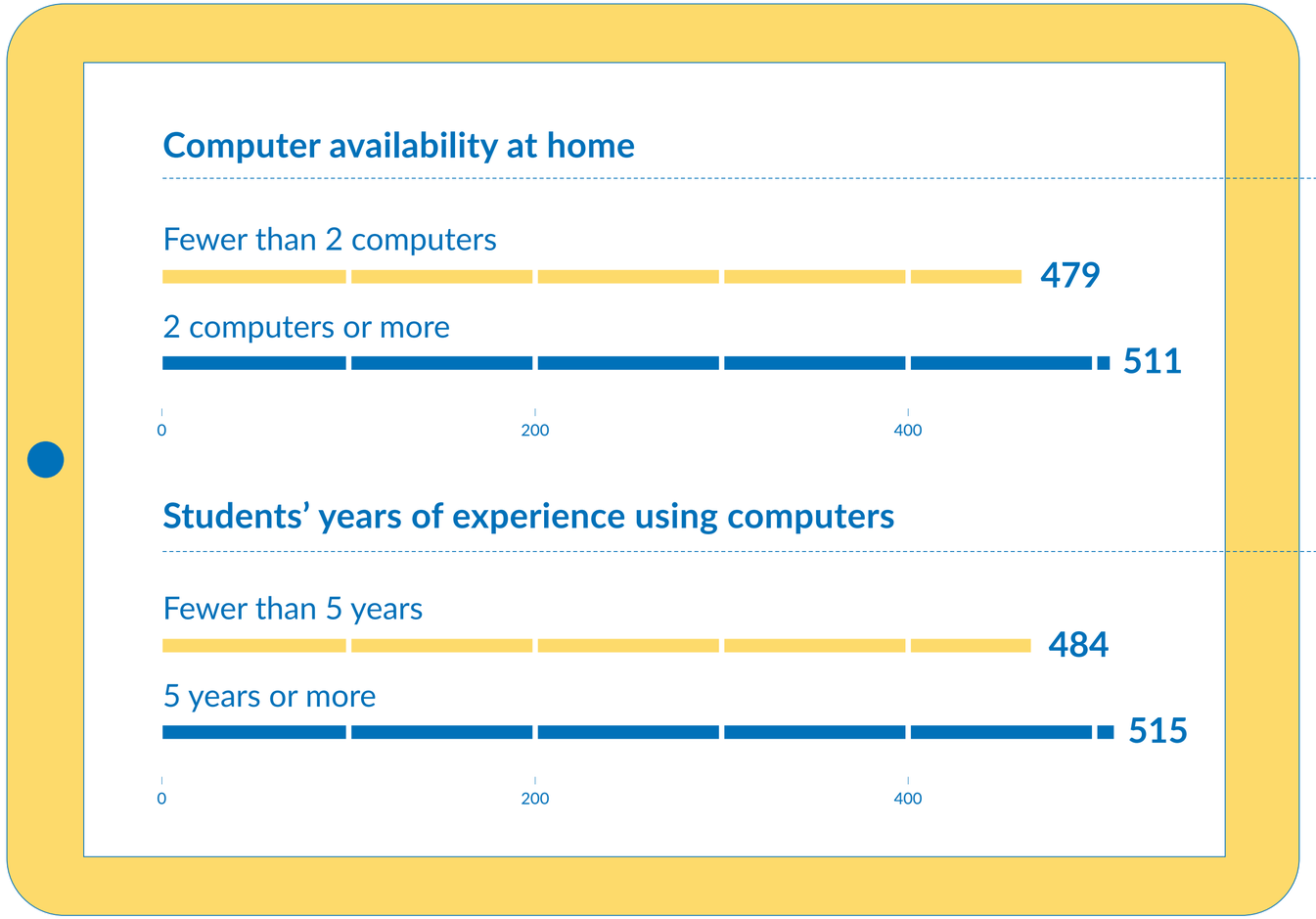
Parental occupation:

Students of a parent with medium - high occupational status: average CT score = 527

Students of parents with low - medium occupational status: average CT score = 485

Students from higher socioeconomic backgrounds (measured by parental occupation, parental education and number of books in the home) had significantly higher Computational Thinking (CT) scores.

Home access & years of experience



Students who reported having 2 or more computers in the home scored an average of 32 CIL scale points more than students with fewer than 2 computers at home.

Students who reported having 5 or more years of experience using computers scored an average of 31 CIL scale points more than students with fewer than 5 years' experience.

Students with more computers in the home and more years of experience using computers have higher Computer and Information Literacy (CIL) scores

5.

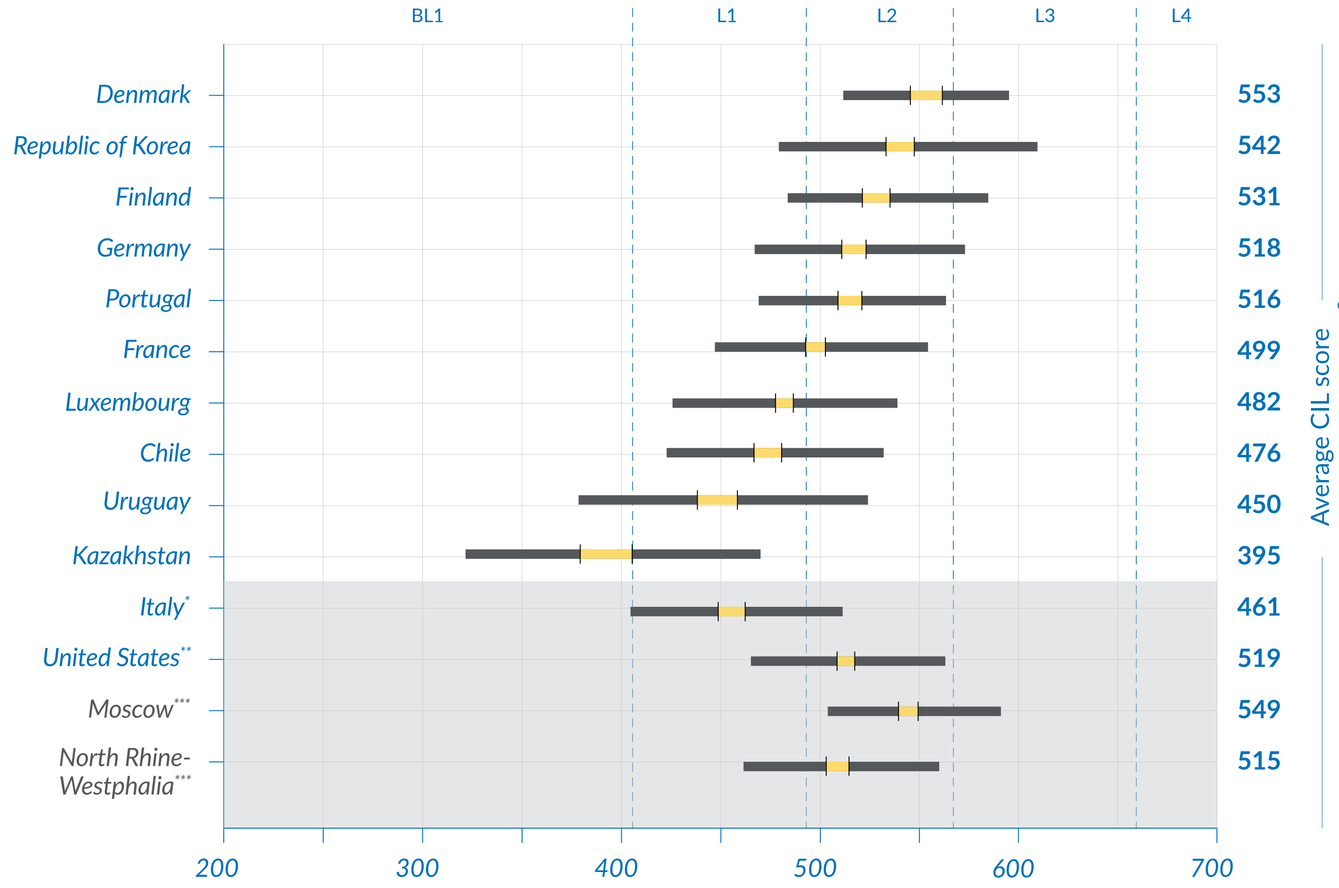
Differences in students’ Computer and Information Literacy (CIL) scores within countries are larger than the differences between countries

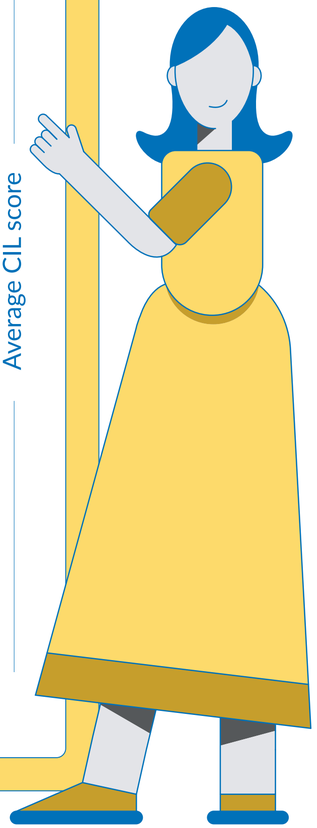
The range between the lowest 5% & the highest 95% of students' CIL scores within countries varied between 216 scale points (in Denmark) and 347 scale points (in Kazakhstan)

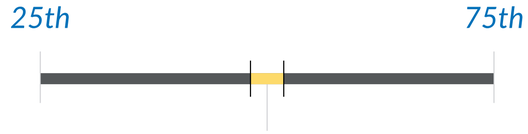
The difference between the highest & lowest average CIL scores across countries was 157 scale points

Variation in Computer and Information Literacy (CIL) scores

Differences within countries are larger than between countries







Average CIL score (±2SE)

* tested at the beginning of the school year

** not meeting the sample participation requirements

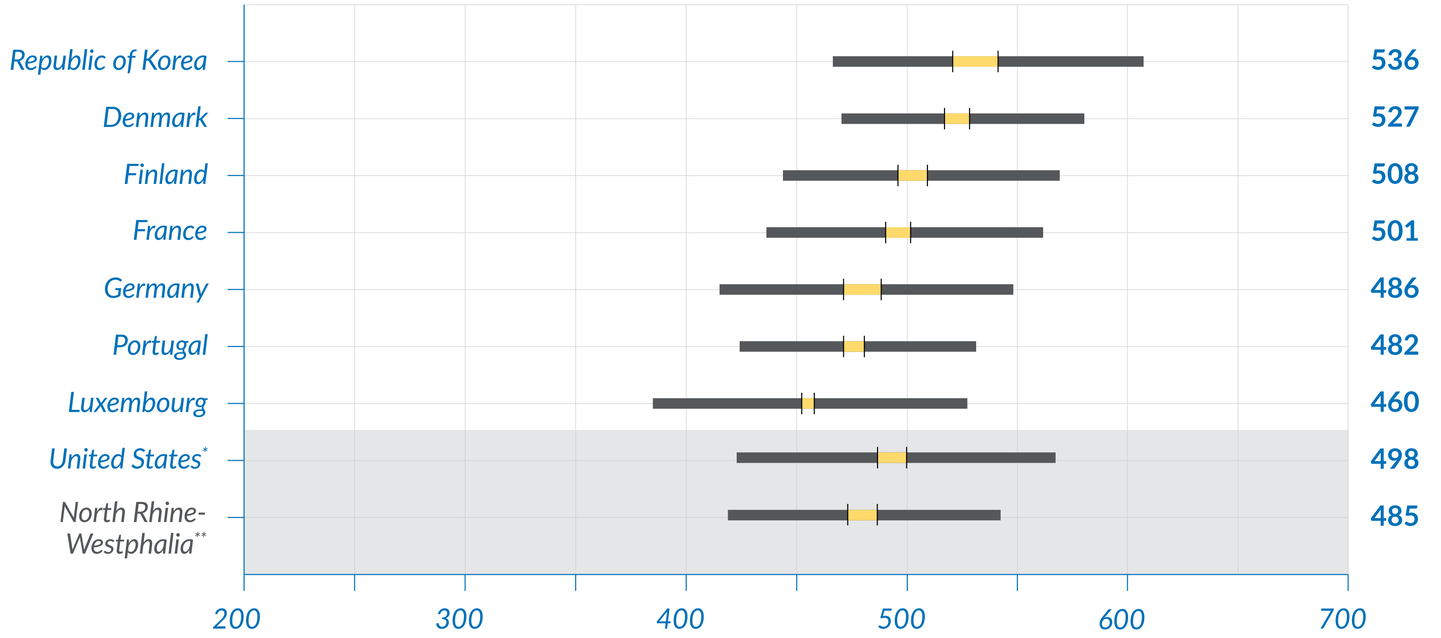
*** Benchmarking participants meeting sample participation requirements

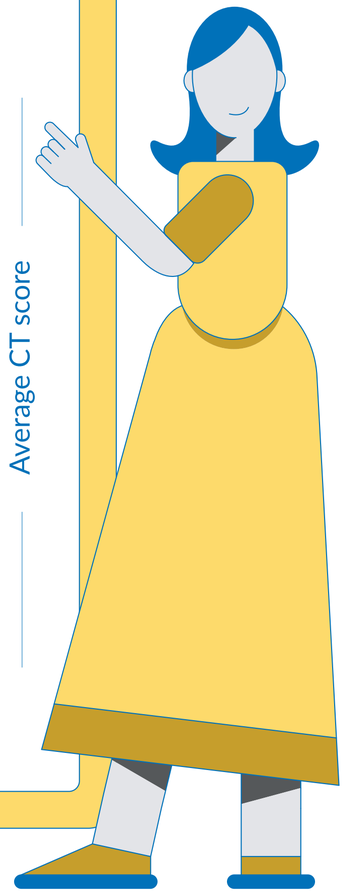
BL1 Below Level 1 CIL scale

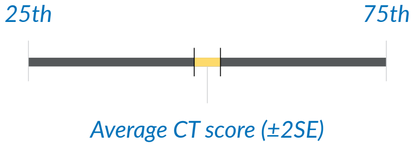
L Level

Variation in Computational Thinking (CT) scores

Variation in Computational Thinking (CT) scores





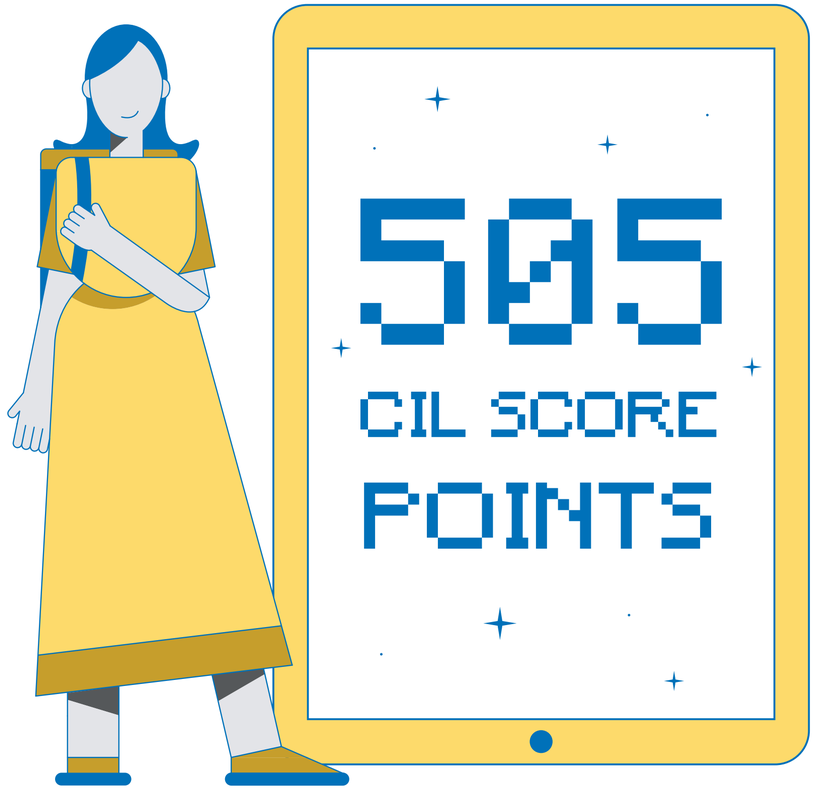


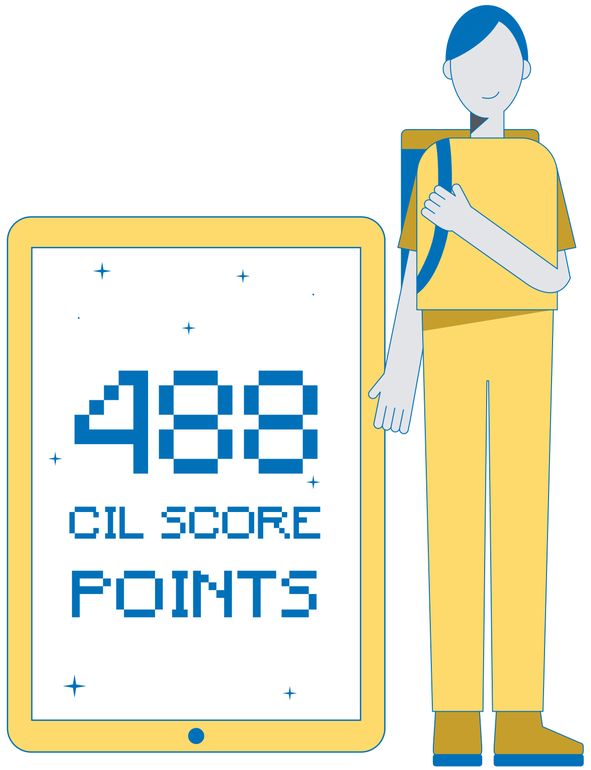
* not meeting the sample participation requirements

** Benchmarking participants meeting sample participation requirements

6.

Gender differences:
Girls tend to perform better than boys in CIL. On average, boys perform better than girls in CT but the differences are not consistent



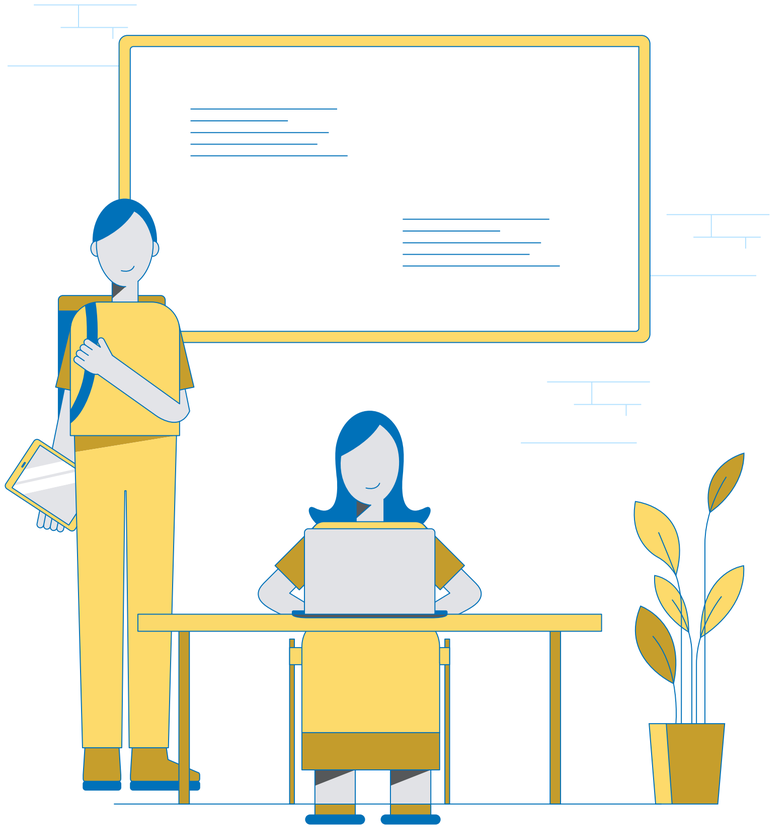


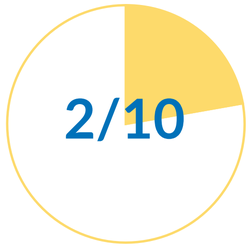
On average, girls perform better than boys in computer and information literacy (CIL)

On average, boys perform better than girls in computational thinking (CT)

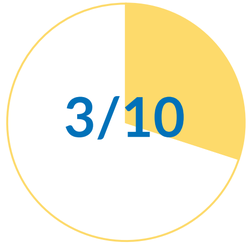
7.

Students use computers more outside than inside school and more for leisure than for other purposes

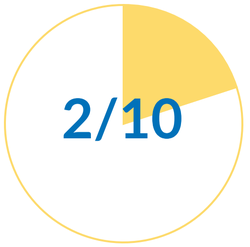




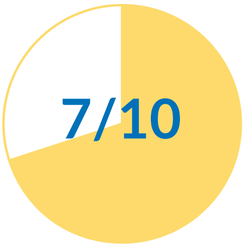
...students reporting daily use of ICT at school for school-related purposes



...students reporting daily use of ICT at school for other purposes



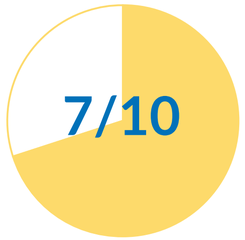
...students reporting daily use of ICT outside of school for school-related purposes



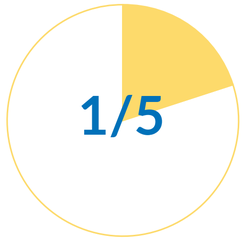
...students reporting daily use of ICT outside of school for other purposes

Students use Information and Communications Technology (ICT) more outside than inside school and more for leisure than for other purposes

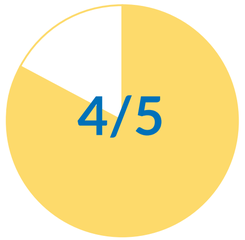
Most students use ICT at least once a week for leisure activities such as...



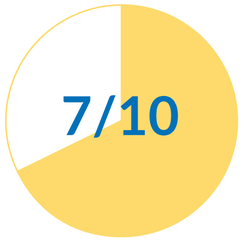
...Grade 8 students used ICT on a daily basis outside school for non-school related purposes



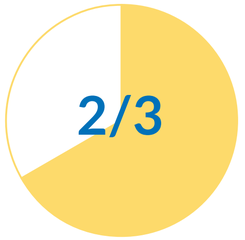
...students reported ICT use on a daily basis for school-related purposes



...listening to music or...



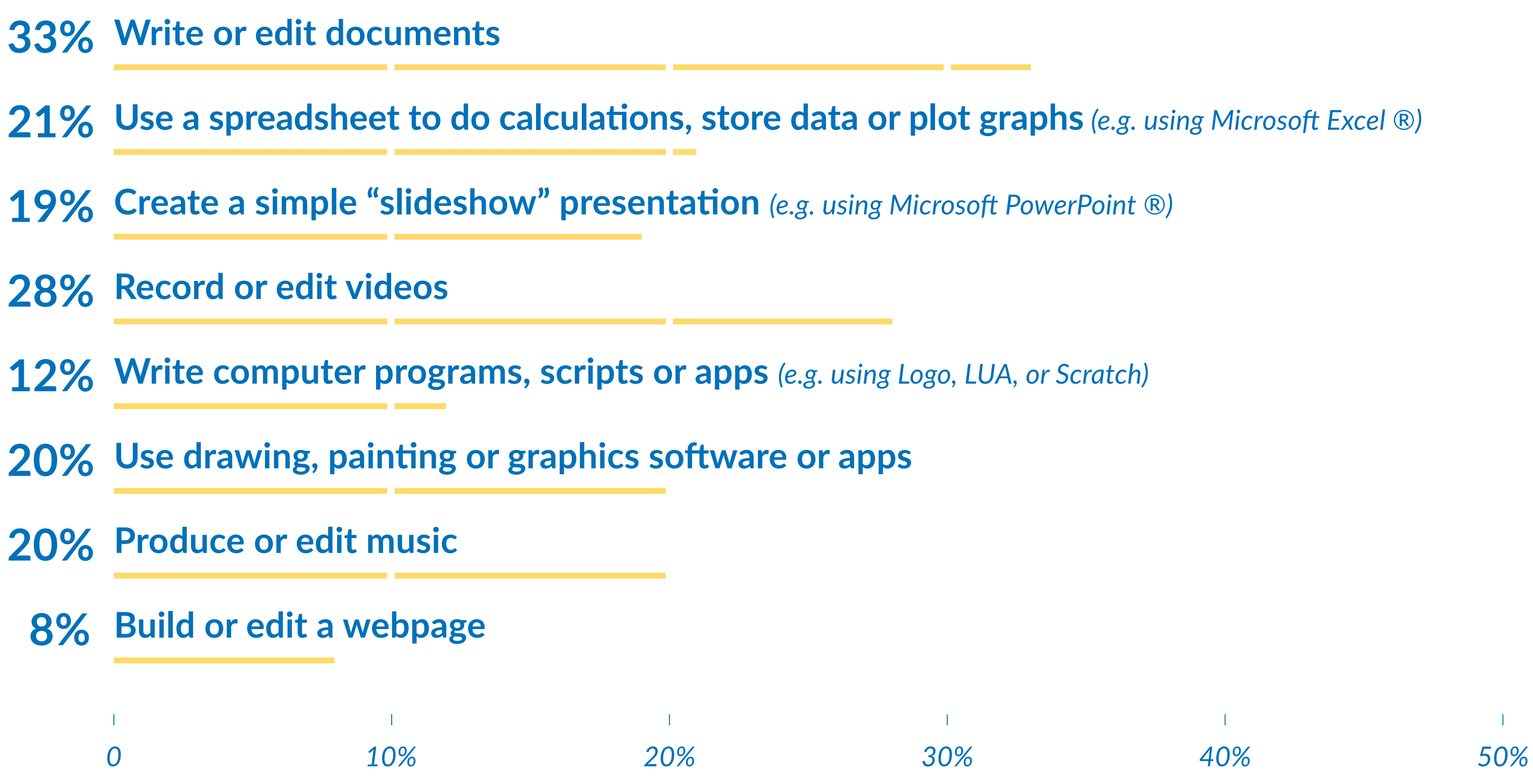
...downloading videos



...of students use ICT at least once a week to access information about things of personal interest from the internet

Students use Information and Communications Technology (ICT) more outside than inside school and more for leisure than for other purposes

Percentages of students' using Information and Communications Technology (ICT) on a weekly basis to create or edit information products



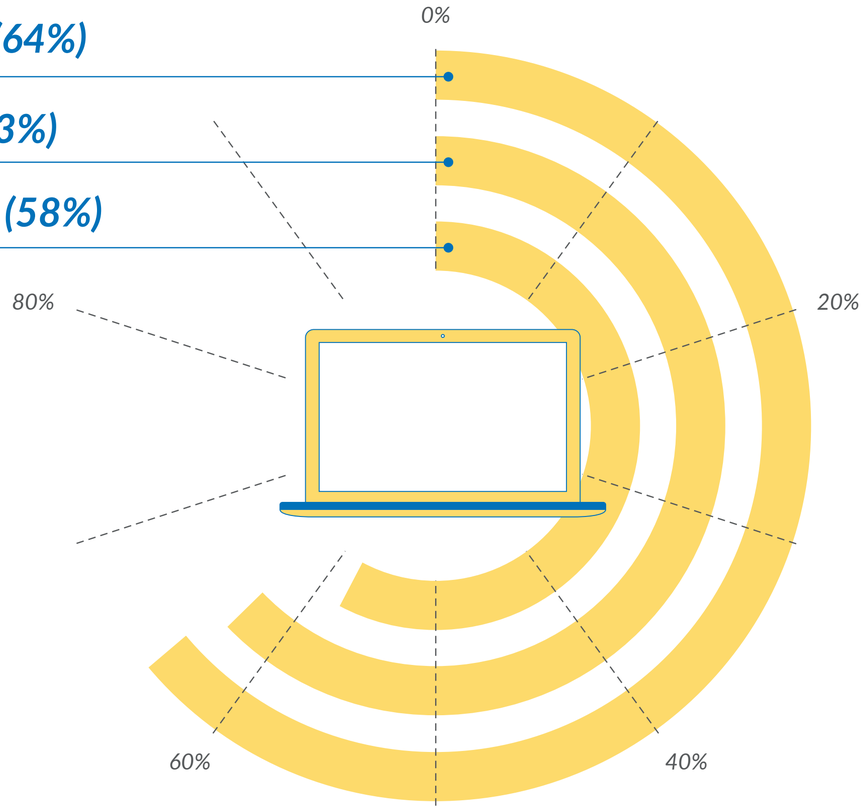
Most often, students use computers to write or edit documents (33%) or to record or edit videos (28%)

Students use computers in most lessons for

...Languages ***(64%)***

...Sciences ***(63%)***

...Humanities ***(58%)***



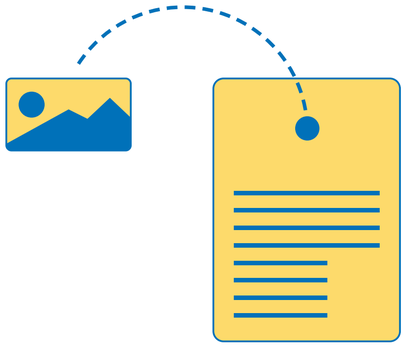
8.

On average, students & teachers have positive attitudes towards Information and Communications Technology (ICT) in education & society but they also acknowledge potential areas of concern

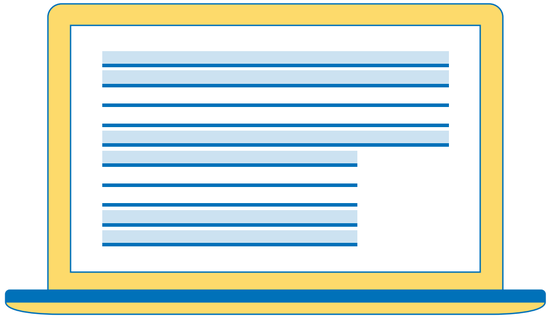
Students

Four out of five students were confident about their ability to use Information and Communications Technology (ICT) to…

…search for information

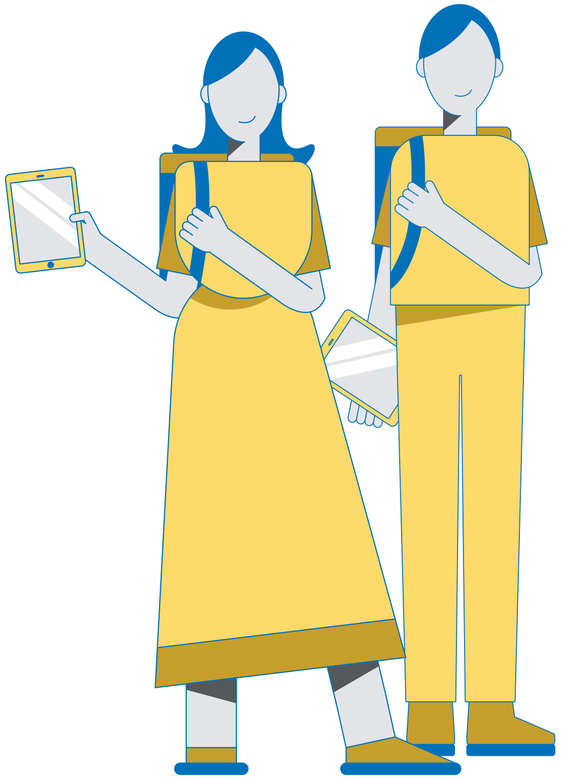


…insert an image into a document



…write or edit text for a school assignment

Most students acknowledged positive outcomes of Information and Communications Technology (ICT) for society



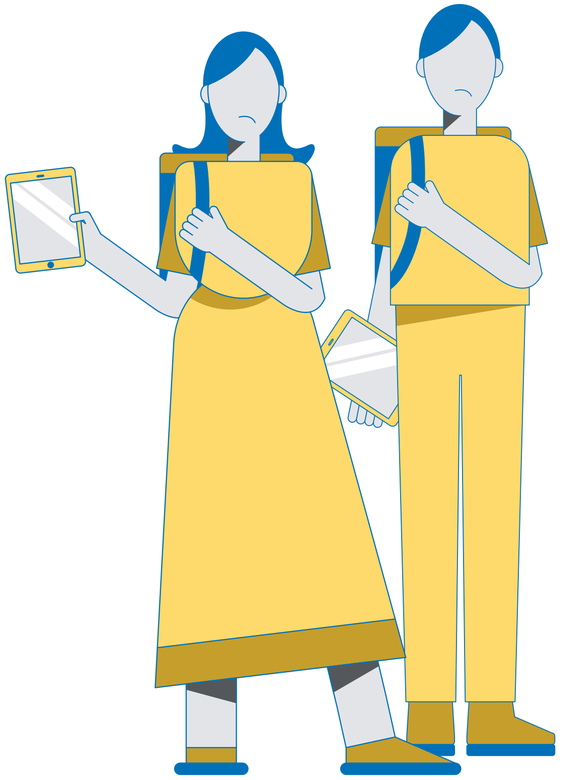
86% Said ICT helps us to understand the world better

85% Said advances in ICT usually improve people's living conditions

84% Said ICT is valuable to society

83% Said advances in ICT bring many societal benefits

Many students acknowledge that Information and Communications Technology (ICT) can have a negative impact on society



80% Said people spend far too much time using ICT

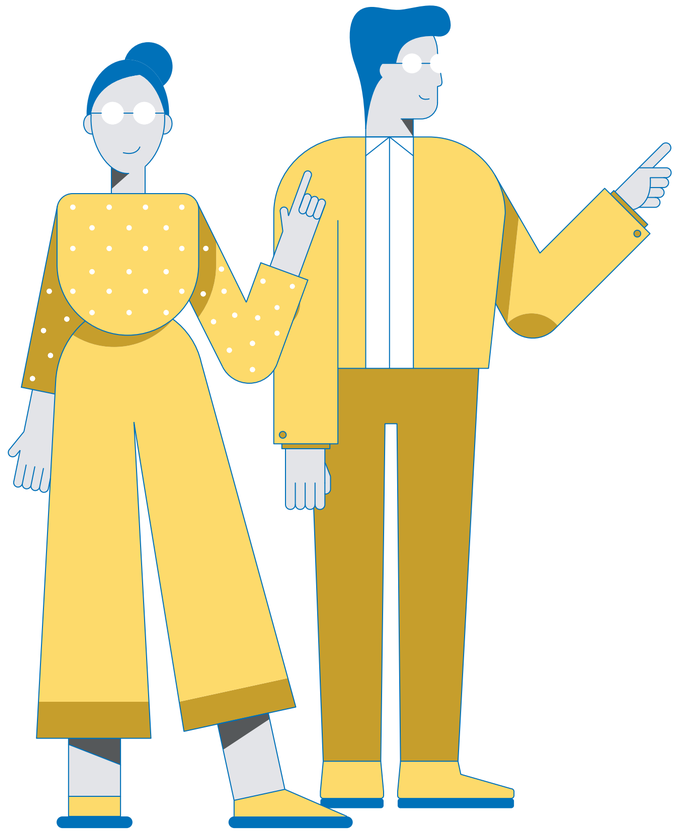
69% Said using ICT may be dangerous for people's health

66% Said using ICT makes people more isolated in society

52% Said with more ICT there will be fewer jobs

Teachers

A majority of teachers agree that there are positive benefits to using Information and Communications Technology (ICT) in teaching and learning

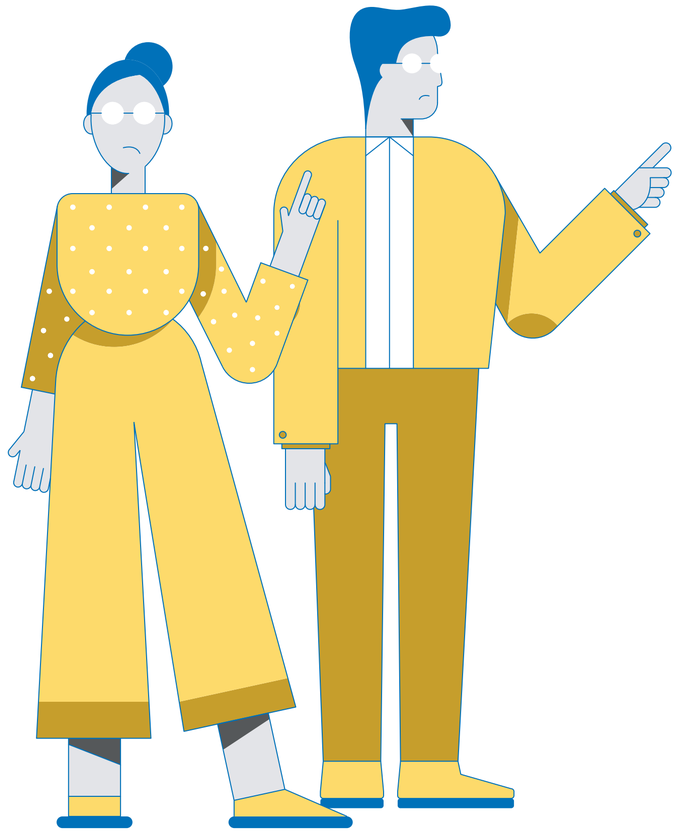


91% Said that using ICT helps students to develop greater interest in learning

92% Said that it enables students to access better sources of information

87% Agree that it helps students to work at a level appropriate to their learning needs

Most teachers agree that Information and Communications Technology (ICT) can have potential negative impacts



71% Agree that ICT use results in students copying material from internet sources

52% Said that using ICT results in poorer written expression among students

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