IEA Releases International Results of the International Computer and Information Literacy Study 2018

The second cycle of IEA's International Computer and Information Literacy Study reveals that just 2% of students demonstrated an ability to critically assess information found online.

ICILS is a large-scale, international assessment of grade 8 students' computer and information literacy and computational thinking skills. It addresses a question of critical importance: how well are students prepared for study, work, and life in a digital world?

This cycle (ICILS 2018) has seen more than 46,000 students and 26,000 teachers take part. ICILS 2018 also gathered valuable background information about students' and teachers' use of, and attitudes towards, technology.

ICILS deals with the core knowledge, skills and understanding students need to succeed in our dynamic information environment. ICILS provides countries with reliable, comparable data about young people's development of 21st century computer and information literacy (CIL) skills. On top of this, ICILS is unique in directly assessing computational thinking (CT) skills of students.

The results of this second cycle of the study call into question the generalization that young people are "digital natives" who through exposure to the use of digital devices develop expertise in their use. The study demonstrates that providing students and their teachers with information and communications technology (ICT) equipment alone, does not automatically result in the development of sophisticated digital literacy skills. Students need to be taught how to use computers effectively, and their teachers need to be supported in their use of ICT in teaching.

Commenting on the results, IEA Executive Director Dr Dirk Hastedt said:

"It is pleasing to find that, across the participating education systems, on average, students and their teachers have positive attitudes towards ICT in education and society, even though they acknowledge potential areas of concern.

"Furthermore, most students reported learning about computer and information literacy issues at school, with 74% saying that they have been taught how to search for information using ICT at school. It is encouraging to see that most students in the participating systems have access to software related resources for learning.

"Nevertheless, ICILS 2018 revealed the impact of socioeconomic status on digital literacy. On average, students from higher socioeconomic status backgrounds had significantly higher computer information literacy (CIL) scores. Students with a parent who had completed a Bachelor's degree or higher had a CIL score 31 points higher than students whose parents do not hold a degree.

"This cycle of ICILS has seen a diverse selection of fourteen countries and benchmarking entities taking part; from Korea to Kazakhstan, France to Finland, Uruguay to the United States. It is striking however, that despite their diversity, we have observed a greater difference in achievement levels within countries than between them.

"Confidence, and crucially, competence, in the use of digital devices is of vital importance globally. It is essential that young people are taught these skills at schools, and that their teachers are well supported in delivering this bedrock of modern education."

Commenting, Study Director, Julian Fraillon said:

"This cycle of ICILS is the first time an international large scale assessment has directly measured students' computational thinking (CT) skills. This is really exciting as a researcher, because it gives us an insight into how well young people can break down problems into manageable chunks, analyze problems, look for sequences, and ultimately create the step-by-step sequenced instructions in order to complete a task.

"ICILS also provides rich information on the contexts in which students develop both CIL and CT skills, including how educational systems, schools and teachers seek to support student learning"

"We're all excited to see how the ICILS data will be used to support continuous improvement in education relating to these essential skills in the digital world and we are greatly looking forward to further develop ICILS for the next cycle, which will take place in 2023."

Key Findings

1. **Young people do not develop sophisticated digital skills just by growing up using digital devices.**
    a) 18% of students who took part in the study failed to reach even the lowest level of the CIL scale, which required them to demonstrate a functional working knowledge of computers as tools.
    b) In all, 25% students achieved the lowest CIL level.
    c) 21% of students reached the two higher levels on the CIL scale, showing that they had the capacity to work independently when using computers as information gathering and management tools.
    d) Just 2% of students taking part in the study reached the highest level of CIL ability, showing they could execute control and evaluative judgement when searching for information online and creating informative displays.
2. **Providing students or teachers with 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.
    a) Most students attend schools with access to word processing, presentation, video/photo and graphics/drawing software.
    b) However, despite this level of resourcing, on average, there was a larger proportion of students scoring below level 2 on the CIL scale than above.
3. **There is a digital divide associated with the socioeconomic status of students**. On average, students from higher socioeconomic backgrounds (measured by parental occupation, parental education, and number of books in the home) had significantly higher CIL scores.
4. **The differences in students' CIL scores within countries are larger than the differences between countries.**
    a) The difference between the highest and lowest average CIL scores across countries was 157 scale points. Within countries, the gap separating the average CIL scores of the top and bottom 5% of students ranged from 216 (Denmark) to 347 scale points (Kazakhstan).

5. **Gender differences:**
    a) Overall, girls outperformed boys in CIL, scoring on average 505 CIL scale points, to boys' 488
    b) On average, boys did better than girls in the Computational Thinking portion, scoring 502 CT scale points compared with 498 by girls.
6. **Teacher attitudes:**
    a) Teachers are more likely to promote CIL and 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.
    b) However, while 70% of students attended schools where ICT coordinators indicated that digital content linked with textbooks was available for teaching and learning, just 32% of teachers in the study reported using this sort of digital content.

ENDS

For more information or to arrange interviews with Dr Hastedt or the study director, Julian Fraillon of the Australian Council of Educational Research, please contact:

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Notes for journalists

ICILS 2018 Participating Education Systems
Chile, Denmark, Finland, France, Germany, Italy, Kazakhstan, Republic of Korea, Luxembourg, Moscow (Russian Federation)*, North Rhine Westphalia (Germany)*, Portugal, Uruguay, and the United States. **Benchmarking education systems.*

CIL and CT
Computer and Information Literacy (CIL) refers to students' abilities to access, evaluate and use digital information productively. In particular, ICILS emphasises the higher-order thinking skills that students require to identify and share online information that is reliable and trustworthy.
Computational Thinking (CT) skills relate to students' capacities to conceptualise problems and formulate solutions in ways that can be implemented by a computer. Students are assessed on their ability to describe and solve problems through a visual coding environment.

The "CIL Levels" Explained
Students' results in the assessment of their CIL abilities were grouped according to Levels. To achieve Level 1 (basic/functional knowledge of ICT), students scored between 407–491 CIL scale points,

Level 2 (need support) = 492–576 scale points, Level 3 (independent user) = 577-661 scale points, and Level 4 (precision skills) = above 661 scale points.

About the International Association of Educational Achievement (IEA)

The International Association for the Evaluation of Educational Achievement (IEA) is an independent, international cooperative of national research institutions and governmental research agencies. It conducts large-scale comparative studies of educational achievement and other aspects of education, with the aim of gaining in-depth understanding of the effects of policies and practices within and across systems of education.

Partners

The Australian Council for Educational Research (ACER) in Melbourne serves as the international study center for ICILS. ACER is responsible for designing and implementing the study in close cooperation with the IEA, and the national centers of participating countries.

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