



Executive summary of 2nd Survey of Schools: ICT in Education

**Objective 1:
Benchmark progress in ICT in
schools**

EXECUTIVE SUMMARY

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 **Ipsos MORI**

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Summary of results and policy recommendations

The **2nd Survey of Schools: ICT in Education** has two objectives:

- **Objective 1: Benchmark progress in ICT in schools** - to provide detailed and up-to-date information related to access, use and attitudes towards the use of technology in education by surveying head teachers, teachers, students and parents covering the EU-28, Norway, Iceland and Turkey;
- **Objective 2: Model for a 'highly equipped and connected classroom'** - to define a conceptual model for a 'highly equipped and connected classroom' (HECC), presenting three scenarios to describe different levels of a HECC and to estimate the overall costs to equip and connect an average EU classroom with advanced components of the HECC model.

Two separate reports are published concurrently, focusing on each of the two study objectives of the '2nd Survey of Schools: ICT in Education'. The current publication refers to the **first objective** of the study, **benchmarking progress in ICT in schools**. The findings on the **second study objective** ('Model for a 'highly equipped and connected classroom') are reported in the separate publication¹.

The results of this survey contribute towards the development of updated, relevant and efficient **indicators** as well as to the establishment of a long-term and **continuous monitoring system** in the field of digital education at school. The survey was conducted in a partnership between Deloitte and IPSOS and builds upon the European Commission's 1st Survey of Schools: ICT in Education which provided data for the school year 2011/2012².

An online survey was carried out in **31 countries** (EU28, Iceland, Norway and Turkey), covering **four different target groups** at **three different ISCED levels** (ISCED level 1: primary schools; ISCED level 2: lower secondary schools; ISCED level 3: upper secondary schools). In each school, interviews were conducted with head teachers, class teachers (one teacher at ISCED level 1, three teachers at ISCED levels 2 and 3), students (all students from one randomly selected class per level in each school, except ISCED level 1), and parents.

Key findings

1. Access to and use of digital technologies

- The share of students who are in schools with **high-speed Internet** (above 100 mbps) differs widely across Europe with the Nordic countries leading. Availability of high-speed Internet is lowest at ISCED 1 level (11%) in relation to ISCED levels 2 and 3 (17% respectively 18%).
- Only 8% of students across all ISCED levels attend schools located in a **village** or a **small city**, which have access to a high-speed Internet above 100 mbps.
- The share of students who are in schools with access to a **Wireless LAN** differs widely across Europe and ranges from 46% (ISCED 1) to 52% (ISCED 2) to 67% (ISCED 3).
- There is an average number of 18 **students per computer** at ISCED level 1 at European level. The average number of students per computer at European level amounts to 7 at ISCED level 2 and 8 at ISCED level 3.

¹ European Commission (2019). 2nd Survey of Schools: ICT in Education – Objective 2: Model for a 'highly equipped and connected classroom'. Luxembourg: European Commission. doi: 10.2759/831325.

² More information on the 1st Survey of Schools: ICT in Education can be found at <https://ec.europa.eu/digital-single-market/en/news/survey-schools-ict-education>. The survey was conducted in 2013 by the European Schoolnet in collaboration with the University of Liège.

- The share of students attending **highly digitally equipped and connected schools** differs widely across Europe, is highest in Nordic countries, and ranges from 35% (ISCED 1) to 52% (ISCED 2) to 72% (ISCED 3).
- The share of students **that use the Internet at least once a week** ranges from 68% (ISCED 2) to 73% (ISCED 3).
- The share of students who **use a computer at school** at least once a week for learning purposes ranges between 52% at ISCED level 2 and 59% in ISCED level 3.
- Still 1 out of 5 ISCED level 2 students and 1 out of 4 ISCED level 3 students never or almost **never use a computer** at school.
- The share of students who use **own digital equipment for learning purposes** remains relatively stable compared to 2011/2012 data. The own equipment most used for learning purposes is a smartphone where use ranges from 30% (ISCED 2) to 53% (ISCED 3). In terms of own equipment use, the use of laptops owned by students is quite low across Europe, except in Nordic countries.
- The share of students taught by teachers that use **ICT in 25% or more of their lessons** ranges from 71% (ISCED 1) to 58% (ISCED 2) to 65% (ISCED 3) and is highest in Nordic countries.
- Teachers perceive the **insufficient number of tablets, laptops and notebooks** as the most important obstacle to the use of digital technologies at schools.

2. Digital activities and confidence of teachers and students in their digital competence

- Across all ISCED levels, more than 90% of students have teachers using ICT to prepare lessons.
- 60% of students in all ISCED levels have teachers who use **digital technologies to communicate with parents**.
- There is a higher frequency of **communication via emails and apps** between teachers and students at higher ISCED levels.
- Teachers are most confident in their own **digital competence** in the areas of **safety, communication, collaboration** as well as **information and data literacy**.
- In terms of **digital content creation**, teachers feel most confident with basic activities (e.g. producing texts) while they feel least confident in more complex tasks (e.g. coding).
- **Male teachers** feel more confident in coding/programming across all ISCED levels compared to female teachers.
- Only 3% of ISCED level 2 students and 6% of ISCED level 3 students engage in **coding activities** on a highly frequent basis (e.g. every day or almost every day). Between 76% and 79% of students in ISCED levels 3 and 2, respectively, never or almost never undertake coding activities during lessons.
- **Male students** engage more frequently in coding/programming during lessons than female students.
- Students seem to be **most confident in the digital competence areas** communication and collaboration and least confident in the digital competence areas related to problem solving and digital content creation.
- Compared to teachers, students seem to be somewhat less confident in performing fairly basic tasks such as producing a text file. **Students** seem to be **more confident** than teachers regarding **coding and programming apps, programs or robots**.
- **Male students** feel **more confident in coding/programming** across all ISCED levels compared to female students.

3. ICT related teacher professional development

- More than 6 out of 10 students across all ISCED levels are taught by teachers who engage in **personal learning about ICT in their own time**.
- Between 29% (ISCED 2) and 41% (ISCED 1) of students are taught by teachers who participate in **online communities** for professional discussions with other teachers.
- In contrast, only between 12% (ISCED 3) and 27% (ISCED 1) of European students are taught by teachers who **participated in a compulsory ICT training**.

- Between 43% (ISCED 1) and 50% (ISCED 3) of students are taught by teachers who have undertaken **pedagogical courses** on the use of ICT.
- **Introductory courses** on Internet use and general applications are more common among teachers than more advanced courses: between 27% (ISCED 2) and 31% (ISCED 2 and 3) of students are taught by teachers who undertook such introductory courses.
- Between 45% (ISCED 1) and 55% (ISCED 2) of students have teachers who invested **more than 6 days in professional development in ICT** during the past two years.
- Only between 2% (ISCED 1) and 4% (ISCED 2 and 3) of European students have teachers who report having spent **no time at all on ICT related professional development activities** over the past two years.

4. Digital home environment of students

- Across all ISCED levels, most students have **access to computers** (e.g. desktop computers, laptops or notebooks) at home. While **tablet access** is lower for students in higher ISCED levels (81 % at ISCED level 1 and 59% at ISCED level 3), **smartphone access** seems to increase with the age of students (80% at ISCED level 1 and 91% at ISCED level 3).
- Students often chat online, participate in social networks and watch video clips or download music, games or software from the Internet at home. Activities like coding or other learning activities using educational software, games, apps or quizzes are less common.
- A large share of students at ISCED levels 2 and 3 never or almost never discuss the risks of the Internet with their parents (42% ISCED 2, 51% ISCED 3).
- On average, 79% of ISCED 1 students, 59% of ISCED 2 students and only 39% of ISCED 3 students have parents that indicate that they **know enough about their child's online activities**.
- **The younger the child, the more frequently parents engage in ICT-related activities** with them.
- More than 3 out of 5 students at ISCED levels 1 and 2, but only half of ISCED 3 students, have parents who are highly confident in teaching their children how to use the Internet safely and responsibly.
- Still, **1 out of 5 students** at ISCED levels 1 and 2 have parents who declare having only **low (or no) confidence in teaching their children how to use the Internet safely** and responsibly. This figure is higher at ISCED level 3 with 30%.
- Students at ISCED level 1 are more likely to have parents that use **parental control** tools than students at ISCED levels 2 and 3, while 1 out of 3 ISCED level 1 students have parents who do not implement any parental control tool.
- The most used parental control tools over all ISCED levels are **online content filters** (e.g. filtering out adult-related sites, illegal activity and social networking sites) and program blockers to stop children from running certain programs.

5. Schools' digital policies, strategies and opinions

- In order to support its use in teaching and learning, most schools organise **regular discussions with teaching staff about ICT use for pedagogical purposes**. Over all ISCED levels, on average 50% (ISCED 1) to 56% (ISCED 2) of students are in schools which organise such regular discussions.
- Between 33% (ISCED level 3) and 38% (ISCED level 2) of students attend schools that implement **written statements about the use of ICT**.
- Only slightly more than 30% of students over all ISCED levels are in schools that have **policies and/or actions to assess the outcomes of using ICT for teaching and learning**.
- About 1 out of 2 European students across all ISCED levels attend schools where time or space for teachers to meet is scheduled in order to support ICT use through collaboration among peers.
- 64% of European students at ISCED level 1, 73% of European students at ISCED level 2 and 66% European of students at ISCED level 3 attend schools having a specific

policy or programme in place to prepare students for **responsible behaviour on the Internet**.

- Over all ISCED levels, most applied methods by schools in order to **reward teachers** for ICT use in teaching and learning are: providing additional training hours and additional ICT equipment for the classroom.
- Between 56% (ISCED 1) and 71% (ISCED 3) of students across all ISCED levels attend a school having **initiatives in place to encourage innovation**.
- Between 62% (ISCED 1) and 81% (ISCED 2) of students are in schools with an **ICT coordinator**.
- Both teachers and head teachers over all ISCED levels have a very **positive attitude** towards using ICT for learning and teaching. In this respect, the positive opinions of head teachers are even more pronounced.
- Both teachers and head teachers clearly agree that ICT use in teaching and learning is essential to prepare students to **live and work in the 21st century**.
- The majority of **students** at ISCED levels 2 and 3 'strongly agree' or 'agree' that it is worth using a computer because it will help them in the future.
- The majority of students have **parents** who believe that digital technologies have a positive impact on their children to study more efficiently (e.g. the use of digital technologies lead to a better understanding, a higher motivation, etc.).
- About 70% of students have **parents** who believe 'a lot' or 'somewhat' that the use of ICT will help their child to find a job in the labour market.

Policy recommendations

Investing in **high-quality education** pays long-term dividends for the European economy and for the overall prosperity of European societies. Innovation in education systems have a great potential to significantly improve learning outcomes, enhance equity and improve efficiency. Thus, there is a clear need to **harness technological change for the benefit of all learners** in order not to further exacerbate existing divides in society. For instance, if broadband availability and adoption of digital equipment are not diffusing in rural and urban areas or between different European countries at the same speed, already existing divides between schools which can benefit from fast Internet access and latest technological developments, and those which are left behind will further increase. Therefore, it will be a key challenge to make sure that **no one is left behind in the digital revolution** in the education sector. This is particularly relevant as the results of this survey clearly show **wide differences** between European countries and between schools located in and outside of big cities with regard to having access to and the use of digital technologies. Whereas several countries are clear frontrunners regarding mainstreaming the access to digital technologies in schools, other countries are lagging behind regarding the level of connectivity and equipment provision in their schools.

To address this situation, the EU, Member States, regions and municipalities as well as industry and civil society organisations must make a concerted and coordinated effort to allow the **European education sector to stay ahead of technological change**. Building upon efforts achieved at different levels will be crucial to bring about the necessary change.

The responsibility for education lies with Member States, which makes **policies and action at national and local level indispensable**, particularly in countries lagging far behind others. However, the European Union also has an important role to play in scaling up innovation in all EU Member States' education systems, particularly through exchange of best practices, peer learning or evidence sharing. In fact, there are several EU funding programs available for digital education projects in the current multi-annual financial framework running from 2014 to 2020 which complement national efforts (such as Erasmus+, European Social Funds, European Regional Development Fund, Horizon 2020, Wifi4EU through the Connecting Europe Facility (CEF), etc.). Education and training is one of the eleven priorities of the EU's 2014-2020 cohesion policy ("thematic objective 10").

There is a **clear need for digital education to be further supported by the new Multiannual Financial Framework (2021-2027)** in addition to national and regional

investments as well as cooperation between private and public stakeholders. The large gaps between surveyed countries reported in the study provide a clear signal to funding programmes such as the European Social Fund (ESF) and the European Regional Development Fund (ERDF) to continue supporting activities to modernise education and training systems, including investments in educational infrastructure. The proposed new Research and Innovation programme (Horizon Europe) will play a crucial role in spurring innovation in education and also scaling up innovation activities to facilitate market entry and diffusion of innovations through large-scale piloting.

Continuous professional development is key for teachers to integrate digital technologies into their teaching practices³. If digital competence of teachers is to be boosted, it is of high importance that policies and actions support all types of participation and engagement in professional development and other forms of professional learning, such as personal learning in their own time. Member States have the **important role to promote all forms of professional development**, including incorporating digital skills in the initial teacher training curriculum. Their role also includes guiding schools in incorporating the goals on digital technologies in school policies, strategies and overall vision. That way, schools can support teachers to use digital technologies and also promote their use for on-the-job learning, peer learning and other knowledge sharing activities within the school. To **facilitate teachers' professional development and further integration of ICT in education**, Erasmus+ offers many successfully established tools for exchanging best practices, peer learning and professional development of teachers (e.g. through tools as eTwinning, School Education Gateway, Teacher Academy). However, more efforts will be needed to further recognise and reward the use of these tools, and promote them among schools, teachers and policy-makers. Furthermore, the recognition by Member States of these existing tools (e.g. by integrating eTwinning in the curriculum) and rewarding their use will be key.

Furthermore, given the many benefits of a high-speed Internet access to schools, the vision of the European Commission is that **by 2025, all schools should have access to Internet connections with download and upload speeds of 1 Gigabit of data per second**. In this context, a wide range of measures have already been undertaken and/or are foreseen by Member States, regional and/or local administrations to finance **connectivity investments**. Further action in this area is particularly urgent in countries lagging far behind others. As part of the next long-term EU budget, the European Commission proposed to renew the **Connecting Europe Facility (CEF)**. The results of this survey show that this Gigabit connectivity goal is very much out of sight at the moment and clearly support the future **Connected Europe Facility Programme's** aim – next to investment efforts at national and regional level - to support high-speed Internet access for socio-economic drivers, including schools, to maximise their positive spill-over effects on the wider economy and society. The European Commission is also advised to further promote its established network of the **European Broadband Competence Offices (BCOs)** which provide legal, technical and financial guidance, including to schools, to support stakeholders in their country or region in accelerating broadband roll-out.

Moreover, the proposed **Digital Europe Programme** has been designed to support the digital transformation of the public sector and of areas of public interest by improving their digital capacities. For Digital Education, this **opens up opportunities for supporting the deployment of digital capacities in schools** (i.e. equipment, technologies, digital content) as well as innovative and effective teaching and learning practices at European level that have already been proven successful in smaller scale pilots. In addition, policy makers are advised to **exchange information and best practices** on the different existing models of providing schools with access to devices (including **Bring-Your-Own-Device policies**) to better understand specific benefits and disadvantages. In this respect, the **digital home environment requires particular attention** by policy-makers as the resources for home-based digital learning must be equally available to all in order to not

³ Organisation for Economic Co-operation and Development (2014). TALIS 2013 results: An international perspective on teaching and learning. OECD.

to increase any digital divide, e.g. between children from low and high socio-economic backgrounds. While the results of this survey revealed that access to equipment is widespread, there are still children without good access to digital equipment at home.

Moreover, digital skills including **coding skills** are essential so that everyone can take part in society and contribute to economic and social progress in the digital era. Coding helps practice 21st century skills such as problem solving or analytical thinking. The results of this survey however show that students rarely regularly engage in coding/programming activities at European level. In light of these figures, activities to strengthen students' coding skills at EU, Member States and local level need to be further scaled up. In fact, the goal of the European Commission is to encourage 50% of schools in Europe to participate in the EU Code Week by 2020, which is a grassroots movement promoting programming and computational thinking in a fun and engaging way. Moreover, the results of this survey show that **female students** less frequently engage in coding than their **male counterparts**. These figures support the European Commissions' strategy to get more women interested in digital by tackling three areas: the image of women in the media, digital skills for girls and women and increasing the number of female tech entrepreneurs.

Furthermore, in terms of strengthening students' competences, national and regional efforts alongside EU initiatives such as the work done through the **Safer Internet Centres** should be further expanded. In this respect, raising parents' awareness on a safe and responsible use of digital technologies is key, as parents can play an important role in helping their children face the challenges digital technologies may bring, including online threats, such as harmful content and behaviour. The results of this survey support the activities aimed at **parents supported by the European Commission's Strategy for a Better Internet for Children**. Among other things, the Commission co-funds Safer Internet Centres in Member States whose main task is to **raise awareness and foster digital literacy among minors, teachers and parents**. The Commission's Safer Internet Day, celebrated each February, is now a worldwide event in over 140 countries to raise awareness of **online safety** among all citizens. In line with the **Digital Education Action Plan**, in 2018 the Commission also launched the EU-wide #SaferInternet4EU Campaign on online safety, media literacy and cyber-hygiene, which helps children, young people, parents, teachers, and other EU citizens to become aware of online risks and challenges.

Moreover, given that the **digital transformation affects schools** in so many ways, it is important to develop a **better understanding** of schools' access to digital technologies as well as where they stand with the use of digital technologies for teaching and learning. In this case, **providing tools for schools** to reflect on their usage of digital technologies for pedagogical goals is crucial, an example of which is **SELFIE**, among many tools provided by Member States themselves. It is also vital to **further strengthen the research base** and **align European-wide and national initiatives** thus allowing to optimise data collection. Both scholars and policy makers consider the availability of reliable data sources as fundamental in order to get a full understanding of the needs in this area. Schools are overloaded with questionnaires from different instances, both at the national and supra-national level. In addition, many of these questionnaires are, to a large extent, overlapping. Instead of scattered European and national initiatives resulting in over-surveying education institutes on a non-permanent basis, data collection initiatives should be consolidated as far as possible.

Last but not least, European policy makers are well placed to elaborate a general framework to support the smooth implementation of digital technologies in education. Such a framework should be an extension of the existing **Digital Education Action Plan**, and should not only serve as a **general guideline** for the individual countries, but also as an advisory document to inform Member States on ways to **implement digital technologies in education, financing possibilities and existing initiatives and support measures**. To sum up, this general EU framework should encourage and support the exchange of best practices among countries and enable capacity building at national, regional and school level.

European Commission

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