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Policies for the digital transformation of school education: Evidence from the Policy Survey on School Education in the Digital Age

Luka Boeskens,

Katharina Meyer

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OECD Education Working Papers Series

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Abstract

The Policy Survey on School Education in the Digital Age collected comparative information on the digital education policies in OECD member and partner countries. 37 jurisdictions participated, providing information on the state of their digital education policy ecosystem in January 2025. The survey results cover central-level policies across a range of domains: Central strategies and policy co-ordination for digital education; governance and regulation; the adaptation of pedagogical approaches, curricula and assessments to digital education; funding and procurement of digital resources; digital infrastructure and innovation; building educators and other stakeholders' digital capacity; aligning human resource policies with digital education; and frameworks to monitor and evaluate digital education and its impact on students. The main text of the working paper provides an overview of key findings related to each of these domains. Annex A presents the complete survey results and individual jurisdictions' responses in comparative tables. Taken together, the results of the Policy Survey are intended to strengthen the evidence base on digital education policies, facilitate international peer learning and support public authorities in developing policies and strategies for the successful digital transformation of school education.

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1 Introduction

Background

Digital technologies have become a key resource for OECD education and training systems. If used effectively, they promise to transform teaching and learning practices and to advance quality, equity and efficiency in education. Investment in education technology has surged worldwide over the past decade and digital education technologies increasingly permeate schools and classrooms. At the same time, access to high-quality digital technologies remains partial and unequally distributed in many education systems and their use often falls short of genuinely transforming teaching and learning practices. Enabling digital education policies are therefore needed for school systems to make effective use of digital technologies, to reap their full potential and to ensure that the teaching profession is ready for the digital age.

The unprecedented increase in the use of digital education resources during the COVID-19 pandemic and the rapid progress in generative artificial intelligence in recent years have made it a top priority for governments to review and adapt policies to effectively and equitably prepare schools for the digital age. The OECD umbrella project *Resourcing School Education: Policies for the Digital Transformation of Education and Future-Readiness of Teachers* was launched in 2023 in order to collect comparative, qualitative data to support this process and to inform the development of system-level digital education policies (OECD, 2025[1]). The Policy Survey on School Education in the Digital Age (hereafter "the Policy Survey") and its associated outputs are designed to inform this work and to strengthen the project's comparative evidence base on digital education policies. This working paper provides a first descriptive overview of the Policy Survey's results, which will be subject to more in-depth analyses carried out by the *Resourcing School Education* project and will inform its country-specific work going forward.

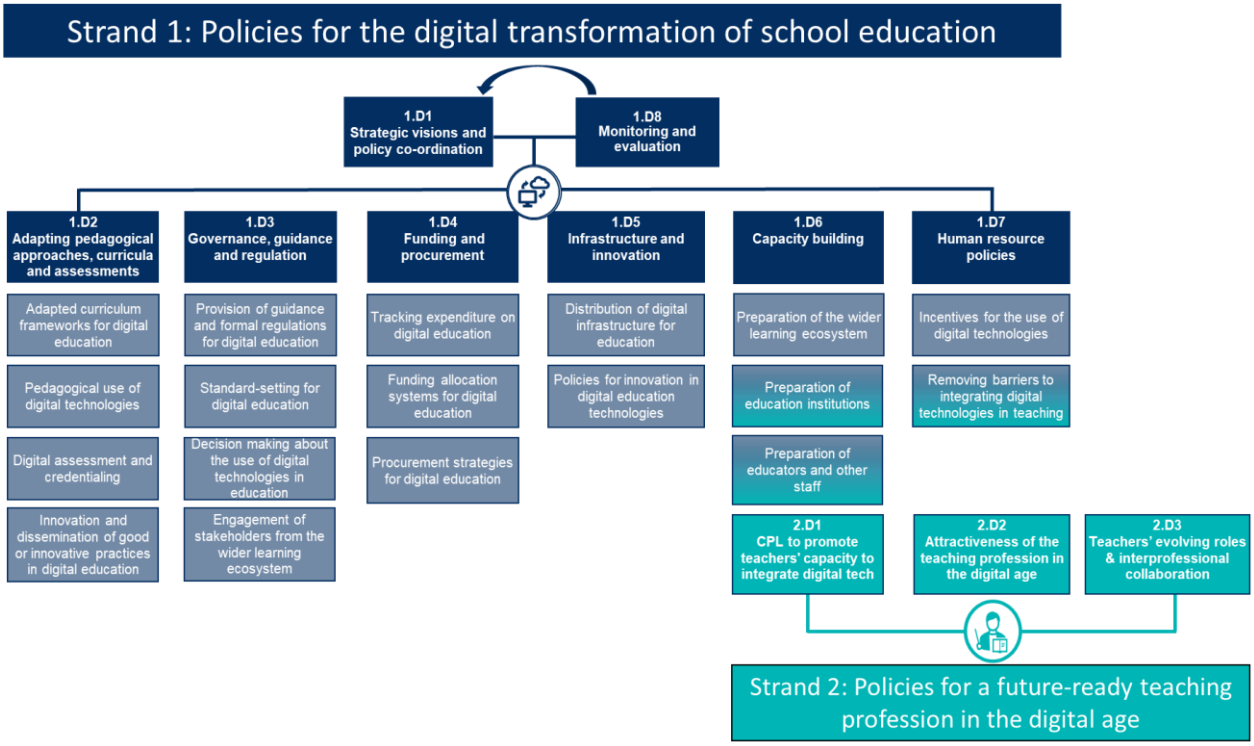
Thematic coverage and analytical framework

The Policy Survey covers two of the umbrella project's thematic strands: Strand 1 ("Policies for the digital transformation of school education") and Strand 2 ("Policies for a future-ready teaching profession in the digital age"). The main text of this working paper focuses on Strand 1, presenting a descriptive summary of the survey results, highlighting key findings related to each of the survey's thematic areas. Comparative tables with the complete survey data and individual jurisdictions' responses – including those on teacher shortages and career structures under Strand 2 – are presented in Annex A. A summary of the survey's main findings is provided in Box 1. Throughout the working paper, the Policy Survey results are presented in line with the project's analytical framework (see Figure 1), which covers the following eight dimensions of Strand 1 as well as Strand 2:

- Dimension 1: Strategic visions and policy co-ordination
- Dimension 2: Adapting pedagogical approaches, curricula and assessments
- Dimension 3: Governance, guidance and regulation
- Dimension 4: Funding and procurement

- Dimension 5: Infrastructure and innovation
- Dimension 6: Capacity building
- Dimension 7: Human resource policies
- Dimension 8: Monitoring and evaluation
- Strand 2: The teaching profession in the digital age (results included in the Annex)

Figure 1. Analytical framework guiding the project and the Policy Survey



Source: OECD (2025[1]), *Resourcing School Education: Policies for the Digital Transformation of Education and Future-Readiness of Teachers* [website], https://www.oecd.org/en/about/projects/resourcing-school-education.html (accessed on 12 March 2025).

The education systems that participated in the Policy Survey have taken different approaches to the digital transformation of schools and this working paper presents them in a comparative way. Nevertheless, the survey results need to be interpreted in the context of the diversity of the participating jurisdictions' education systems, for example their different degrees of centralisation and variations in the locus of decision making. Respondents were asked to provide information pertaining to their highest level of government, i.e. the central level of government or the highest level of decision making in the case of sub-national entities. For policy areas that are not under the responsibility of the respective highest levels of government, respondents were encouraged to report the most common policies implemented at lower levels of government and to highlight variations in the table notes.

Since the results of the Policy Survey reflect system-level policy frameworks, it is also important to bear in mind that their expression may vary within jurisdictions at the local level. Central policies and regulations may be subject to differential implementation or interpretation, which may lead to some degree of heterogeneity across local units and schools, or discrepancies between system-level frameworks and the experience of education professionals on the ground. As for any system-level data collection, it is therefore important to complement and triangulate the Policy Survey's results with additional data sources, which the *Resourcing School Education* project will do in future analytical outputs.

Participation

The survey was completed by 37 jurisdictions (26 OECD member countries, 7 sub-national entities[1] and 4 non-member economies): Austria, Chile, Colombia, Denmark, Estonia, Finland, France, Germany, Greece, Iceland, Israel, Ireland, Italy, Japan, Korea, Lithuania, Luxembourg, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, New South Wales (NSW) in Australia, the Flemish Community of Belgium, the French Community of Belgium, England (United Kingdom), Northern Ireland (UK), Scotland (UK), Wales (UK), Bulgaria, Croatia, Romania and Singapore. Throughout this document, the terms "jurisdictions" and "systems" are used interchangeably to refer to the survey respondents.

Survey administration

The results presented in this document reflect the digital education policies of participating jurisdictions in January 2025. The OECD Secretariat presented a draft of the survey questionnaire at an informal meeting of the Group of National Experts on School Resources (GNE-SR) on 13 September 2023. The survey was revised based on the feedback received and shared with jurisdictions in October 2023. The OECD Secretariat received responses over the course of the first half of 2024 and validated them from November 2024 to January 2025, including any updates on recent policy developments. The survey questions were presented in fixed-response format with the option to provide additional information to clarify or add nuance to responses in open-ended questions and comment fields.[2] One response per (national or sub-national) education system was requested.

Scope and definitions

The survey covers policies concerning public school and government-dependent private schools at the primary and secondary levels of education. Unless otherwise specified, responses refer to ISCED[3] levels 1-3 and notable differences across levels of education in individual jurisdictions are explained in the table notes. Where policies differed between general education and technical and vocational education and training (TVET), respondents were asked to report on the policies applicable to general education and to describe policies applicable to TVET in the table notes.

Building on the terminology used in the OECD Programme for International Student Assessment (PISA) 2022 and the OECD Teaching and Learning International Study (TALIS) 2024, the Policy Survey uses the term "digital resources" to refer to: 1) digital devices or "hardware" (computers, tablets, smartphones, 3D printers, etc.), 2) software (programmes, apps, communication tools, educational learning tools, etc.) and 3) online resources and digital education content (websites, web portals, digital textbooks, etc.). Definitions of other key terms are provided in notes under the relevant tables in Annex A. Please note that the definitions are chosen in the context of this survey and may not reflect those used in other OECD data collections.

[1] The sub-national entities are listed in tables under "other participants" and referred to in tables and figures as follows: The state of New South Wales, in Australia, is referred to as "NSW (Australia)"; the Flemish Community of Belgium is referred to as "Flemish Comm. (Bel)"; the French Community of Belgium is referred to as "French Comm. (Bel)"; the nations of England, Northern Ireland and Scotland and Wales are referred to as "England (UK)", "Northern Ireland (UK)", "Scotland (UK)" and "Wales (UK)" respectively.

[2] OECD (2023), *Policy Survey on School Education in the Digital Age* [doc. ref. EDU/EDPC/SR(2023)8].

[3] ISCED refers to the International Standard Classification of Education (ISCED 2011). The ISCED levels referred to in individual tables are: ISCED 0 (early childhood education and care), ISCED 1 (primary education), ISCED 2 (lower secondary education), ISCED 3 (upper secondary education), ISCED 4 (post-secondary non tertiary education), and ISCED 5-8 (higher education).

Box 1. Key findings of the Policy Survey on School Education in the Digital Age

The Policy Survey on School Education in the Digital Age provides an overview of education systems' policy approaches to the digital transformation of school education in 2025. Several key findings emerge from the survey:

- Digital education now assumes a prominent position in countries' central education policy strategies. The implementation of these strategies is increasingly supported by funding and accountability mechanisms and many jurisdictions require schools to develop corresponding digital strategies. While most central strategies cover digital infrastructure and teachers' capacity, fewer include initiatives or goals related to artificial intelligence (AI) and other emerging technologies.
- Binding regulations on the use of digital resources in schools remain the exception and most jurisdictions rely on non-binding guidelines, particularly for emerging technologies like AI. While privacy and data protection are regulated across all jurisdictions, approaches to enforcement and implementation support vary. Around half of jurisdictions have processes in place to certify the quality or safety of digital education resources.
- The funding and procurement of digital education resources tends to be complex, often involving multiple levels of administration and different funding mechanisms for different types of goods and services. In many systems, schools share some responsibility for the procurement of digital devices or software and central authorities use a range of approaches to support them by providing guidance, negotiating with suppliers or setting purchasing criteria.
- Many jurisdictions allow for local flexibility to ensure students' access to digital devices and give sub-central authorities or schools the discretion to select appropriate strategies. Although 1:1-policies, which provide all students in need with a portable device, appear to be widespread (particularly at the secondary level), not all systems have a centrally defined strategy to ensure that disadvantaged students have access to a digital device for learning.
- The use of digital resources is an integral part of many initial teacher education (ITE) programmes, but whether and how it is integrated is often at the discretion of ITE institutions. While only a few jurisdictions require teachers to participate in continuing professional learning (CPL) on digital technologies, most systems offer free learning opportunities.
- The use of digital resources is now mentioned in many systems' professional standards for teachers. Of the jurisdictions with central appraisal or evaluation frameworks, around half also systematically considered teachers' use of digital resources when evaluating their work, although the systematic evaluation or certification of teachers' digital skills at the central level is not yet widespread.
- The evaluation of the use of digital resources in schools remains limited, with only a third of jurisdictions systematically considering it in external school evaluations. More frequently, authorities rely on schools to evaluate their own use of digital resources and just under half of jurisdictions have made this a formal part of schools' self-evaluation frameworks.
- While most jurisdictions report that they assess the impact of their digital education policies on student outcomes, evaluations primarily focus on students' digital skills. Less attention is paid to student outcomes like cognitive skills, their well-being, or socio-emotional skills.
- Many countries have updated their school curricula to integrate digital skills and learning contents, but only a few have included interactive features in their digital curricula so far. Although the importance of digital skills is widely recognised, their systematic assessment remains limited. Only a minority of jurisdictions are covering them in school-based assessments or central examinations.

2 Results of the Policy Survey on School Education in the Digital Age

The following sections provide a descriptive summary of the results of the Policy Survey on School Education in the Digital Age, highlighting selected findings for each of the survey's eight thematic areas of digital education policies. They cover jurisdictions' digital education strategies (Section 1); the adaptation of pedagogical approaches, curricula and assessments to digital education (Section 2); the governance, guidance and regulation of digital education (Section 3); funding and procurement (Section 4); digital infrastructure and innovation (Section 5); building capacity for digital education (Section 6); the alignment of human resource policies with digital education (Section 7); and instruments to monitor and evaluate digital education and its impact on students (Section 8). Comparative tables with the Policy Survey's complete results and individual responses for each of the 37 participating jurisdictions are included in Annex A.

1. Strategic visions and policy co-ordination for digital education

Reaping the benefits of digital technology to advance quality, equity and efficiency in education systems requires a co-ordinated and strategic approach, spanning multiple policy domains and operating at different levels of intervention, from the central to the school level. A clear strategic vision can provide the foundation for successful reforms in this area, serving as a basis to articulate goals, to develop digital education policies that are aligned with broader educational and societal objectives, and to co-ordinate them across sectors and levels of governance. This section describes how central-level strategies[4] and associated instruments are used in participating jurisdictions to shape the digital transformation of their school systems and to co-ordinate digital education policies.

Many school systems have developed central-level strategies for digital education policy in recent years

Previous OECD analyses from 2022 showed that many OECD and EU countries had recently updated or were in the process of revising their education strategies to account for the changing role of digital education technologies since the outbreak of the COVID-19 pandemic and the rise of generative artificial intelligence (AI) (OECD, 2023, p. 42[2]). Since then, the share of countries developing strategies specifically dedicated to digital education has only increased.

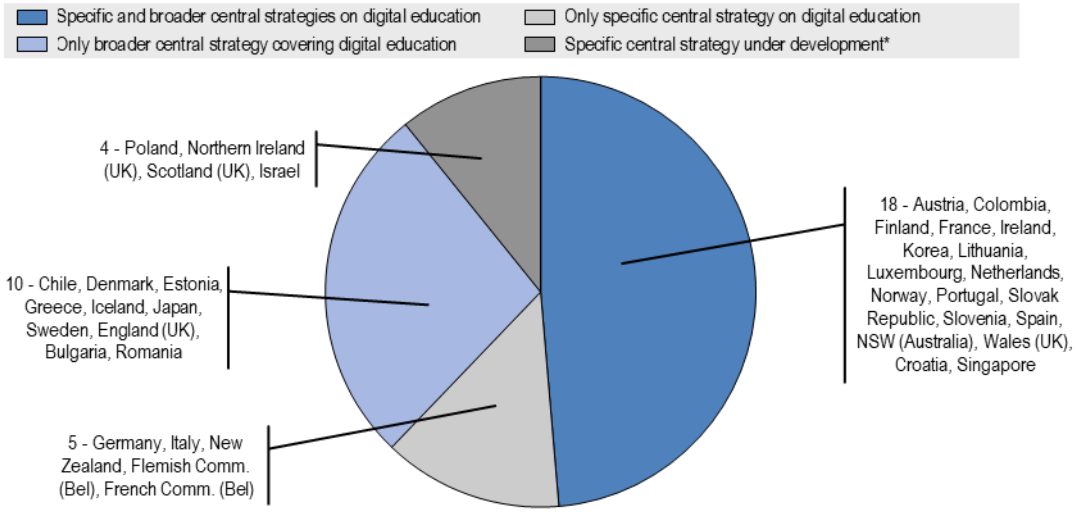
The results of the Policy Survey show that all of the participating systems are addressing digital education in their high-level strategic documents guiding education reforms – either in dedicated digital education strategies or in broader strategies covering the sector. The majority of responding jurisdictions (23 of 37 [62%]) have a central-level strategy specifically dedicated to digital education (Figure 1.1). In another 10

[4] Central-level strategies here refer to high-level strategic documents that set out governments' aims with respect to digital education.

jurisdictions (27%), digital education is covered by broader central-level strategies and the remaining 4 jurisdictions (Israel, Northern Ireland [UK], Poland and Scotland [UK]) are currently in the process of developing a dedicated strategy for digital education.

Figure 1.1. Central-level strategies for digital education

Existence of central-level policy strategies covering digital education



Note: Number of jurisdictions with available data = 37. *"Specific central strategy under development" is only reported if no specific or broader central strategies exist yet. (More jurisdictions are currently developing strategies to replace existing ones). See Annex Table 1.1 for further details and individual jurisdictions' responses corresponding to this figure.

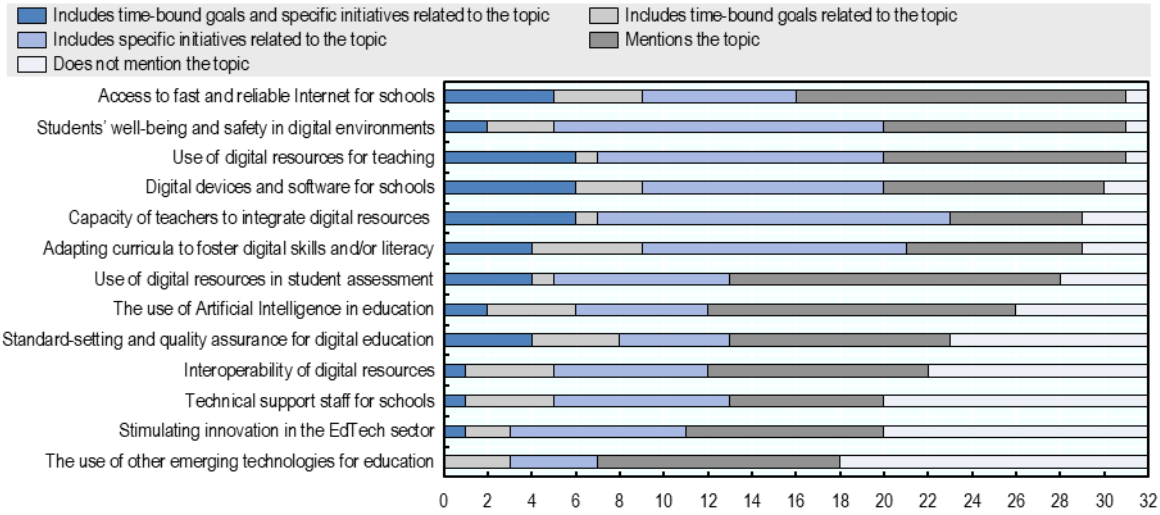
Most digital education strategies cover technological infrastructure and capacity building while emerging technologies are addressed in more limited ways

Digital education strategies vary in the range of thematic areas they cover as well as the depth and level of specificity with which they are addressed. At the start of the 2020s, many OECD countries' digital education strategies focused on infrastructure and learning environments, fostering digital competency and bridging digital divides (van der Vlies, 2020[3]). Improving access to high-speed Internet connections and digital devices in education institutions was at the heart of many national strategies, while advanced technologies, such as AI, were rarely addressed in detail (OECD, 2023, p. 44[2]).

In the intervening years, most countries have addressed the rise of AI and other emerging technologies in their education strategies, even though the majority of strategies do not feature specific initiatives or goals on the topic. Responses to the Policy Survey highlight which policy areas are not only mentioned in most digital education strategies but that are also the subject of specific strategic initiatives in around two thirds of the responding jurisdictions. This includes digital education infrastructure (incl. access to fast and reliable Internet, digital devices and software for schools), the effective use of digital technologies (incl. the use of digital resources for teaching and teachers' capacity to integrate them), and the adaptation of curricula to foster students' digital skills, their well-being and their safety in digital environments (Figure 1.2). Other thematic areas that are not only mentioned, but also linked to specific initiatives in a significant number of strategies, include standard-setting and quality assurance for digital education, technical support staff for schools, stimulating innovation in the EdTech sector (9 systems respectively). By contrast, even though the use of AI in education is mentioned in the strategies of 26 of the 32 responding jurisdictions (81%), only 8 strategies (25%) contain specific initiatives and 6 strategies (19%) include time-bound goals on the topic (Figure 1.2).

Figure 1.2. Thematic areas covered by digital education strategies

How central-level strategies for digital education address different thematic areas



Note: Number of jurisdictions with available data = 32. Responses refer to central-level strategies specifically dedicated to digital education or, if no such strategy exists, broader central-level strategies covering digital education (see Annex Table 1.1). Jurisdictions without relevant central-level strategy were excluded. See Annex Table 1.2 for further details and individual jurisdictions' responses corresponding to this figure.

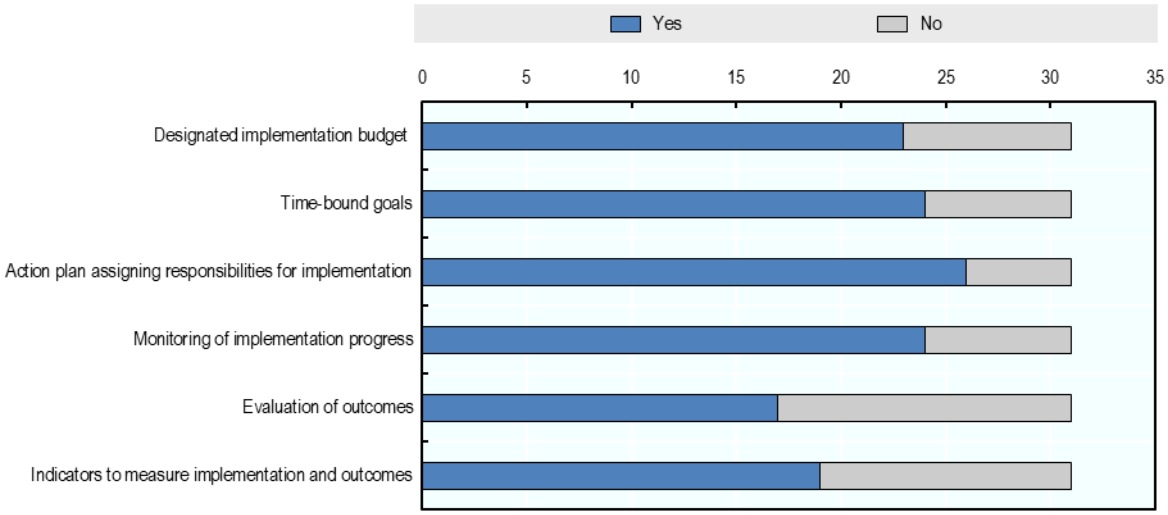
Digital education strategies are increasingly supported by funding, implementation and accountability mechanisms

To serve as an effective vehicle for reform, central strategies for digital education can be linked to a number of mechanisms and instruments designed to facilitate the implementation of associated policies. This includes, for example, well-structured action plans that include time-bound goals and assign responsibilities among key actors, designated budgets and funding mechanisms, as well as robust frameworks to monitor and evaluate the strategy's progress (OECD, 2023, p. 44[2]). All 31 of the responding jurisdictions with relevant central strategies covering digital education had linked them to one or more such instruments.

Typically, digital education strategies were linked to a designated implementation budget (23 systems [74%]), included time-bound goals (24 systems [77%]) and assigned responsibilities for implementation (26 systems [84%]). While 24 of 31 (77%) systems linked their strategies to instruments designed to monitoring their implementation (e.g. regular progress reviews), only 19 (61%) included indicators to measure the strategies' implementation progress and outcomes and only 17 (55%) included formal processes to evaluate their outcomes (Figure 1.3).

Figure 1.3. Funding, implementation and accountability instruments for digital education strategies

Instruments linked to jurisdictions' central-level policy strategies covering digital education



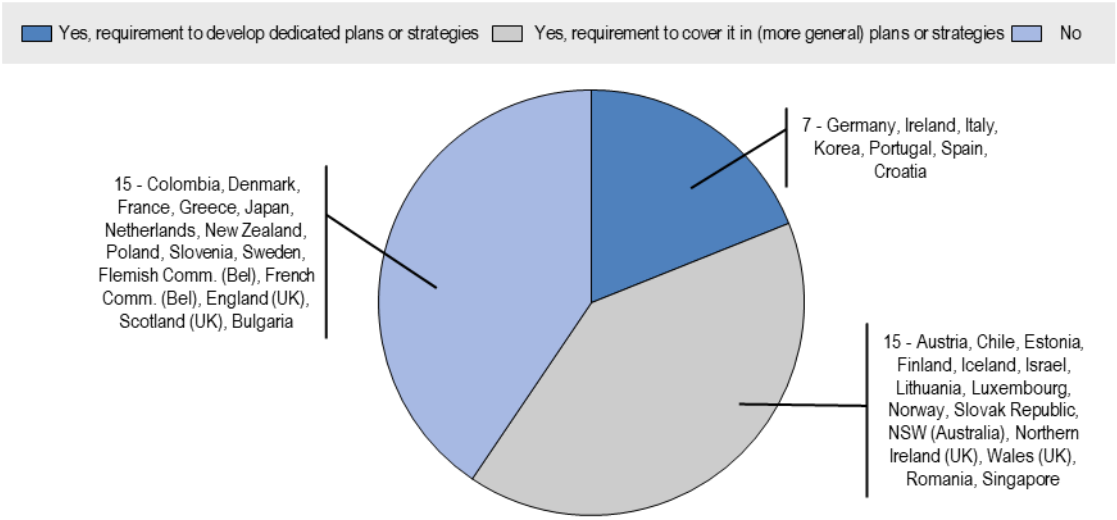
Note: Number of jurisdictions with available data = 31. Responses refer to central-level strategies specifically dedicated to digital education or, if no such strategy exists, broader central-level strategies covering digital education (see Annex Table 1.1). Jurisdictions without relevant central-level strategy were excluded. See Annex Table 1.3 for further details and individual jurisdictions' responses corresponding to this figure.

Schools in many education systems are required to develop plans or strategies addressing digital education

In most OECD countries, responsibilities for decisions concerning the use of digital education resources are shared between actors across multiple levels of administration and schools bear some responsibility for regulating the use of digital resources in nearly all systems (see Annex Table 3.1). A strategic approach to digitalisation is therefore not only needed at the central level, but also on the part of school leaders. Responses to the Policy Survey suggest that the great majority of responding jurisdictions require schools to engage in strategic reflections on their approach to digitalisation. 7 of 37 (19%) systems require schools to develop dedicated plans or strategies concerning digital education. An additional 15 of 37 (41%) systems require schools to cover the use of digital resources for teaching in more general plans or strategies they develop (Figure 1.4).

Figure 1.4. School-level strategies for digital education

Requirements for schools to develop plans or strategies concerning the use of digital technology for teaching



Note: Number of jurisdictions with available data = 37. See Annex Table 2.3 for further details and individual jurisdictions' responses corresponding to this figure.

2. Adapting pedagogical approaches, curricula and assessments for digital education

Public authorities can use a range of policy levers to promote the effective use of digital technologies for teaching and learning. This section describes initiatives that participating jurisdictions use to guide teachers' effective use of digital resources or to promote peer learning on the selection and use of digital technologies. It also examines how curricula and assessment frameworks are being adapted to account for the use of digital technologies in the classroom and to promote students' digital skills.

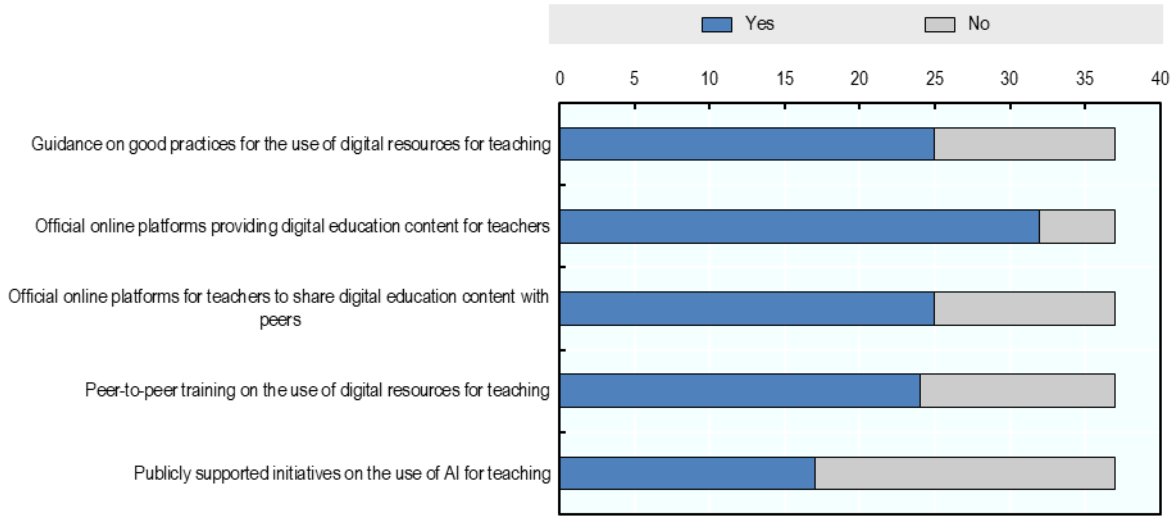
Most systems provide central support for teachers' effective use of digital resources

Although the COVID-19 pandemic has accelerated teachers' take-up of digital technologies, not all of them are able to use their full potential to enable a more individualised, efficient or responsive form of teaching and learning (OECD, 2023, p. 62[2]). Although teachers and school leaders tend to have significant pedagogical autonomy in deciding when and how to use digital education resources, central education authorities can play an important role in promoting their effective integration. All of the 37 jurisdictions responding to the Policy Survey reported having some central initiatives in place to support teachers in their use of digital resources (Figure 2.1).

For example, 25 systems (68%) provide teachers with guidance on good practices for the use of digital resources and 24 systems (65%) support teachers' peer-to-peer training on the subject. Many central authorities have also invested in platforms that allow educators to access digital teaching materials and adapt them to their needs. Specifically, 32 systems (86%) had invested in online platforms that provide digital education content for teachers and 25 systems (68%) reported operating interactive platforms that allow teachers to share digital education content with peers. In light of recent advances in artificial intelligence, 17 systems (46%) also reported having launched initiatives on the use of AI for teaching (Figure 2.1).

Figure 2.1. Initiatives to foster the effective use of digital resources for teaching

Number of jurisdictions that reported having the following initiatives in place at the central level



Note: Number of jurisdictions with available data = 37. See Annex Table 2.3 for further details and individual jurisdictions' responses corresponding to this figure.

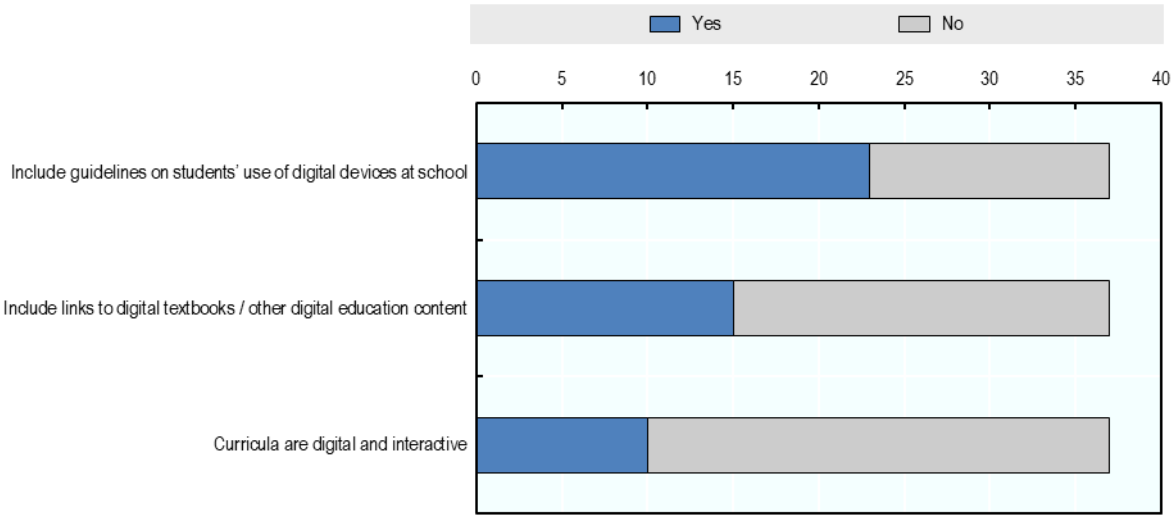
Curricula are increasingly adapted to the use of digital education resources

Governments across the OECD recognise the importance of developing students' digital skills and data literacy to enable them to thrive in the 21st century. Many countries have therefore engaged in reforms to update their school curricula by integrating digital skills and content related to digital technologies (OECD, 2020[4]) (see Annex Table 2.1). At the same time, curricula are increasingly adapted to students' and teachers' use of digital technologies in the learning process. The results of the Policy Survey show that 23 of 37 responding jurisdictions (62%) include guidelines on students' use of digital devices in their curricula and 15 systems (41%) include links to digital textbooks or other digital education content (Figure 2.2).

Most jurisdictions make curriculum documents available online to facilitate the access for teachers, students and other stakeholders. These digital curricula tend to be in static formats (e.g. PDF). However, an increasing number of school systems embrace the potential of making curriculum documents more interactive, for example by enabling teachers to filter and to access education contents across grades and subjects or by assisting users in designing lessons in line with curriculum goals. In the Policy Survey, 10 of 37 systems (27%) reported having integrated interactive elements in their curricula for lower secondary schools and several countries are in the process of making their curricula more interactive (Figure 2.2).

Figure 2.2. Digitalisation of school curricula

Number of jurisdictions whose curricula (at ISCED 2) exhibit the following characteristics



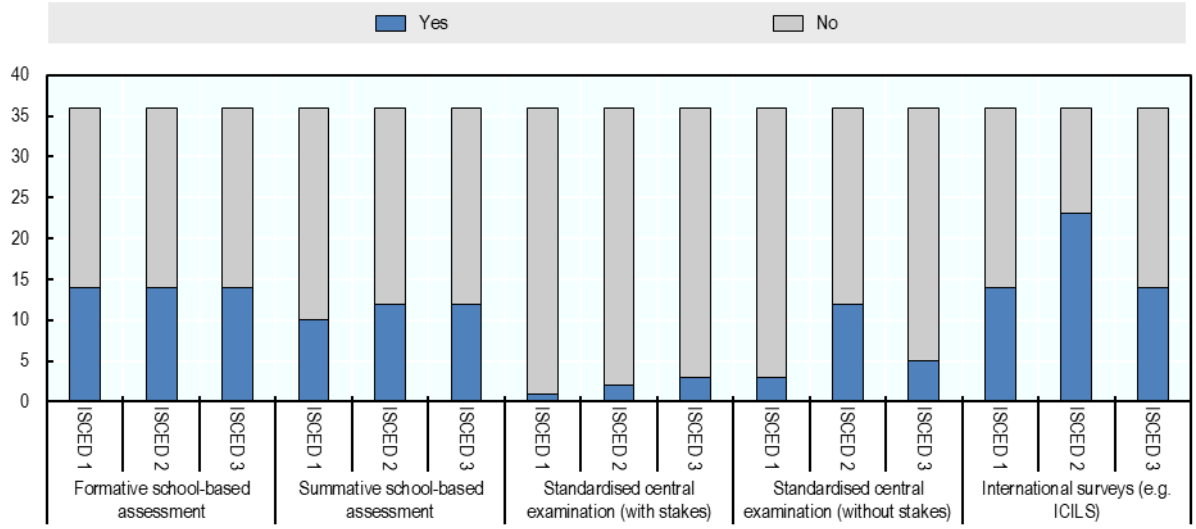
Note: Number of jurisdictions with available data = 37. See Annex Table 2.1 for data on ISCED 1 & 3 and individual jurisdictions' responses corresponding to this figure.

Students' digital skills are not systematically assessed in many countries

The importance of developing students' digital skills is acknowledged in the curricula of all responding jurisdictions and teaching digital skills is either recommended or mandated in all of them (in most cases transversally, across a number of compulsory subjects) (see Annex Table 2.1). Nevertheless, students' digital skills are not yet systematically assessed in many jurisdictions. Responses to the Policy Survey indicate that 14 of 36 responding jurisdictions (39%) assess digital skills through formative school-based assessments in lower secondary education. Even fewer systems reported doing so through summative school-based assessments (12 systems [33%]) or reported assessing digital skills in central examinations with stakes (France and Romania) (Figure 2.3). By contrast, many jurisdictions reported assessing students' digital skills using international surveys, such as the International Computer and Information Literacy Study (ICILS) (23 systems [64%] in lower secondary education and 14 systems [38%] in primary and upper secondary education) or – particularly at the lower secondary level – through standardised examinations without stakes (12 systems [33%]) (Figure 2.3). Excluding international surveys, just under a third of the responding jurisdictions (10 of 36 [28%]) do not systematically assess students' digital skills.

Figure 2.3. Systematic assessment of students' digital skills

Number of jurisdictions systematically assessing students' digital skills by the following means



Note: Number of jurisdictions with available data = 36. See Annex Table 2.2 for further details and individual jurisdictions' responses corresponding to this figure.

3. Governance, guidance and regulation for digital education

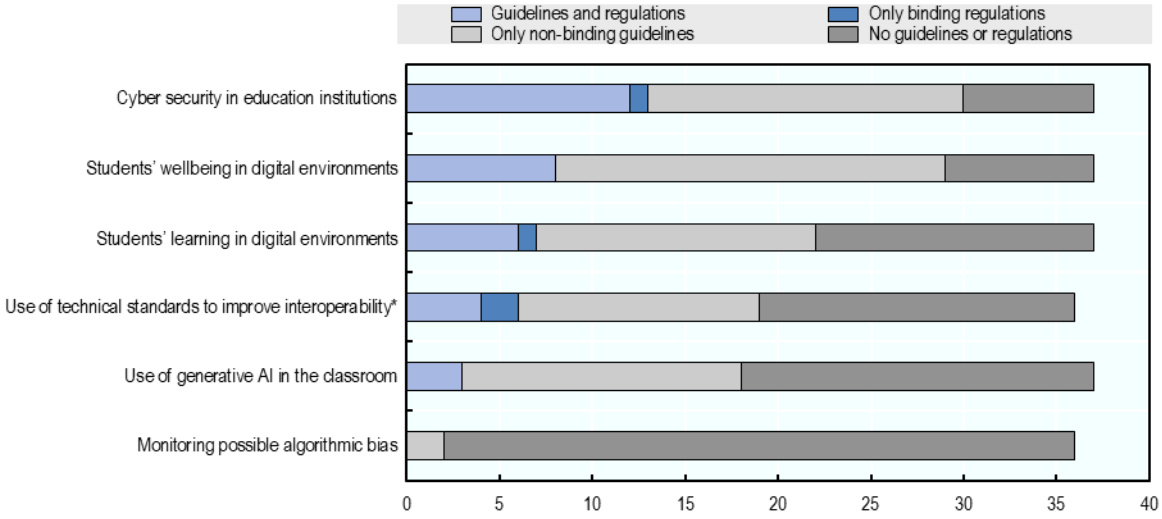
This section covers the governance of digital education. In more than half of the jurisdictions responding to the Policy Survey (24 of 37 [65%]), primary responsibility for regulating the use of digital education resources is shared across multiple levels of administration. Both schools and central authorities were reported as holding key responsibilities in this domain in 25 jurisdictions (68%) respectively (see Annex Table 3.1). Given this important role played by central authorities, the following sections address central-level guidance and regulatory frameworks designed to support the effective use of digital resources. They also cover central provisions aiming to ensure privacy, data protection and the quality of digital resources in schools.

Binding regulations concerning the use of digital resources in schools remain the exception, particularly for emerging technologies

Central authorities dispose of different means to steer the use of digital resources in schools, including binding regulations as well as guidelines designed to inform practitioners' decisions on the use of digital resources. Results from the Policy Survey show that the majority of the 37 responding jurisdictions provide guidelines addressing cyber security in education institutions (29 systems [78%]), students' well-being in digital environments (29 systems [78%]) and students' learning in digital environments (21 systems [57%]). Although less widespread, many jurisdictions also provide guidelines on the use of generative AI in the classroom (18 of 37 systems [49%]) and technical standards to improve interoperability (17 of 36 systems [47%]). By contrast, as of 2025, only 2 systems (Korea and Singapore) had issued guidelines on monitoring algorithmic bias – a concern that has increased over the last decade (Baker, Lee and Hawn, 2023[5]) (Figure 3.1). So far, fewer systems have issued binding regulations affecting these areas. The domains that are most commonly regulated among the responding jurisdictions are cyber security in education institutions (13 systems [35%]) and students' well-being in digital environments (8 systems [22%]). Typically these binding regulations complement central guidelines on the same topics (Figure 3.1).

Figure 3.1. Central guidelines and regulations on digital education

Number of jurisdictions that reported having central guidelines or regulations on the following issues



Note: Number of jurisdictions with available data = 36/37. *Covers the use of open standards for digital resources or data in education as well as other technical standards to improve interoperability. See Annex Table 3.1 for further details and individual jurisdictions' responses corresponding to this figure.

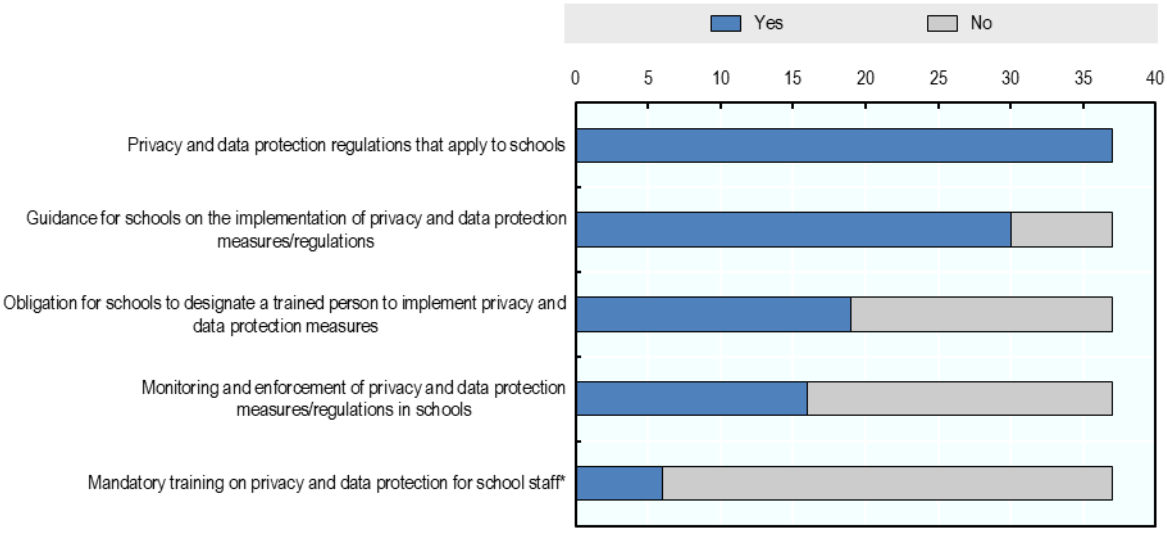
While the protection of privacy and data in schools is regulated in all participating jurisdictions, support for its implementation varies

The digital transformation has presented education institutions with new challenges concerning students' information privacy as well as the security of their data and their activities online. All 37 responding jurisdictions reported having privacy and data protection regulations that apply to schools (Figure 3.2). This reflects the heightened awareness surrounding the importance of protecting sensitive data and – in EU countries – the introduction of the General Data Protection Regulation (GDPR), which has strengthened education institutions' accountability for the data they possess and collect in many countries (OECD, 2023, pp. 91, 96[2]).

At the same time, the measures taken to support or accompany the implementation of privacy and data protection regulations very significantly across the responding jurisdictions. Most central authorities (in 30 of 37 systems [81%]) reported providing schools with guidance on the implementation of privacy and data protection measures or regulations. However, fewer than half of the responding jurisdictions (16 of 37 [43%]) also reported having central monitoring and enforcement processes in place to ensure that these measures are implemented in schools. Where responsibilities for privacy and data protection in schools are centrally regulated, they tend to be entrusted to trained individuals. In 19 systems (51%), schools are obliged to assign responsibility to implement privacy and data protection measures to a trained member of staff. Only 6 systems (16%) also require other staff members to undergo training on privacy and data protection (Figure 3.2).

Figure 3.2. Privacy and data protection in schools

Number of jurisdictions that reported having the following central provisions to ensure privacy and data protection in schools



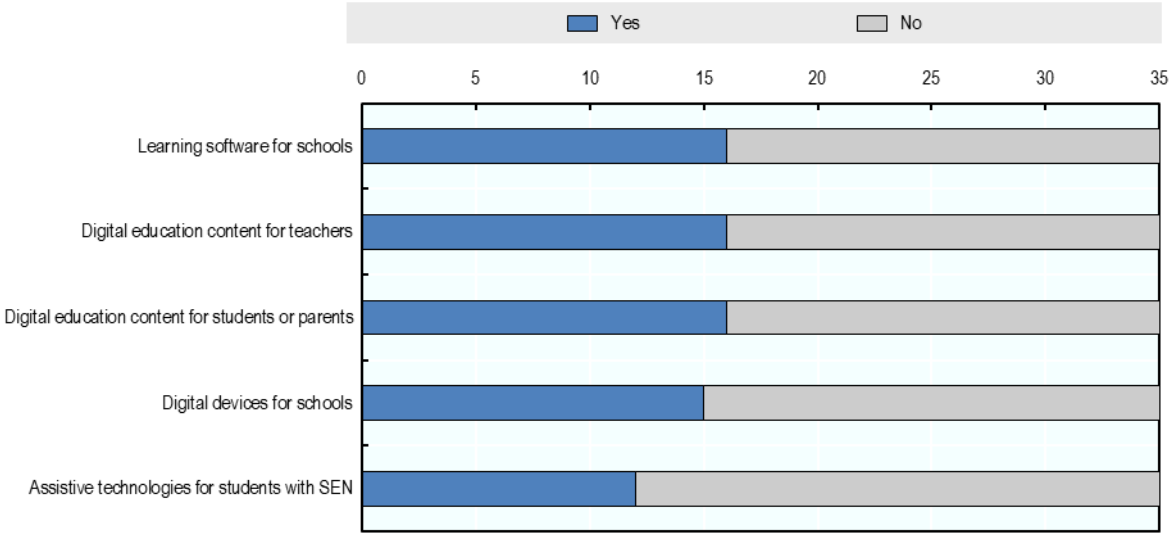
Note: Number of jurisdictions with available data = 37. *Covers mandatory training for school administrative staff or for teachers. See Annex Table 3.2 for further details and individual jurisdictions' responses corresponding to this figure.

Around half of jurisdictions have processes to certify the quality or safety of digital education resources

The certification of digital education resources or their providers can provide schools, teachers and other stakeholders with an effective means to identify safe and high-quality products while encouraging developers and suppliers to meet high standards. Around half of the 35 responding jurisdictions reported having processes in place to certify the quality and/or safety of learning software for schools, of digital education content for teachers, and of digital education content for students or parents (16 systems [46%] respectively). 15 systems (43%) also have a certification process covering digital devices for schools. Processes to certify assistive technologies for students with special education needs (SEN) are slightly less common and exist in 12 systems (32%) (Figure 3.3).

Figure 3.3. Ensuring the quality and safety of digital education resources

Number of jurisdictions that reported having central processes to certify the quality and/or safety of the following types of digital education resources (or their providers)



Note: Number of jurisdictions with available data = 35. See Annex Table 3.2 for further details and individual jurisdictions' responses corresponding to this figure.

4. Funding and procurement for digital education

This section describes how responsibilities for purchasing digital resources are distributed, how central authorities support procurement processes and which mechanisms they use to fund the digital transformation of schools. Almost all jurisdictions participating in the Policy Survey reported having undertaken major public investments in digital education over the past five years. Investments in the digital education infrastructure tend to be complex, involving a mix of current and capital expenditure on resources ranging from broadband access and digital devices to learning software. Furthermore, responsibilities for the procurement of digital resources are often shared between multiple levels of administration and investments tend to involve funding obtained through more than one allocation mechanism (see Annex Table 4.1). As a result of this complexity, comparative data on the extent of digital education investments and evidence of their efficiency remain limited (OECD, 2023, p. 113[2]). The results from the Policy Survey seek to provide an overview of international funding and procurement systems for digital resources in order to facilitate comparative analyses.

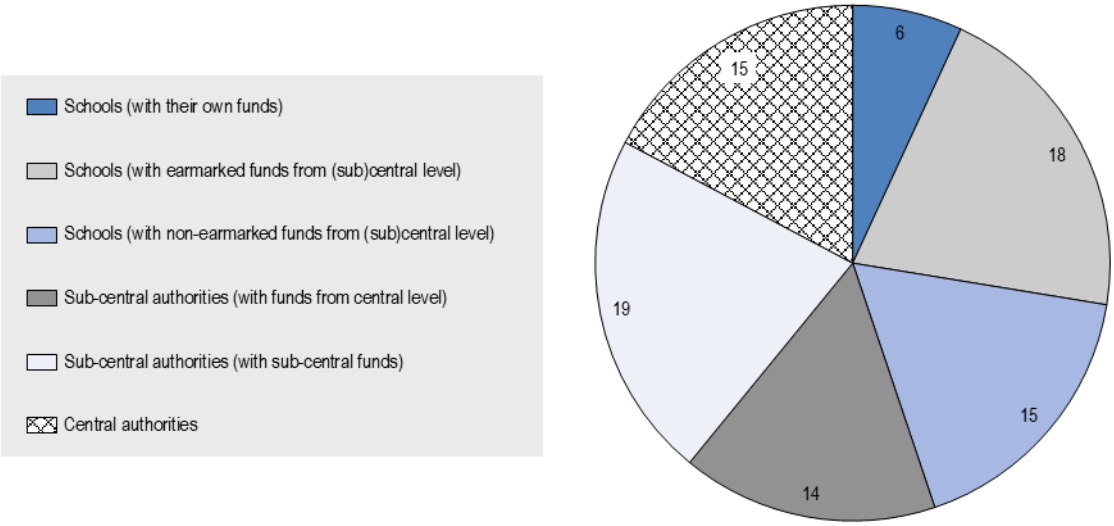
Schools have some responsibility for procuring digital devices in many systems, typically drawing on funding allocated by central or sub-central authorities

Results from the Policy Survey show that schools have some responsibility for procuring digital devices in 26 of 37 responding jurisdictions (70%). Sub-central authorities have some responsibility for the procurement of digital devices in almost as many systems (23 of 37 [62%]), and central authorities are responsible in 15 of 37 systems (41%). In around half of all responding jurisdictions (19 of 37 [51%]), the responsibility is shared between at least two levels of administration (i.e. schools, sub-central or central authorities). Among the 18 jurisdictions where a single level is responsible for procuring digital devices, the responsibility is most commonly assigned to schools (9 systems) and less frequently to sub-central or central authorities (5 and 4 systems respectively) (see Annex Table 4.1). Where schools are responsible

for procuring digital devices, they tend to do so using earmarked funding (18 systems) or non-earmarked funding (15 systems) (also known as block-grants) from the central or sub-central level. Only in 6 of 37 systems (16%) do schools procure devices using funding that they raised themselves. Sub-central authorities procured digital devices using either their own funding (in 19 systems [51%]) or funding they receive from the central level (in 14 systems [38%]) (Figure 4.1).

Figure 4.1. Funding and procurement of digital devices

Level of authority responsible for the procurement of digital devices for schools and source of funding

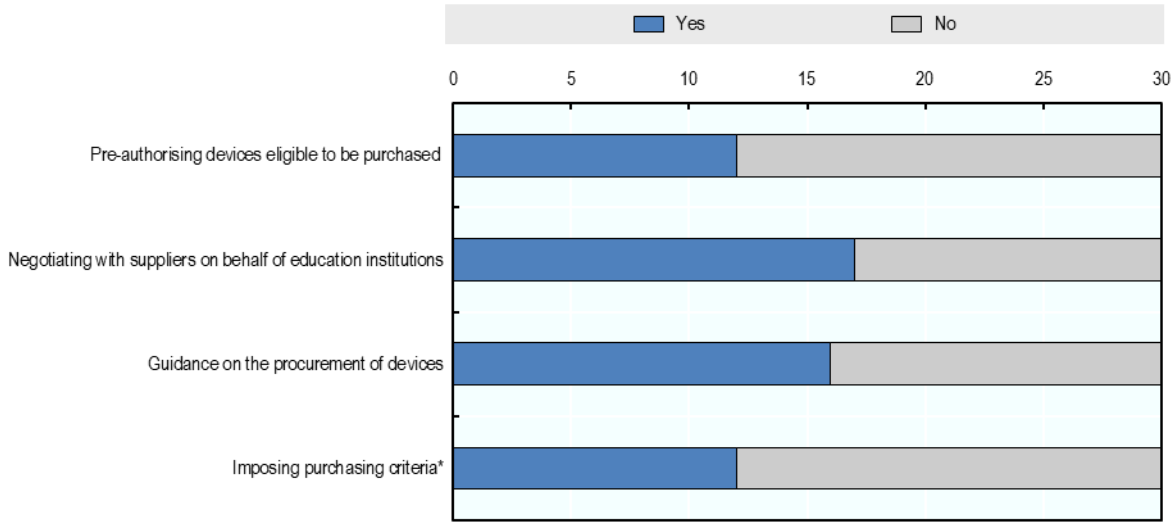


Note: Number of jurisdictions with available data = 37. Jurisdictions could select multiple options. See Annex Table 4.1 for further details and individual jurisdictions' responses corresponding to this figure.

Given the complexity and, in some cases, fragmentation of the market for digital education resources, central authorities can be a valuable source of support for sub-central actors or schools responsible for purchasing digital resources. Central support can strengthen these actors' capacity and their position in a rapidly evolving market that they may have limited experience engaging with. In the case of digital devices, central authorities in 16 jurisdictions [43%] reported providing schools or sub-central authorities with guidance on the procurement of devices. 12 systems [32%] reported pre-authorising a set of devices as eligible for purchase and 12 systems [32%] reported imposing criteria that the purchased devices need to fulfil (Figure 4.2). These criteria most frequently concern the products' security (12 [32%]), sustainability (8 [22%]), equity of access (6 [16%]) and interoperability (6 [16%]). The criteria are less frequently related to the products' demonstrated effectiveness (see Annex Table 4.1). In 17 systems (46%), central authorities reported negotiating directly with suppliers of digital devices on behalf of education institutions, for example to create economies of scale or generate administrative efficiencies (Figure 4.2).

Figure 4.2. Central support for the procurement of digital devices

Number of jurisdictions providing the following types of central support in the purchasing/procurement process for digital devices



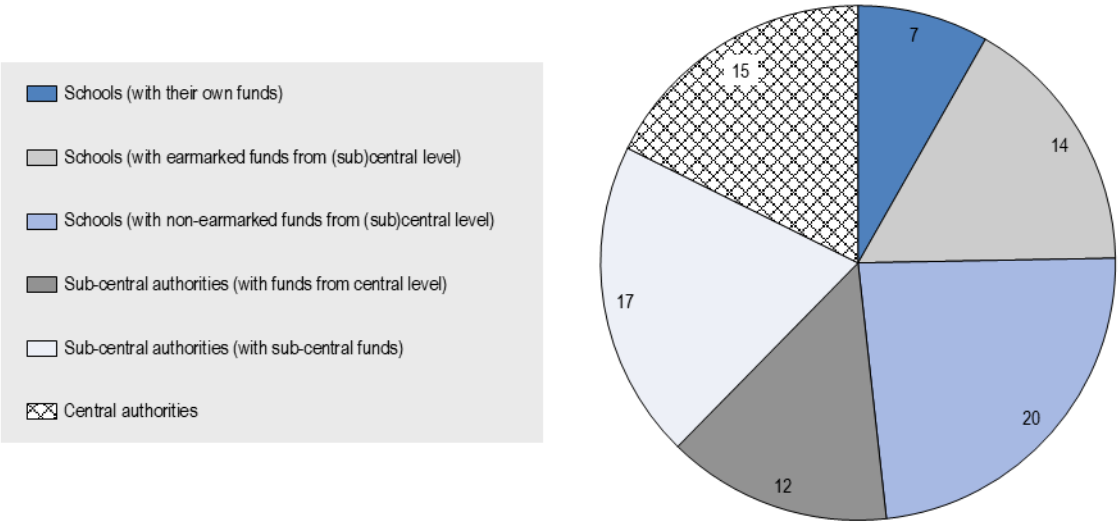
Note: Total number of jurisdictions = 30 (excluding jurisdictions reporting "non applicable / no procurement support available from the central level"). *Purchasing criteria can relate to any of the following: Evidence of effectiveness, equity of access, interoperability, security or sustainability. See Annex Table 4.2 for disaggregated data and individual jurisdictions' responses corresponding to this figure.

Many central authorities provide local actors with guidance on the procurement of teaching and learning software

The distribution of responsibilities for the procurement and funding of teaching and learning software is similar to that of digital devices, discussed above. In 27 of 36 responding jurisdictions (75%), schools bear some responsibility for procuring educational software and sub-central authorities have responsibility in 21 systems (58%). In 15 of 36 systems (42%), central authorities have some responsibility for producing teaching and learning software. In 21 jurisdictions (58%), the responsibility is shared between at least two levels of administration. Among the 14 jurisdictions where a single level is responsible for procuring teaching and learning software, the responsibility is mostly commonly given to schools (8 systems) and less frequently to sub-central or central authorities (4 and 2 systems respectively) (see Annex Table 4.1). Where schools are responsible for procuring education software, they tend to do so using earmarked funding (14 systems [39% of the 36 responding systems]) or – more often than is the case for digital devices – using non-earmarked funding (20 systems [56%]) from the central or sub-central level. In 7 systems (19%), schools purchase devices using funding that they raised themselves. Sub-central authorities procure digital devices using either their own funding (17 systems [47%]) or funding they receive from the central level (12 systems [33%]) (Figure 4.3).

Figure 4.3. Funding and procurement of teaching and learning software

Level of authority responsible for the procurement of teaching and learning software and source of funding

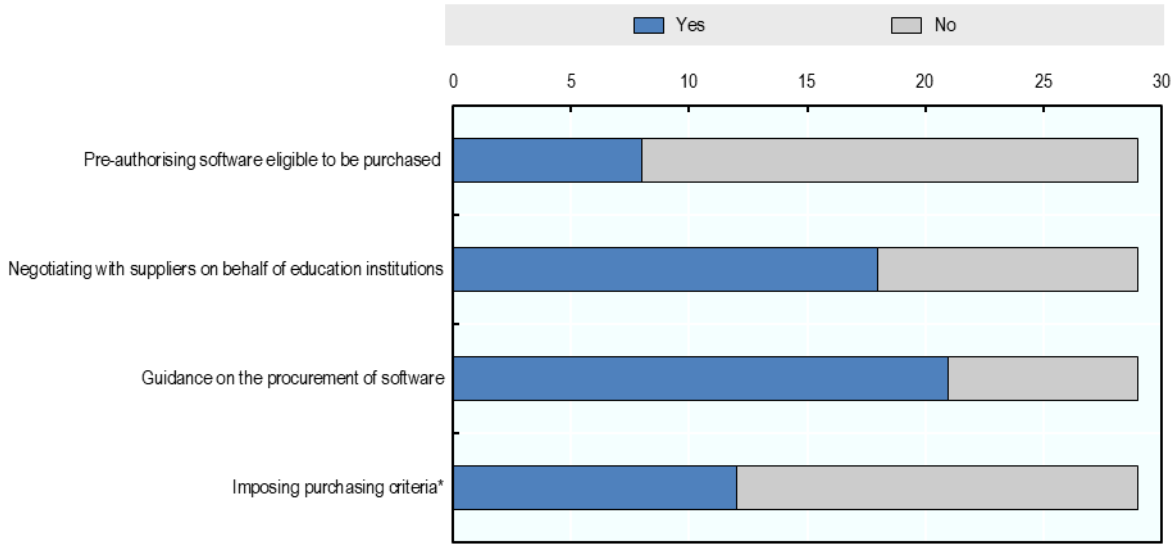


Note: Number of jurisdictions with available data = 36. Jurisdictions could select multiple options. See Annex Table 4.1 for further details and individual jurisdictions' responses corresponding to this figure.

As for the procurement of digital devices described above, central authorities provide different kinds of support to assist local actors in the procurement of teaching and learning software. In 21 jurisdictions (57% of the 37 participating jurisdictions), central authorities reported providing schools or sub-central authorities with guidance on the procurement of software (compared to 16 [43%] for digital devices) and 8 systems (22%) reported pre-authorising software as eligible for purchase (compared to 12 [32%] for digital devices). 12 systems (32%) reported imposing criteria that the purchased software needs to fulfil (Figure 4.4). These criteria most frequently concern the products' security (7 [19%]), equity of access (7 [19%]) and interoperability (7 [19%]). As for digital devices, the demonstrated effectiveness of software is less frequently a formal criterion for purchasing decisions and – other than for devices – only 3 systems (8%) applied criteria related to sustainability (see Annex Table 4.1). Central authorities in 18 systems (49%) reported negotiating directly with suppliers of education software on behalf of education institutions (Figure 4.4).

Figure 4.4. Central support for the procurement of teaching and learning software

Number of jurisdictions providing the following types of central support in the purchasing/procurement process for teaching and learning software



Note: Total number of jurisdictions = 29 (excluding jurisdictions reporting "non applicable / no procurement support available from the central level"). *Purchasing criteria can relate to any of the following: Evidence of effectiveness, equity of access, interoperability, security or sustainability. See Annex Table 4.2 for disaggregated data and individual jurisdictions' responses corresponding to this figure.

5. Infrastructure and innovation for digital education

Strengthening the digital education infrastructure and expanding access to high-speed Internet connections in schools, bridging digital divides and ensuring the availability of high-quality digital devices are central elements of many national strategies for digital education. This section considers the policy environment in which these efforts take place. It covers policies aimed at enhancing the quality and accessibility of the digital infrastructure, the types of digital resources that central authorities typically provide for schools (see Annex Table 5.2), as well as strategies to promote EdTech innovation and the development of cutting-edge digital education tools.

Students' access to digital devices for learning is often organised at the sub-central level

Results from PISA 2022 show that higher-performing school systems tend to have higher computer-to-student ratios, even after accounting for per capita GDP (OECD, 2023, pp. 409, Table II.B1.5.24[6]). Given the increasing use on digital devices for learning (both in schools and at home), providing students with access to digital devices has become an important condition for successful teaching and learning. The Policy Survey provides a more detailed picture of the policies that school systems use to widen access to digital devices for learning.

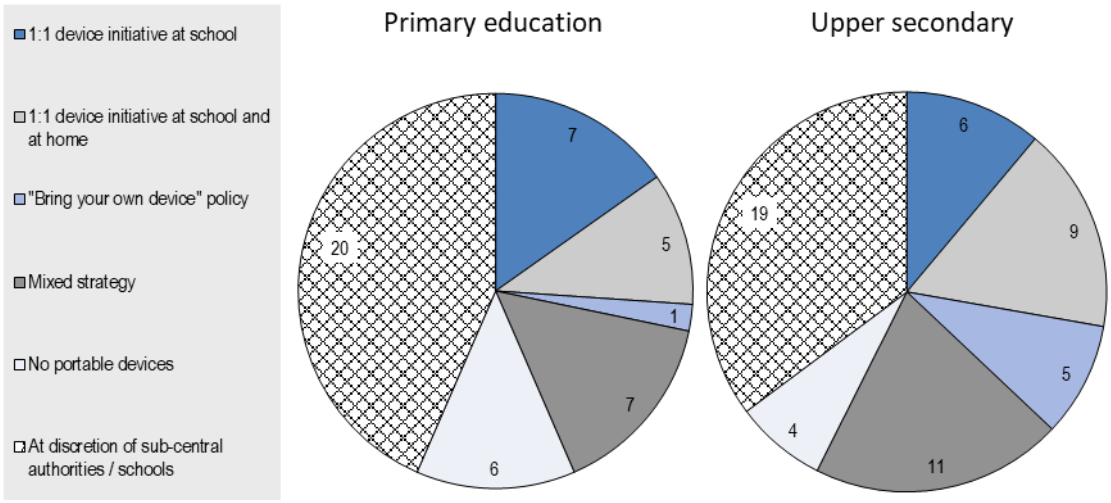
At both the primary and upper secondary education levels, sub-central authorities or schools have discretion over how to ensure students' access to digital devices in most responding jurisdictions (20 and 19 out of 37 respectively [54% and 51%]). Among the systems with centralised approaches at the primary level, most reported having a 1:1 policy, meaning that all students who need portable devices for learning receive a laptop or tablet to use in their school (7 systems [19%]) or both at school and at home (5 systems [14%]). 1:1 initiatives are similarly popular at the upper secondary level, although it is more common for

students to take their laptops home at this level (9 systems [24%]) to complete homework or study independently (Figure 5.1).

5 systems (14%) reported that most upper secondary schools have a Bring-Your-Own-Device (BYOD) policy, which was the case for only one system at the primary level. A small number of jurisdictions reported that students do not use portable devices in primary schools (6 systems [16%]) or upper secondary schools (4 systems [11%]), which suggests that students use desktop computers when working with digital devices at school and private devices when working at home. Finally, a significant share of jurisdiction reported relying on "mixed strategies" to provide students with access to portable devices for learning (7 systems [19%] at the primary level and 11 systems [30%] at the upper secondary level) (Figure 5.1). Such mixed strategies include, for example, allowing students to use private devices and providing devices for students without access.

Figure 5.1. Ensuring students' access to digital devices for learning

Most common approach(es) to ensuring students' access to digital devices for learning



Number of jurisdictions with available data = 37. Jurisdictions could select multiple options. See Annex Table 5.1 for data on ISCED 2, further details and individual jurisdictions' responses corresponding to this figure.

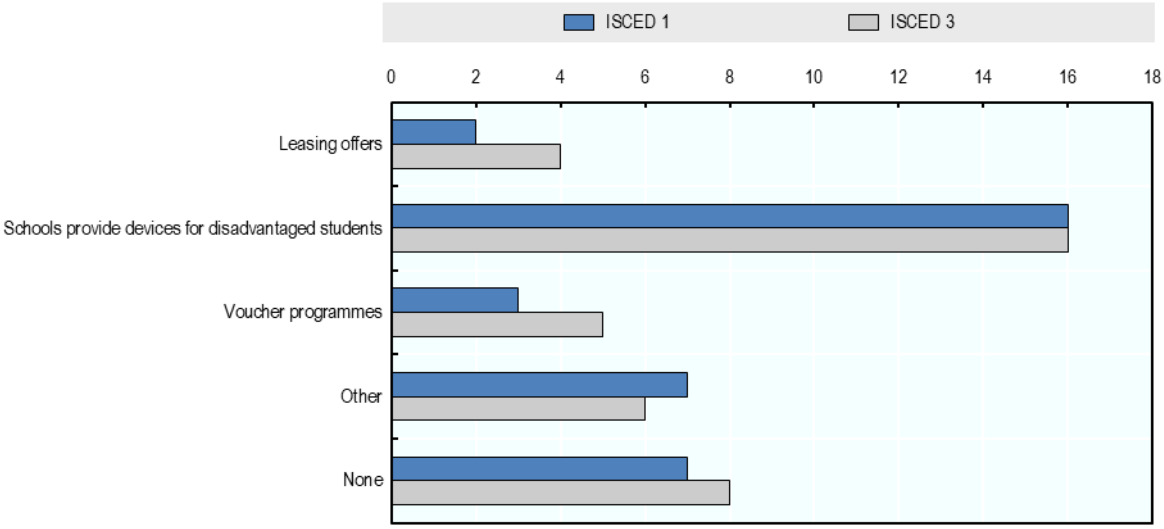
Not all countries have central strategies to provide disadvantaged students with access to digital devices for learning

In the large majority of school systems that do not provide students with universal access to digital devices to use at school and at home, addressing socio-economic inequities in students' access to digital devices is an important policy challenge. Results from the Policy Survey indicate that schools play an important role in providing digital devices for students who may lack access at home. 16 jurisdictions reported that schools provide devices for disadvantaged students at the primary and upper secondary level respectively (52% and 50% of jurisdictions with available data). At the upper secondary level, another 4 of 32 systems (12.5%) reported operating leasing offers that allow students to rent laptops under favourable conditions and 5 systems (23%) reported offering voucher programmes for disadvantaged students. Both were less common at the primary level, with 2 of 31 systems (6%) operating a leasing scheme and 3 systems (10%) having a voucher programme. Notably, 8 of 32 systems (25%) at the upper secondary level and 7 of 31

systems (23%) at the primary level reported having no central provisions to ensure access to digital devices for disadvantaged learners (Figure 5.2).

Figure 5.2. Providing disadvantaged students with access to digital devices for learning

Number of jurisdictions that reported having the following provisions in place to improve disadvantaged students' access to digital devices



Note: Number of jurisdictions with available data between 31 and 34. Jurisdictions that provide universal access to devices (see Figure 5.1) were not included. See Annex Table 5.1 for further details and individual jurisdictions' responses corresponding to this figure.

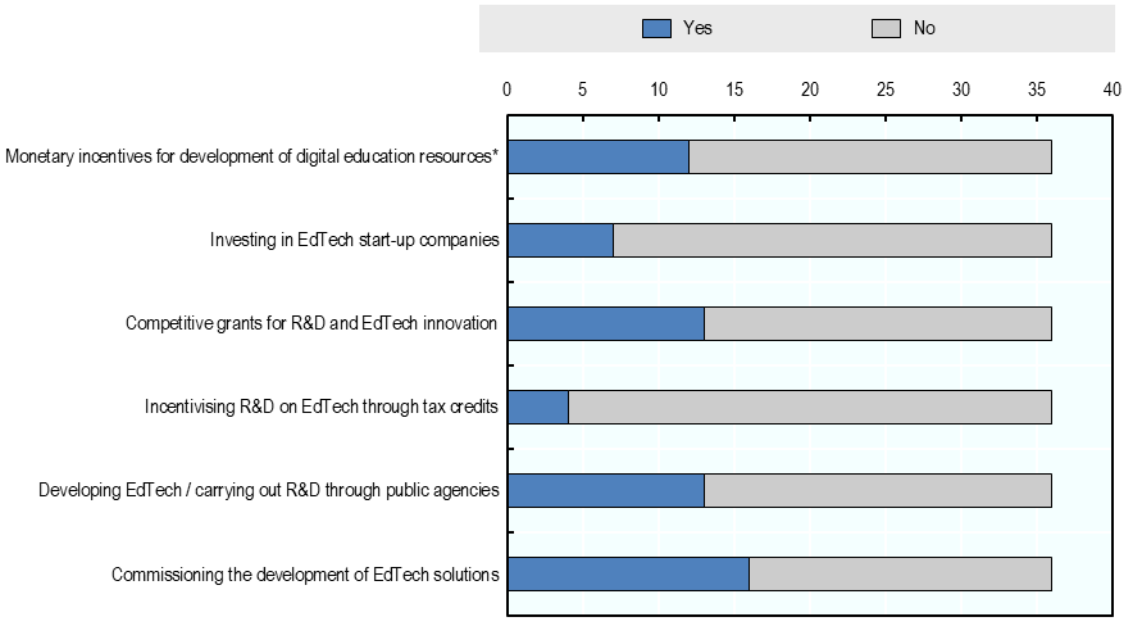
EdTech innovation, research and development is supported through a range of instruments in two thirds of jurisdictions

The development and improvement of digital education resources is an important part of a strong digital education ecosystem. In addition to traditional education stakeholders, many advances in this field are now driven by education technology (EdTech) companies. Public authorities can play an important role in connecting the work of the EdTech sector with that of education practitioners and bringing together actors from government, research, industry, schools and other stakeholder groups to set priorities and advance the effective use of digital tools in schools. Some governments have therefore started providing targeted support to encourage the development of digital education resources that are aligned with the sector's priorities or to foster collaborative forms of development (OECD, 2023, pp. 18, 319[7]).

Evidence from the Policy Survey indicates that more than two thirds of responding jurisdictions (25 of 36 [69%]) use at least one form of targeted support to encourage EdTech innovation, research or developments (see Annex Table 5.3). The approach most widely used by central authorities (in 16 systems [44%]) is to commission the development of EdTech solutions. 13 systems (36%) reported carrying out R&D or developing EdTech through public agencies and providing competitive grants respectively. 12 jurisdictions (33%) also reported providing monetary incentives, either for the development of digital education content, of education software or of AI-based EdTech solutions. By contrast, providing tax credits to incentivise R&D on EdTech or investing directly in EdTech startups is less common, reported by only 4 and 7 jurisdictions respectively (11% and 19%) (Figure 5.3).

Figure 5.3. Support for EdTech innovation, research and development

Number of jurisdictions whose central authorities support the development of digital education technologies or innovation among EdTech companies by the following means



Note: Number of jurisdictions with available data = 36. *Includes monetary incentives for the development of digital education content, education software or AI-based EdTech solutions. See Annex Table 5.3 for further details and individual jurisdictions' responses corresponding to this figure.

6. Capacity building for digital education

Realising the potential of digital technologies to enhance teaching and learning requires people who are prepared, motivated and empowered to put digital resources to effective use. This section covers policies designed to build capacity for digital education among actors at all levels of the education system, including teachers, school leaders and parents. The section considers teachers' initial education and continuing professional learning as well as structural supports aimed at encouraging the take-up of digital education technologies in schools. It also addresses efforts to support school leaders and parents in contributing to the digital transformation of education.

The use of digital resources is now an integral part of many ITE programmes, but whether and how it is integrated is often at the discretion of institutions

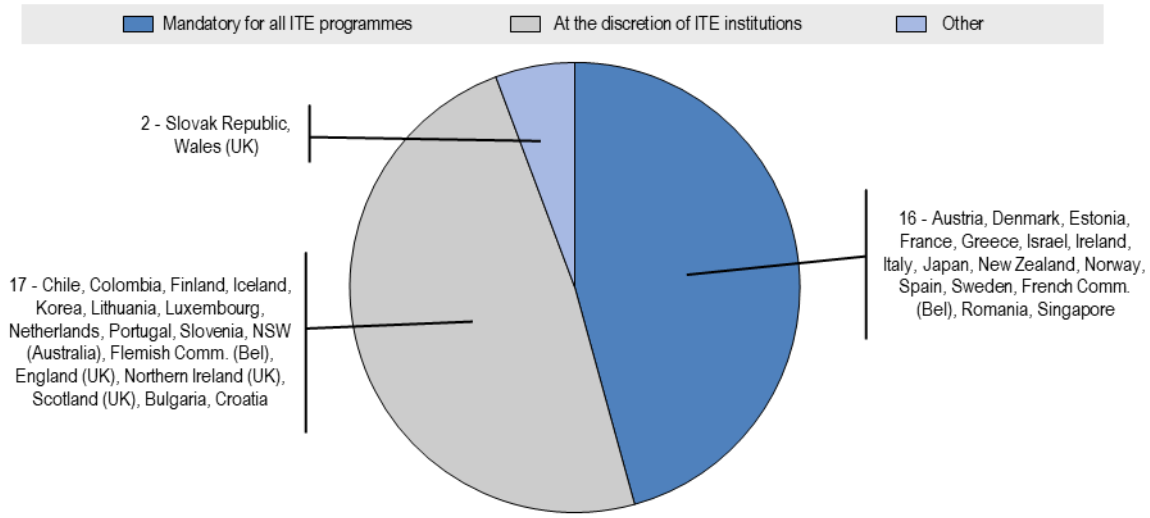
Preparing teachers for the effective use of digital education technologies is a key component of many education systems' digital strategies. Modernising ITE programmes plays an important role in this process and results from TALIS indicate that recent teacher cohorts are more likely to have received training in the use of information and communication technology (ICT) than their more experienced peers (OECD, 2019, p. 207[8]). Nevertheless, prospective teachers' exposure to effective digital pedagogies is not universal in all countries. Public authorities in some systems play a role in steering the content of ITE programmes, for example by prescribing core contents for ITE programmes through accreditation criteria or by developing central learning goals or curricula for ITE programmes.

In the Policy Survey, just under half of the jurisdictions (16 of 35 [46%]) reported that the use of digital resources is a mandatory component for all ITE programmes aimed at general subject teachers in lower

secondary education (ISCED 2). In another 17 systems (49%), integrating the use of digital resources in teacher training programmes is at the discretion of individual ITE institutions (Figure 6.1). This relatively even divide between systems using central prescriptions and those with greater institutional autonomy held across levels of education, i.e. also for ITE programmes preparing primary and upper secondary education teachers (see Annex Table 6.1).

Figure 6.1. Training on the use of digital resources in ITE programmes

Training on the use of digital resources for teaching in initial teacher education (ITE) programmes for general subject teachers (ISCED 2)



Note: Number of jurisdictions with available data = 35. See Annex Table 6.1 for information on ISCED 1 & 3, further details and individual jurisdictions' responses corresponding to this figure.

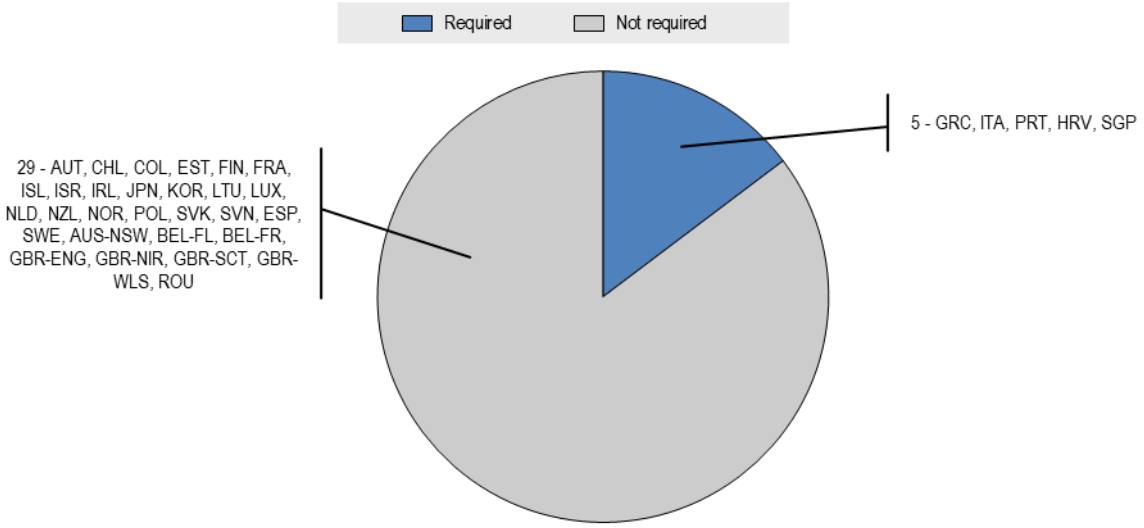
Few jurisdictions require teachers to engage in continuing professional learning on digital technologies, but many offer free training opportunities

Given the rapid pace of technological progress, teachers' engagement in continuing professional learning (CPL) is critical to ensure that digital education resources are and continue to be used effectively in the classroom. CPL is also an important instrument to strengthen the capacity of experienced educators who have not been exposed to modern digital technologies in their initial teacher education. Teachers who received relevant training tend to feel more confident in supporting students with digital technologies and more frequently use ICT in their classes (OECD, 2020[9]; Minea-Pic, 2020[10]).

Many education systems have therefore taken steps to support teachers' professional learning on digital technologies. This can take on different formats, ranging from structured courses to informal peer learning or the engagement in communities of practice. A common way to promote teachers' professional development is to facilitate their access to learning opportunities. In 27 of 35 responding jurisdictions (77%), teachers have access to free in-service training on digital education (see Annex Table 6.2). A smaller number of systems have made teachers' participation in professional development mandatory. In the Policy Survey, only 5 of 34 systems (15%) reported having central requirements for teachers to undertake in-service training on the use of digital resources for teaching (Croatia, Greece, Italy, Portugal and Singapore) (Figure 6.2).

Figure 6.2. Requirements for teachers to engage in professional learning on digital resources

Number of jurisdictions in which teachers are centrally required to undertake in-service training on the use of digital resources for teaching



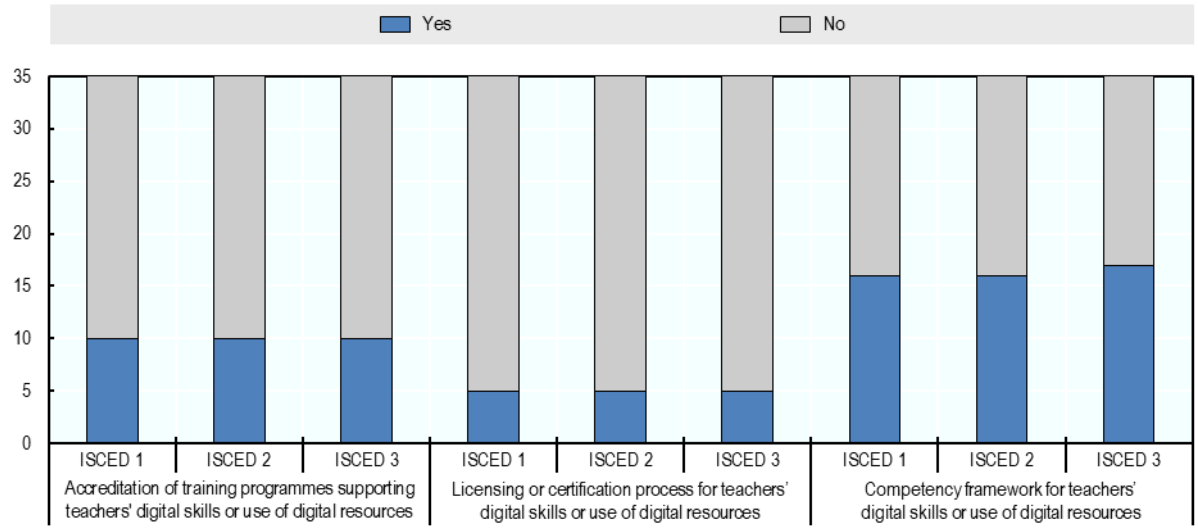
Note: Number of jurisdictions with available data = 34. See Annex Table 6.2 for further details and individual jurisdictions' responses corresponding to this figure.

Efforts to certify or accredit teachers' digital skills or effective use of digital education resources are not yet widespread

Accrediting or certifying the skills that teachers develop as they engage in innovative practices and professional learning on digital education technologies can be an effective means to recognise their efforts and encourage their continued engagement in such practices (OECD, 2023, p. 203[2]). At the lower secondary level, 16 of 35 jurisdictions (46%) reported having a competency framework for teachers' digital skills or their use of digital resources. Some of these build on existing international competency frameworks, such as the European Framework for the Digital Competence of Educators (*DigCompEdu*) (Redecker, 2017[11]). Such competency frameworks can help teachers to self-assess their skills and orient their professional development. A much smaller share of systems (5 of 35 [14%]) reported having a process to actively license or certify teachers' digital skills or their use of digital resources. 10 systems (29%) reported accrediting training programmes aimed at supporting teachers' digital skills or their use of digital resources, rather than (or in addition to) certifying teachers' skills directly. There was little variation in the existence of these programmes across levels of education (Figure 6.3).

Figure 6.3. Certification and accreditation of teachers' digital skills or effective use of digital education resources

Number of jurisdictions that reported having the following mechanisms in place at the central level



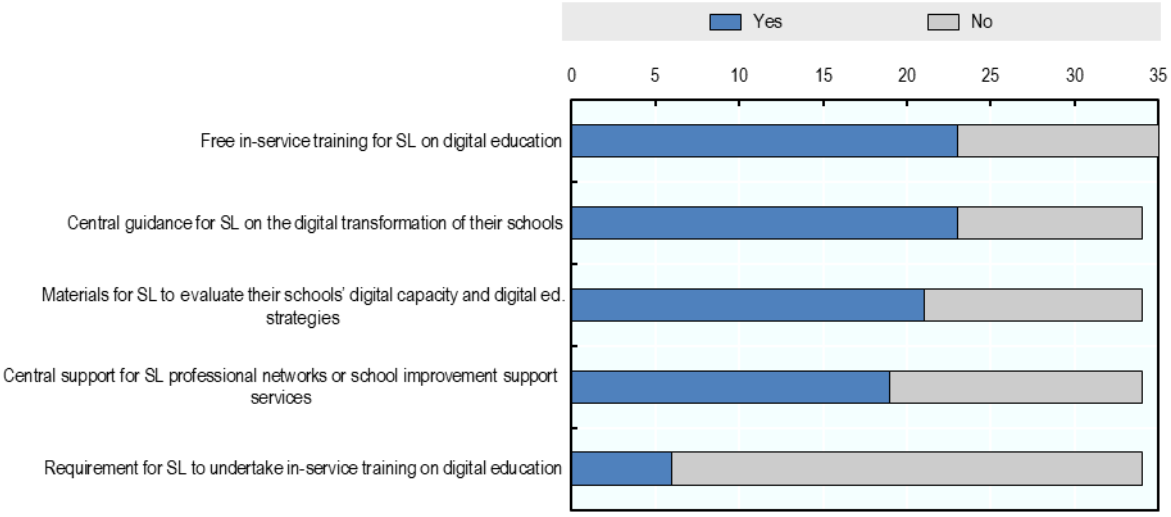
Note: Number of jurisdictions with available data = 35. See Annex Table 6.1 for further details and individual jurisdictions' responses corresponding to this figure.

Many systems recognise the importance of strengthening school leaders' digital capacity, although support is mostly provided indirectly

The successful digital transformation of schools requires strong institutional capacity and a strategic approach to school improvement and development. School leaders play a critical role in managing this transition and bringing their teachers on board to embrace the effective use of digital education technologies (OECD, 2023, p. 162[2]). All but 3 of the systems participating in the Policy Survey (92%) reported having undertaken actions at the central level to strengthen school leaders' digital capacity (see Annex Table 6.3). Some systems have sought to do so by investing directly in the professional development of school leaders. As for teachers, the provision of free in-service training on digital education for school leaders is relatively widespread (in 23 of 35 jurisdictions [66%]). However, only 6 of 34 systems (18%) require school leaders to undertake in-service training on the topic. Slightly above half of the systems (19 of 34 [56%]) reported having taken a more indirect approach to strengthening school leaders' digital capacity by providing central support to professional networks or investing in school improvement support services on the subject. Other widespread forms of support include central guidance for school leaders on the digital transformation of their schools (23 systems [68%]) or the provision of materials designed to support school leaders in evaluating their schools' digital capacity and strategy (21 systems [62%]) (Figure 6.4).

Figure 6.4. Strengthening school leaders' capacity for digital education

Number of jurisdictions that reported having the following central-level provisions in place to strengthen school leaders' (SL) capacity for digital education



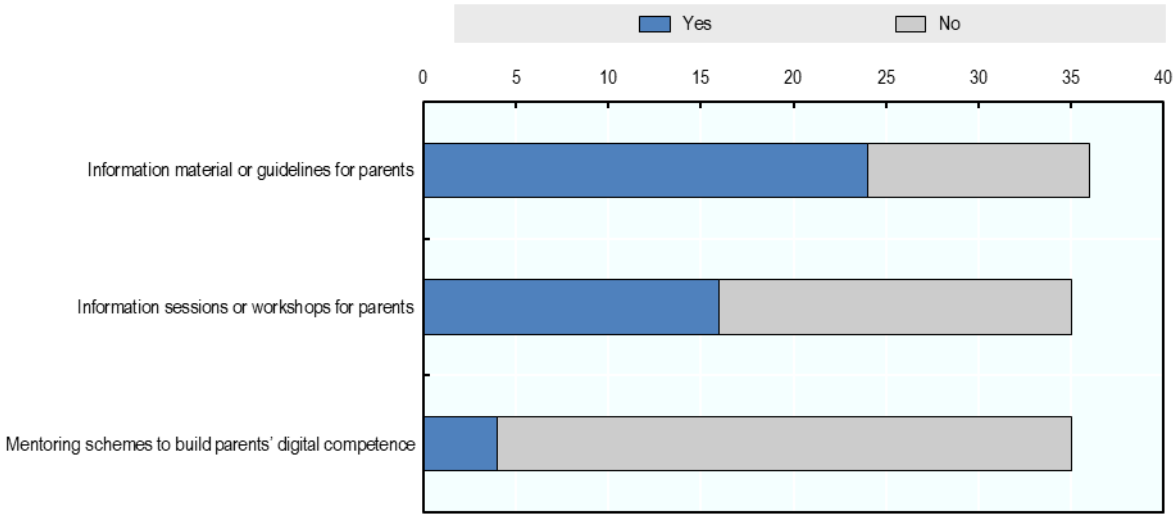
Note: Number of jurisdictions with available data = 34/35. See Annex Table 6.3 for further details and individual jurisdictions' responses corresponding to this figure.

The role of parents as facilitators of digital education is not yet recognised in many systems

Parents or guardians play an important role in promoting children's learning progress, particularly at younger ages. As the use of digital education technologies becomes more widespread, parents will increasingly need digital competencies themselves to accompany and facilitate their children's learning or to raise their awareness about the safe navigation of digital environments. As was demonstrated during the COVID-19 pandemic, this is even more important when learning activities take place in hybrid or online formats. Several countries have recognised this challenge and are undertaking efforts to build parents' digital capacity, also as a means to bridge digital divides and inequities based on students' social backgrounds (OECD, 2023, p. 165[2]). Results from the Policy Survey indicate that central authorities' initiatives in this area are mostly limited to the dissemination of information, e.g. by providing information materials or guidelines for parents (24 of 36 systems [67%]) or organising information sessions and parents' workshops on the topic (16 systems [46%]). 4 jurisdictions [11%] have gone further and reported running mentoring schemes to build parents' digital competency. At the same time, 10 jurisdictions (28%) reported providing none of these initiatives to strengthen parents' digital capacity (Figure 6.5).

Figure 6.5. Central initiatives to strengthen parents' digital capacity

Number of jurisdictions with the following central initiatives aimed at strengthening parents' digital skills and their ability to support their children's effective and safe use of digital resources



Note: Number of jurisdictions with available data = 35/36. See Annex Table 6.4 for further details and individual jurisdictions' responses corresponding to this figure.

7. Human resource policies for digital education

Attracting and retaining effective teachers remains an important challenge for many countries and economies and the strategies needed to accomplish this goal must be adapted to the digital age.[5] Career structures, professional standards and appraisal systems can provide education professionals with incentives to enhance their digital skills, to integrate new technologies into their practice and to experiment with innovative digital teaching methods. This section explores how human resource policies for teachers, school leaders and other school staff can be adapted to account for the digital transformation of their work. It focuses on the adaptation of professional standards and appraisal systems to the use of digital technologies as well as the creation of dedicated staff positions with responsibilities for the use or maintenance of digital resources in schools.

While teachers' work with digital resources is reflected in many countries' professional standards, most appraisal systems are not designed to reward their effective use

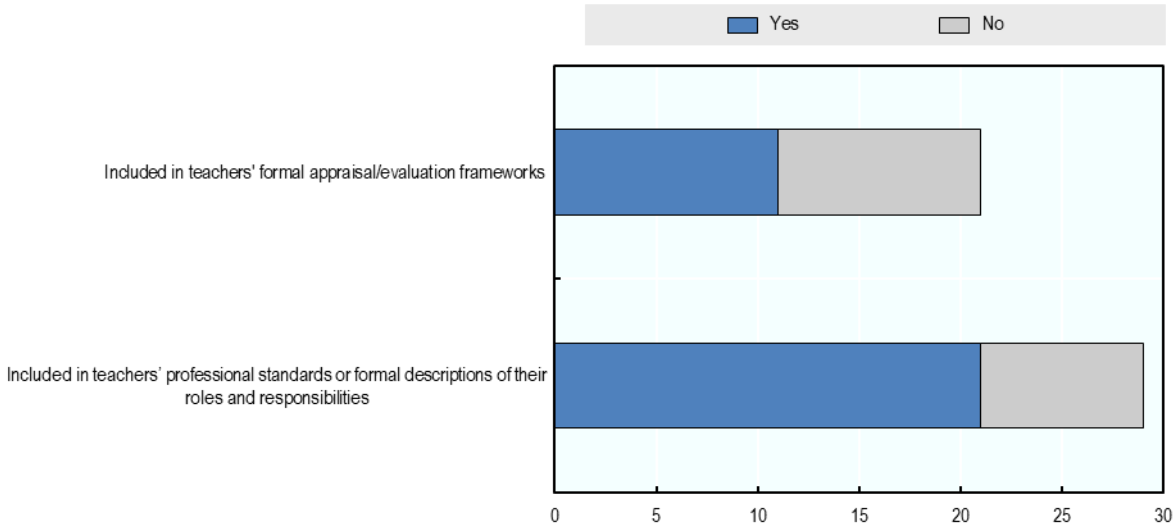
Including references to digital competencies or the use of digital technologies in professional teaching standards and evaluation frameworks can incentivise teachers to continue developing their professional practices. It can also provide recognition for teachers who use digital technologies in particularly innovative and effective ways in the classroom (OECD, 2023, p. 203[2]). As education authorities and stakeholders adapt teacher policies to the changing realities of the classroom, many reflect on the evolving role of educators and what it means to be an effective teacher in the digital age. Among the 29 jurisdictions with central professional standards or formal role descriptions for teachers (at ISCED 2), 21 (72%) reported that they already include references to the use of digital resources. However, among the 21 jurisdictions with central appraisal or evaluation frameworks, fewer than half (11 systems [52%]) systematically consider teachers' use of digital resources when evaluating their work (Figure 7.1). These results were similar at

[5] See Annex Table 9.1 for an overview of teacher shortages, as reported by participating jurisdictions.

the primary and upper secondary levels, pointing to a potential gap between the standards to which the teaching profession holds itself and the criteria that its work is evaluated against (see Annex Table 7.1).

Figure 7.1. The role of digital resources in teachers' professional standards and appraisal frameworks

References to teachers' use of digital resources in professional standards and appraisal/evaluation frameworks at the central level (ISCED 2)



Note: Number of jurisdictions with available data = 21 & 29. Jurisdictions without central professional standards, formal role descriptions, or teacher evaluation/appraisal frameworks were excluded for the respective items. See Annex Table 7.1 for information on ISCED 1 & 3, further details and individual jurisdictions' responses corresponding to this figure.

Most systems allow for local autonomy and flexibility when assigning responsibilities for the pedagogical use of digital resources in schools

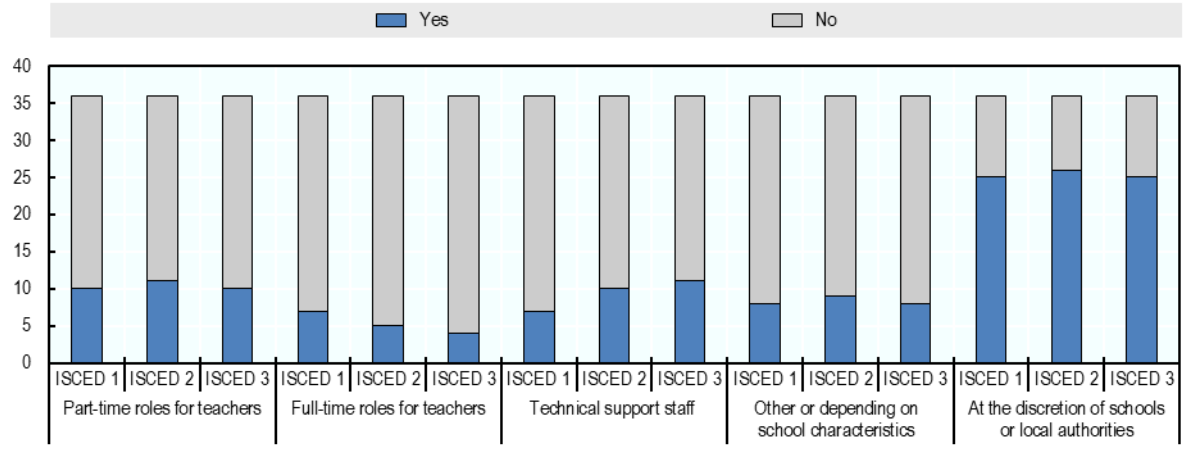
As schools and teachers are increasingly expected to enhance their work using digital technologies, they may require the support of specialist professionals who are able to help them to deploy digital tools effectively. Many schools have sought to meet these needs by appointing members of their teaching staff to either formal or informal positions as digital co-ordinators (OECD, 2023, p. 204[2]). Evidence from the Policy Survey suggests that most school systems allow for local autonomy or flexibility in the allocation of these responsibilities. In the majority of the responding jurisdictions (26 of 36 [72%] at the lower secondary level), the task of creating staff positions and assigning responsibilities for the use of digital resources is at the discretion of school leaders or local authorities (Figure 7.2).

Although a majority of participating jurisdictions have a multi-stage career structure for teachers (see Annex Table 9.2), fewer than half (15 of 36 [42%]) have centrally defined staff positions with responsibilities related to the use of digital resources for teaching (e.g. supporting teachers in integrating digital technologies into their practice). In most cases, these positions are part-time roles for teachers (11 systems [31%]) or – less frequently – full-time roles for teachers (5 systems [14%]). A significant number of jurisdictions (10 systems [28%]) also have dedicated positions for technical support staff to assume this responsibility. 9 systems (25%) have other arrangements or staff positions that are contingent on school characteristics (e.g. its size or educational offer) (Figure 7.2). In some systems, more than one of these arrangements coexist, e.g. where schools have the discretion to assign responsibilities for the use of digital

resources to one of multiple centrally defined staff positions (see Annex Table 7.2 for a detailed overview). Differences across levels of education are relatively small.

Figure 7.2. Staff positions with responsibility for the use of digital resources for teaching

Number of jurisdictions with dedicated staff positions with responsibility for the use of digital resources for teaching



Note: Number of jurisdictions with available data = 36. See Annex Table 7.2 for further details and individual jurisdictions' responses corresponding to this figure.

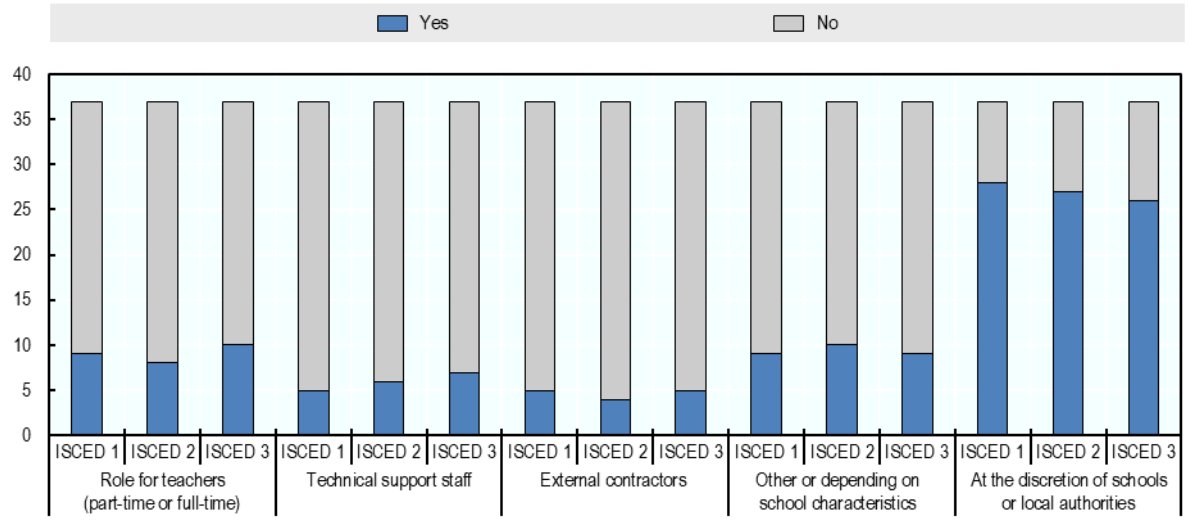
Assigning responsibility for the maintenance of digital education resources is mostly at the discretion of schools or local authorities

Digital software and devices require regular maintenance to ensure their continued security and functionality. In addition to specialised staff who can assist teachers in the pedagogical use of digital technologies, schools therefore need technical support to maintain their digital infrastructure and assist teachers or students with technical problems (OECD, 2023, p. 200[2]). Education systems across the OECD currently face significant gaps in the availability of technical assistance in schools. In PISA 2022, 41% of 15-year-old students attended schools whose principal reported having insufficiently qualified technical assistant staff, on average across the OECD (OECD, 2023, pp. 409, Table II.B1.5.32[6]).

The Policy Survey provides an insight into the distribution of responsibilities for maintaining digital resources in schools. In most responding jurisdictions (27 of 37 systems [73%] at the lower secondary level), assigning responsibility for the maintenance of digital education resources is at the discretion of schools or local authorities. A minority of jurisdictions assign responsibility for the maintenance of digital resources at the central level. 8 systems (22%) reported that teachers exercise this role in a part-time or full-time capacity, 6 systems (16%) assign the responsibility to technical support staff (sometimes shared between multiple schools) and 4 systems (11%) assign maintenance responsibilities to external contractors. 10 systems (27%) have other arrangements or the responsibility for the maintenance of digital devices depends on school characteristics (Figure 7.3). In some school systems, more than one of these arrangements coexist (see Annex Table 7.2 for a detailed overview). Differences across levels of education are relatively small.

Figure 7.3. Staff responsible for maintaining digital resources in schools

Number of jurisdictions assigning responsibility for the maintenance of digital resources in schools to different types of staff



Note: Number of jurisdictions with available data = 37. See Annex Table 7.2 for further details and individual jurisdictions' responses corresponding to this figure.

8. Monitoring and evaluation for digital education

Monitoring and evaluation mechanisms are important elements of any successful digital education policy ecosystem. Countries draw on a diverse range of approaches to evaluate the performance of students, teachers, school leaders, schools and the education system as a whole. Many school systems use a combination of school self-evaluations, external school evaluations, national student examinations, administrative data collections and appraisal processes. These instruments can be used to gain a better understanding of students' learning progress, to provide information to parents and other stakeholders, or to improve school leadership and teaching practices (OECD, 2013, p. 17[12]). This section addresses central authorities' strategies to monitor the state of digitalisation in their education systems and to evaluate the impact of their digital education policies. Results of the Policy Survey should be interpreted bearing in mind the significant heterogeneity of national quality assurance frameworks and practices.

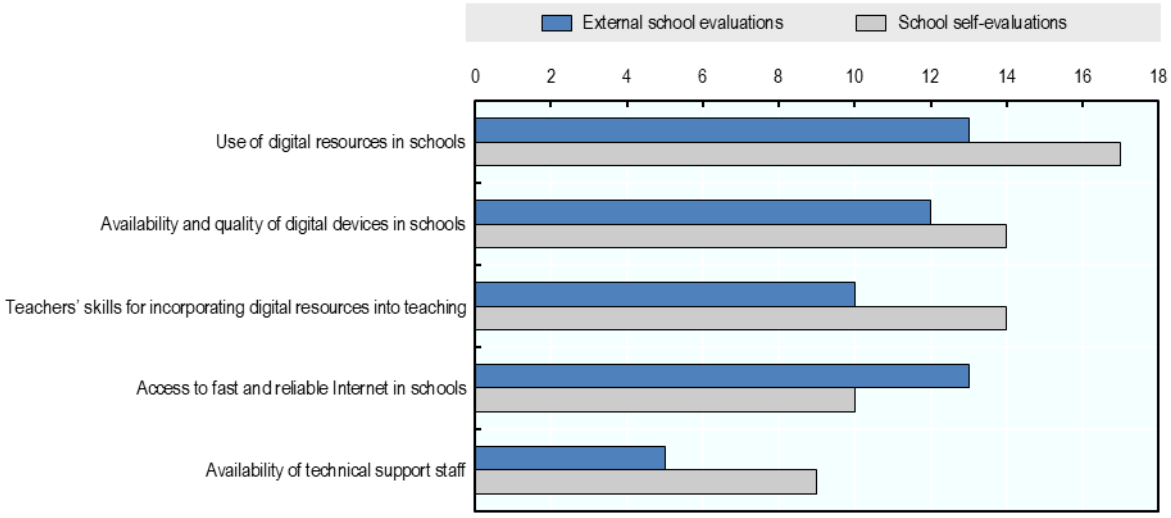
Important aspects of digital education in schools are not yet systematically evaluated

Internal and external evaluation mechanisms at the school level can play an important role in enhancing the use of digital technologies for teaching, learning and management (OECD, 2023, p. 94[2]). Fewer than half of the jurisdictions responding to the Policy Survey (17 of 37 systems [46%]) reported using external school evaluations (i.e. inspections or external reviews) to collect information related to digital education systematically. The topics that are most frequently monitored through external evaluations are the use of digital resources in schools and their access to fast and reliable Internet (13 systems [35%], respectively), as well as the availability and quality of digital devices in schools (12 systems [32%]). 10 systems (27%) reported that external school evaluations are used to monitor teachers' skills for incorporating digital resources into teaching and 5 systems (14%) reported monitoring the availability of technical support staff (Figure 8.1).

A slightly larger share of responding jurisdictions (20 of 37 [54%]) has embedded aspects of digital education in schools' self-evaluation frameworks (see Annex Table 8.1). Particularly the use of digital resources and teachers' digital skills are more frequently covered by schools' self-evaluations (in 17 and 14 systems respectively [46% and 28%]), than by external reviews or inspections. The availability and quality of digital devices is the subject of schools' self-evaluations in 14 systems (38%) and the availability of technical support staff in 9 systems (24%). By contrast, schools' access to fast and reliable Internet is more frequently monitored through external evaluations than self-evaluations (10 systems [27%]) (Figure 8.1).

Figure 8.1. External school evaluations and self-evaluations on digital education

Aspects of schools' digitalisation monitored through external evaluations (reviews and inspections) and self-evaluations



Note: Number of jurisdictions with available data = 37. See Annex Table 8.1 for further details and individual jurisdictions' responses corresponding to this figure.

The impact of digital education policies is evaluated for a narrow set of student outcomes, with most countries focusing on digital skills

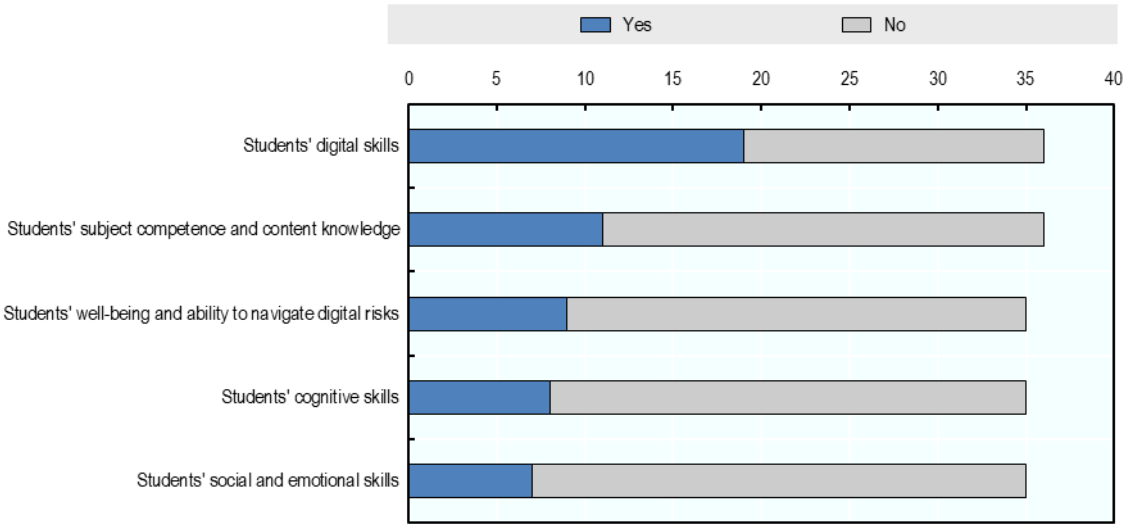
The use of digital education technologies in schools is not an end in itself but should serve to improve the quality of teaching and learning. It should be aligned with promoting system-wide goals like equity, inclusion or efficiency and ultimately improve outcomes for students. If the right conditions are in place to enable their effective use, digital education technologies can enhance a range of student outcomes, including their cognitive skills and digital literacy, their socio-emotional skills and well-being as well as their labour market and social outcomes (OECD, 2023, p. 24[2]). Conversely, there are justified concerns that the inadequate use of digital technologies in the classroom could do more harm than good. Evaluating the impact of digital education policies is therefore critical to assess their effectiveness and to make adjustments where needed.

Responses to the Policy Survey suggest that more than two thirds of the responding jurisdictions (23 of 36 [64%]) systematically evaluate the impact of digital education on student outcomes (see Annex Table 8.2). However, the range of outcomes they consider is relatively narrow. 19 of 36 jurisdictions (53%) evaluate the impact of digital education policies on students' digital skills and 6 do so exclusively. The impact on students' subject competency and content knowledge is evaluated less frequently (in 11 of 36 systems [33%]), as is the case for students' well-being and ability to navigate digital risks (9 of 35 systems [26%]),

their cognitive skills (8 of 35 systems [23%]) and their social and emotional skills (7 of 35 systems [20%]) (Figure 8.2). Jurisdictions reported using a diverse range of methods to evaluate the impact of digital education policies. Many of them are observational and not designed to identify causal effects, for example comparing students' achievement in PISA across schools that make different use of digital technologies. Due to diversity of methods used, the practices reported by jurisdictions' may not be directly comparable.

Figure 8.2. Evaluating the impact of digital education on students

Number of jurisdictions that reported systematically evaluating the impact of digital education policies on the following student outcomes



Note: Number of jurisdictions with available data = 35/36. Number of jurisdictions where none of the outcomes are systematically evaluated = 13. See Annex Table 8.2 for further details and individual jurisdictions' responses corresponding to this figure.

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Annex A. Responses to the Policy Survey

This Annex includes comparative tables presenting the complete data of the Policy Survey on School Education in the Digital Age, including the individual responses of all 37 participating jurisdictions. The tables include detailed information (and contextual footnotes) for all items covered in the figures and the main text of this working paper, as well as additional items not addressed in detail above. In line with the analytical framework of the OECD project *Resourcing School Education: Policies for the Digital Transformation of Education and Future-Readiness of Teachers*, the tables are organised into the following eight dimensions of the project's Strand 1, as well as the project's Strand 2, which focuses on the teaching profession:

- Dimension 1: Strategic visions and policy co-ordination for digital education
- Dimension 2: Adapting pedagogical approaches, curricula and assessments for digital education
- Dimension 3: Governance, guidance and regulation for digital education
- Dimension 4: Funding and procurement for digital education
- Dimension 5: Infrastructure and innovation for digital education
- Dimension 6: Capacity building for digital education
- Dimension 7: Human resource policies for digital education
- Dimension 8: Monitoring and evaluation for digital education
- Strand 2: The teaching profession in the digital age

Notes

The following symbols and abbreviations are used in the tables:

- a = Data are not applicable because the category or question does not apply.
- m = Data are missing because no response was provided.

Where footnotes are included on specific jurisdictions' responses, the cells that they refer to are marked with an asterisk (*).

Dimension 1: Strategic visions and policy co-ordination for digital education

Annex Table 1.1. Strategies for digital education

Existence of central or sub-central-level strategies specifically dedicated to or covering digital education

	Central-level strategy specifically dedicated to digital education		**Broader central-level strategy covering digital education**		**Strategies for digital education exist at sub-central levels of government**	**References to relevant strategic documents** (Strategies dedicated to digital education or, if not available, broader central-level strategies covering digital education)
	One or more such strategies exist	New strategy under development	One or more such strategies exist	New strategy under development		
OECD countries						
Austria	✓		✓			8-Punkte-Plan für den digitalen Unterricht
Chile		✓	✓	✓	✓	Estrategias para la Reactivación Educativa
Colombia	✓		✓		✓	Tecnologías para aprender
Denmark			✓		✓	National Strategy for Digitalisation
Estonia			✓			Strategic Planning for 2021-2035
Finland	✓		✓			Policies for the Digitalisation of Education and Training until 2027
France	✓	✓	✓		✓	2023-2027 Digital Education Strategy
Germany	✓	✓				Bildung in der Digitalen Welt: Strategie der KMK
Greece*			✓			Digital Transformation Bible 2020 - 2025
Iceland			✓			Þingsályktun um menntastefnu fyrir árin 2021–2030
Israel		✓				
Ireland	✓		✓			Digital Strategy for Schools to 2027
Italy	✓					Piano Nazionale Scuola Digitale
Japan			✓			The Fourth Basic Plan for the Promotion of Education
Korea	✓		✓		✓	Digital-driven Education Reform Plan
Lithuania	✓		✓			EdTech Digital Transformation of Education Program
Luxembourg	✓		✓*			Einfach Digital – Zukunftskompetenze fir staark Kanner
Netherlands	✓		✓			Digitalisation Agenda - Primary and Secondary Education
New Zealand	✓					Connected Ako: Digital and Data for Learning
Norway	✓		✓*			Strategi for digital kompetanse og infrastruktur

	Central-level strategy specifically dedicated to digital education		Broader central-level strategy covering digital education		Strategies for digital education exist at sub-central levels of government	References to relevant strategic documents (Strategies dedicated to digital education or, if not available, broader central-level strategies covering digital education)
	One or more such strategies exist	New strategy under development	One or more such strategies exist	New strategy under development		
Poland		✓				
Portugal	✓		✓			Capacitação Digital das Escolas
Slovak Republic	✓		✓			Education Informatization Program until 2030
Slovenia	✓		✓			Akcijski Načrt Digitalnega Izobraževanja (Andi) 2021-2027
Spain	✓		✓		✓	Plan #DigEdu
Sweden			✓		✓	För ett Hållbart Digitaliserat Sverige – En Digitaliseringsstrategi
Other participants						
NSW (Australia)	✓	✓	✓		✓	NSW Department of Education Digital Strategy
Flemish Comm. (Bel)	✓					Digisprong - Kwaliteitsvolle Digitalisering in het Onderwijs
French Comm. (Bel)	✓				✓	Stratégie Numérique pour l'Éducation
England (UK)			✓			UK Digital Strategy
Northern Ireland (UK)		✓				
Scotland (UK)		✓			✓	
Wales (UK)	✓	✓	✓		✓	Digital 2030: Strategic Framework for Post-16 Digital Learning
Partners						
Bulgaria		✓	✓			Digital Transformation of Bulgaria for the Period 2020-2030
Croatia	✓		✓			Strateški Okvir za Digitalno Sazrijevanje Škola i Školskog Sustava
Romania			✓			National Strategic Framework for AI (CSN-IA) / România Educată
Singapore	✓		✓			EdTech Masterplan 2030

Note: Central-level strategies here refer to high-level strategic documents that set out the government's aims with respect to digital education.
Greece: Sections 9.1.1 and 9.1.2 of the "Digital Transformation Bible 2020 - 2025" provide strategic directions and objectives for education and projects to be implemented by the Ministry of Education.
Luxembourg: The action plan "*sécher.digital*" (https://secher.digital/fr) is a broader central-level strategy covering digital education.
Norway: A broader central-level strategy ("*Fremtidens digitale Norge*"), including goals for digital competency, was published in Q4 2024. Information in the tables refers to the education-specific strategy.
Source: Question A.1 of the Policy Survey on School Education in the Digital Age.

Annex Table 1.2. Scope and coverage of central-level strategies for digital education

Education levels and thematic areas addressed by jurisdictions' central-level strategy for digital education

	Education levels						Thematic areas											
	ISCED 0	ISCED 1	ISCED 2	ISCED 3	ISCED 4	ISCED 5-8	Use of digital resources in student assessment	Use of digital resources for teaching	Adapting curricula to foster digital skills and/or literacy	Interoperability of digital resources (1)	Standard-setting and quality assurance for digital ed.	Students' well-being and safety in digital environments	Access to fast and reliable Internet for schools (2)	Digital devices and software for schools	The use of Artificial Intelligence in education (3)	The use of other emerging technologies for education	Stimulating innovation in the EdTech sector	Capacity of teachers to integrate digital resources	Technical support staff for schools
OECD countries																		
Austria		✓	✓	✓		✓	A	A/C	A/C	A	A/B/C	A/B/C	A/B/C	A/B/C	*			A/C	A/C
Chile		✓	✓	✓			A	A	A	A/B	A	A/C	A/B/C	A/C	A		A	A/C	A/C
Colombia		✓	✓	✓	✓	✓	A	A/B/C	A	A/B	A	A	A/B	A/B/C	A	A/B	A/C	A/C	A
Denmark	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
Estonia	✓	✓	✓	✓	✓	✓	A	A	A/B	A	A	A	A	A	A	A	A	A	A
Finland	✓	✓	✓	✓	✓	✓	A/B/C	A/B/C	A/B/C	A/B/C	A/B/C	A/B	A	A	A/B/C	A/B	A	A/B/C	
France		✓	✓	✓	✓	✓	A/C	A/C		A/C	A/C	A/C	A/C	A/C	A		A/C	A/C	
Germany		✓	✓	✓	✓	✓	A	A		A		A	A	A	A				A
Greece	✓	✓	✓	✓	✓	✓	A/C	A/C	A/C	A/C		A/C	A	A/B/C	A/C		A/C	A/C	
Iceland	✓	✓	✓	✓				A	A			A/C						A/C	
Israel	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
Ireland		✓	✓	✓			A	A/C	A/B		A	A/B/C	A/B/C	A/C	A	A		A/C	A/C
Italy		✓	✓	✓	✓		A/C	A/B	A/B	A	A/B	A	A/C		A		A/C	A/C	A/C
Japan	✓	✓	✓	✓	✓	✓	A/C	A/C	A/C	A/C	A	A/C	A	A/C	A	A	A	A	A/C
Korea	✓	✓	✓	✓		✓	A/B	A/B/C	A/B/C	A	A/B/C	A/C	A/B/C	A/B/C	A/B/C	A/C	A/B/C	A/B/C	A/B/C
Lithuania	✓	✓	✓	✓	✓	✓	A/B/C	A/B/C	A/B/C	A	A/B/C	A	A/B	A/B/C			A/B	A/B/C	A/B
Luxembourg		✓	✓	✓			A/C	A/C	A/C			A/C	A	A/C	A/C	A	A	A/C	A/C
Netherlands		✓	✓	✓			A	A	A/C			A/C	A/C	A/C	A	A	A/C	A/C	
New Zealand	✓	✓	✓	✓	✓	✓	A	A/C	A	A	A	A	A	A	A	A	A	A	A

	Education levels						Thematic areas												
	ISCED 0	ISCED 1	ISCED 2	ISCED 3	ISCED 4	ISCED 5-8	Use of digital resources in student assessment	Use of digital resources for teaching	Adapting curricula to foster digital skills and/or literacy	Interoperability of digital resources (1)	Standard-setting and quality assurance for digital ed.	Students' well-being and safety in digital environments	Access to fast and reliable Internet for schools (2)	Digital devices and software for schools	The use of Artificial Intelligence in education (3)	The use of other emerging technologies for education	Stimulating innovation in the EdTech sector	Capacity of teachers to integrate digital resources	Technical support staff for schools
Norway	✓	✓	✓	✓		*	A/C	A		A/C		A/C	A	A/C	A/C	A/C	A/C	A/C	A
Poland	✓	✓	✓	✓			A/B/C	A/C	A/B	A/B	A/B	A/B	A/B	A/B	A/B	A/B	A/B	A/B	A/B
Portugal	✓	✓	✓	✓			A	A	A			A	A	A				A/B/C	
Slovak Republic	✓	✓	✓	✓		✓			A/C			A/B	A/B	A/B	A/B				A/B
Slovenia	✓	✓	✓	✓			A	A	A/B		A	A	A	A	A/B	A		A	
Spain	✓	✓	✓	✓	✓	✓	A/C	A/C	A/C	A/C	A/C	A/C	A/C	A/C	A/C	A/C		A/C	
Sweden	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
Other participants																			
NSW (Australia)	✓	✓	✓	✓			A	A	A	A	A	A	A	A	A	A		A	A
Flemish Comm. (Bel)	✓	✓	✓	✓	✓			A/C	A/C	A/C	A/B	A/C	A/C	A/C	A/B	A/C	A/C	A/C	A/C
French Comm. (Bel)	✓	✓	✓	✓				A/B/C	A/B/C				A	A/B/C				A/B/C	
England (UK)		✓	✓	✓	✓	✓	A	A/C	A/C	A/C	A/C	A/C	A/C	A	A/C	A	A/C	A/C	
Northern Ireland (UK)	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
Scotland (UK)	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
Wales (UK)	✓	✓	✓	✓	✓		A	A	A	A	A	A	A	A	A	A	A	A	A
Partners																			
Bulgaria		✓	✓	✓	✓	✓	A/B/C	A/B/C	A/C		A/C	A/C	A/B/C	A/B	A		A	A/B/C	
Croatia	✓	✓	✓	✓	✓	✓	A	A/C	A/C	A/B	A/B	A/C	A/C	A/C				A/C	A/B
Romania	✓	✓	✓	✓	✓	✓	A	A	A	A	A	A	A	A	A	A			
Singapore		✓	✓	✓	✓	✓	A/C	A/C	A/C		A/C	A/C	A	A/C	A/C		A	A/C	A/C

Note: Responses refer to jurisdictions' central-level strategies specifically dedicated to digital education or, if no such strategy exists, broader central-level strategies covering digital education (see Annex Table 1.1). For the thematic areas, letters indicate how they are addressed by the central-level strategy: A = Thematic area is mentioned in the strategy; B = Strategy includes specific time-bound goals related to the thematic area; C = Strategy includes specific initiatives related to the thematic area.
(1) Interoperability refers to the ability of computer systems or software to exchange and make use of information from other systems or software; (2) Fast and reliable Internet refers to an Internet connection that meets the criteria of the EU connectivity target for schools of uplink speeds of at least one gigabit per second; (3) AI here refers to a machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations, or decisions influencing real or virtual environments. AI systems are designed to operate with varying levels of autonomy.
a = No applicable central-level strategy on digital education.
Austria: The use of AI in education, incl. goals and initiatives, is covered by a separate strategy document ("*Künstliche Intelligenz – Chance für Österreichs Schulen*").
Norway: Higher education (ISCED 5-8) is covered in a separate strategy ("*Strategi for digital omstilling i universitets- og høyskolesektoren 2021-2025*").
Romania: Responses refer to the broader education strategy *România Educată* (Romania Educated), which covers digital education.
Source: Questions A.1.a and A.1.f of the Policy Survey on School Education in the Digital Age.

Annex Table 1.3. Development and implementation of central-level strategies for digital education

Stakeholder involvement, revision process and funding/implementation/accountability instruments linked to central-level strategies for digital education

	Stakeholders consulted during the development of the strategy						Funding, implementation and accountability instruments linked to the strategy						Provisions to regularly update or review the strategy (duration of the strategy in brackets)
	Teacher unions	Student representatives	Business representatives	Sub-central authorities	Other ministries or government agencies	Other	Designated budget for the strategy's implementation	Time-bound goals	Action plan assigning responsibilities for the implementation	Indicators to measure implementation progress and outcomes	Monitoring of the implementation (e.g. regular reviews of ...)	Evaluation of strategy outcomes (2)	
OECD countries													
Austria	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	No
Chile	✓		✓	✓	✓		✓	✓					No
Colombia	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓		Yes
Denmark	a	a	a	a	a		a	a	a	a	a	a	a
Estonia	✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	Yes (15 years)
Finland	✓	✓	✓	✓	✓			✓	✓				No
France	✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	Yes (annual)
Germany	✓	✓	✓	✓	✓		✓	✓	✓				No
Greece	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	Yes
Iceland	✓	✓	✓	✓	✓		✓		✓		✓		Yes (4 years)
Israel	a	a	a	a	a	a	a	a	a	a	a	a	a
Ireland	✓	✓	✓		✓	✓	✓		✓		✓		Yes (5 years)*
Italy						✓	✓	✓	✓	✓	✓		Yes
Japan	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	Yes (5 years)
Korea	✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	No
Lithuania		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	No
Luxembourg	✓			✓	✓				✓				No
Netherlands	✓			✓		✓*	a**	a**	a**	a**	a**	a**	No
New Zealand	✓	✓	✓		✓					✓	✓		Yes (2 years)

	Stakeholders consulted during the development of the strategy						Funding, implementation and accountability instruments linked to the strategy						Provisions to regularly update or review the strategy (duration of the strategy in brackets)
	Teacher unions	Student representatives	Business representatives	Sub-central authorities	Other ministries or government agencies	Other	Designated budget for the strategy's implementation	Time-bound goals	Action plan assigning responsibilities for the implementation	Indicators to measure implementation progress and outcomes	Monitoring of the implementation (e.g. regular reviews of ...(1))	Evaluation of strategy outcomes (2)	
Norway	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		No
Poland	✓		✓	✓			✓	✓		✓	✓	✓	Yes
Portugal					✓	✓	✓	✓	✓	✓	✓	✓	Yes
Slovak Republic					✓				✓				Yes
Slovenia	✓	✓	✓	✓	✓				✓		✓	✓	No
Spain	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	No
Sweden	a	a	a	a	a	a	a	a	a	a	a	a	a
Other participants													
NSW (Australia)	✓	✓	✓	✓		✓		✓		✓	✓		m
Flemish Comm. (Bel)							✓	✓	✓		✓	✓	No
French Comm. (Bel)	✓					✓	✓	✓	✓	✓	✓	✓	Yes
England (UK)			✓		✓			✓	✓				No
Northern Ireland (UK)	a	a	a	a	a	a	a	a	a	a	a	a	a
Scotland (UK)	a	a	a	a	a	a	a	a	a	a	a	a	a
Wales (UK)	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	Yes
Partners													
Bulgaria	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	No
Croatia	✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	Yes
Romania	✓	✓	✓	✓			✓			✓	✓		Yes
Singapore							✓	✓	✓	✓	✓	✓	Yes

Note: Responses refer to jurisdictions' central-level strategies specifically dedicated to digital education or, if no such strategy exists, broader central-level strategies covering digital education (see Annex Table 1.1). (1) Monitoring here refers to be the systematic collection of performance data that can be used to track the progress of policies and the achievement of policy objectives in order to identify relevant system challenges and weaknesses; (2) Evaluation here refers to the structured assessment of the design, implementation and results of a specific policy intervention and serves for the purpose of accountability and learning about the impact of individual policies.

a = No applicable central-level strategy on digital education.
Ireland: The strategy is valid for 5 years, with actions being updated following a mid-term review.
Netherlands: *School boards were consulted during the development of the strategy. **The Digitalisation Agenda is an umbrella strategy covering multiple policy initiatives with distinct funding, implementation and accountability instruments.
Romania: Responses refer to the broader education strategy *România Educată* (Romania Educated), which covers digital education.
Singapore: The budget and indicators measured to evaluate the progress of the EdTech Masterplan 2030 are used internally but are not published.
Source: Questions A.1.c, A.1.d and A.1.e of the Policy Survey on School Education in the Digital Age.

Dimension 2: Adapting pedagogical approaches, curricula and assessments for digital education

Annex Table 2.1. Adapting school curricula for digital education

Digitalisation and the integration of digital skills in school curricula

	Digitalisation of school curricula									Integration of digital skills in school curricula											
	Include guidelines on students' use of digital devices at school			Include links to digital textbooks / other digital education content			Curricula are digital and interactive (1)			Curricula include digital skills (2)			Digital skills taught in dedicated compulsory subject			Digital skills taught in dedicated optional subject			Digital skills taught transversally across compulsory subjects		
ISCED level	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
OECD countries																					
Austria*	✓	✓	✓							Yes (B)	Yes (B)	Yes (B)		✓	✓*	✓	✓	✓*	✓	✓	✓*
Chile	✓	✓	✓	✓	✓	✓	✓	✓	✓	Yes (A)	Yes (A)	Yes (A)						✓	✓	✓	✓
Colombia				✓	✓	✓				Yes (A)	Yes (A)	Yes (A)	✓	✓	✓						
Denmark	✓	✓	✓	✓	✓	✓				Yes (B)	Yes (B)	Yes (B)							✓	✓	✓
Estonia				✓	✓	✓	✓	✓	✓	Yes (B)	Yes (B)	Yes (B)	✓	✓	✓	✓	✓	✓	✓	✓	✓
Finland	✓	✓	✓			✓	✓	✓	✓	Yes (B)	Yes (B)	Yes (B)					✓	✓	✓	✓	✓
France	✓	✓	✓				✓	✓	✓	Yes (B)	Yes (B)	Yes (B)			✓			✓	✓	✓	✓
Germany*	✓	✓	✓							Yes (A)	Yes (A)	Yes (A)	✓	✓	✓	✓	✓	✓	✓	✓	✓
Greece*	✓	✓	✓	✓	✓	✓				Yes (B)	Yes (B)	Yes (B)	✓	✓	✓				✓	✓	✓
Iceland	✓	✓	✓							Yes (B)	Yes (B)	Yes (A)	✓	✓				✓	✓	✓	✓
Israel	✓	✓	✓	✓	✓	✓				Yes (A)	Yes (A)	Yes (A)	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ireland	✓	✓	✓							Yes (A)	Yes (A)	Yes (A)					✓	✓	✓	✓	✓
Italy	✓	✓	✓	✓	✓	✓				Yes (A)	Yes (A)	Yes (A)			✓	✓	✓	✓	✓	✓	✓
Japan										Yes (B)	Yes (B)	Yes (B)			✓				✓	✓	✓
Korea	✓	✓	✓	✓	✓	✓				Yes (B)	Yes (B)	Yes (B)	✓	✓	✓						
Lithuania	✓	✓	✓	✓	✓	✓	✓	✓	✓	Yes (B)	Yes (B)	Yes (A)	✓	✓				✓	✓	✓	✓
Luxembourg	✓	✓	✓	✓	✓	✓				Yes (B)	Yes (B)	Yes (B)		✓				✓	✓	✓	✓
Netherlands										Yes (A)	Yes (A)	Yes (A)	a*	a*	a*	a*	a*	a*	a*	a*	a*

	Digitalisation of school curricula									Integration of digital skills in school curricula											
	Include guidelines on students' use of digital devices at school			Include links to digital textbooks / other digital education content			Curricula are digital and interactive (1)			Curricula include digital skills (2)			Digital skills taught in dedicated compulsory subject			Digital skills taught in dedicated optional subject			Digital skills taught transversally across compulsory subjects		
ISCED level	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
New Zealand										Yes (A)	Yes (A)	Yes (A)	✓	✓	✓	✓	✓	✓	✓	✓	✓
Norway							✓	✓	✓	Yes (B)	Yes (B)	Yes (B)							✓	✓	✓
Poland	✓	✓	✓							Yes (B)	Yes (B)	Yes (B)	✓	✓	✓				✓	✓	✓
Portugal	✓	✓	✓	✓	✓	✓				Yes (B)	Yes (B)	Yes (A)	✓	✓				✓	✓	✓	✓
Slovak Republic										Yes (B)	Yes (B)	Yes (B)	✓	✓	✓						
Slovenia	✓	✓	✓				✓	✓	✓	Yes (A)*	Yes (A)*	Yes (B)			✓	✓	✓		✓	✓	✓
Spain										Yes (B)	Yes (B)	Yes (B)		✓		✓	✓	✓	✓	✓	✓
Sweden										Yes (B)	Yes (B)	Yes (B)							✓	✓	✓
Other participants																					
NSW (Australia)							✓	✓	✓	Yes (B)	Yes (B)	Yes (B)					✓	✓	✓	✓	✓
Flemish Comm. (Bel)										Yes (B)	Yes (B)	Yes (B)							✓	✓	✓
French Comm. (Bel)										Yes (B)	Yes (B)	Yes (B)	✓	✓				✓	✓	✓	✓
England (UK)										Yes (B)	Yes (B)	Yes (B)	✓	✓	✓						
Northern Ireland (UK)	✓	✓	✓				✓	✓	✓	Yes (A)	Yes (A)	Yes (A)							✓	✓	✓
Scotland (UK)										Yes (B)	Yes (B)	Yes (A)		✓				✓	✓		
Wales (UK)	✓	✓	✓							Yes (B)	Yes (B)	Yes (B)	✓	✓	✓				✓	✓	✓
Partners																					
Bulgaria	✓	✓	✓	✓	✓	✓				Yes (B)	Yes (B)	Yes (B)	✓	✓	✓	✓	✓	✓		✓	✓
Croatia	✓	✓	✓	✓	✓	✓				Yes (B)	Yes (B)	Yes (B)	✓	✓	✓	✓*			✓	✓	✓
Romania		✓	✓	✓	✓	✓	*	*	*	Yes (A)	Yes (B)	Yes (B)		✓	✓	✓	✓	✓		✓	✓
Singapore	✓	✓	✓	✓	✓	✓	✓	✓	✓	Yes (A)	Yes (A)	Yes (A)				✓	✓	✓	✓	✓	✓

Note: (1) Digital and interactive curricula can, for example, enable teachers to filter and access education contents across grades and subjects or assist users in designing lessons; (2) Yes (A) = Curricula recommend teaching digital skills; Yes (B) = Curricula mandate teaching digital skills; No = Curricula do not include digital skills.
Austria: The use of digital resources for teaching is included in the general didactic principles included in the curricula; At ISCED 3, digital skills are taught in various compulsory and/or optional subjects depending on the type of school.

Colombia: There is no central national curriculum. Responses refer to the *Colombia Aprende* platform, which offers digital resources for teachers and students related to different learning areas.
Croatia: Informatics is currently taught as a compulsory subject in ISCED 2 & 3 and as an optional subject in ISCED 1. An ongoing reform will introduce a new compulsory subject (Information and Digital Competence) in all primary schools by 2027.
Germany: School curricula in Germany are developed at the level of the federal states (*Länder*). Depending on the state, digital skills are taught transversally, or as part of optional or compulsory subjects.
Greece: Curricula for all subjects are accessible in digital format online.
Netherlands: The implementation of learning goals is at the discretion of schools. New learning objectives for digital literacy are expected to come into force in 2027 and to be integrated transversally across the curriculum by most schools.
Romania: The Romanian curriculum is available on an online platform (manuale.edu.ro), which is currently being redesigned to present it in a more interactive format.
Slovenia: School curricula for ISCED 1 and ISCED 2 currently recommend teaching digital skills across all subjects. An ongoing curriculum reform will make this mandatory.
Source: Questions B.2, B.3 and B.3.a of the Policy Survey on School Education in the Digital Age.

Annex Table 2.2. Student assessment for digital education

Use of digital resources for student assessment and the assessment of students' digital skills

	Use of digital resources for student assessment						Means by which students' digital skills are systematically assessed																	
	School-based summative assessment (1)			Central student examinations (2)			Formative school-based assessment			Summative school-based assessment			Standardised central examination (with stakes)			Standardised central examination (without stakes)			International surveys (e.g. ICILS)			Other		
ISCED level	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
OECD countries																								
Austria	D	D	D	E	E	D														✓		✓	✓	✓
Chile	D	D	D	C	C	C																	✓	✓
Colombia	D	D	D	D	D	D	✓	✓	✓															
Denmark	D	B	B	E	A	A																		
Estonia	D	D	D	E	C*	C*																		
Finland	D	D	A	E	E	A														✓				
France	D	C	B	E	C	C							✓	✓	✓				✓	✓	✓			
Germany	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Greece	C	C	C	E	E	C*	✓	✓	✓	✓	✓	✓			✓					✓				
Iceland	D	D	D	E*	E*	E																		
Israel	B	B	B	E	E	C*	✓	✓	✓													✓	✓	✓
Ireland	D	D	D	E	C	C																		
Italy	D	D	D	E	E	B														✓				
Japan	D	D	D	E	E	E	✓	✓	✓	✓	✓	✓												
Korea	D	D	D	E	E	C										✓	✓	✓		✓				
Lithuania	B	B	B	A	A	A	✓	✓	✓											✓				
Luxembourg	D	D	D	E	E	C	✓	✓	✓		✓						✓			✓				
Netherlands	D	D	D	E	D	B														✓		✓		
New Zealand	D	D	D	E	E	D*														✓				
Norway	D	D	D	E	A	A														✓				
Poland	D	D	D	E	F	C				✓	✓	✓												
Portugal	B	B	B	A	A	A	✓	✓		✓	✓													✓

	Use of digital resources for student assessment						Means by which students' digital skills are systematically assessed																	
	School-based summative assessment (1)			Central student examinations (2)			Formative school-based assessment			Summative school-based assessment			Standardised central examination (with stakes)			Standardised central examination (without stakes)			International surveys (e.g. ICILS)			Other		
ISCED level	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Slovak Republic	D	D	D	E	E*	C	✓	✓				✓												
Slovenia	D	D	D	E	E	C						✓								✓				
Spain	D	D	D	E	E	C	✓	✓	✓	✓	✓	✓								✓				
Sweden*	D	D	D	B	B	B														✓				
Other participants																								
NSW (Australia)	D	D	D	E	D	F										✓	✓	✓						✓*
Flemish Comm. (Bel)	D	D	D	B*	B*	E														✓				
French Comm. (Bel)	D	D	D	C	C	C				✓	✓	✓												
England (UK)	D	D	D	B	C	C																		
Northern Ireland (UK)	B	B	B	D	D	D																		
Scotland (UK)	D	D	D	E	D	D																		
Wales (UK)	D	D	D	E	B	B																		
Partners																								
Bulgaria	C	B	B	E	E	B	✓	✓	✓	✓	✓	✓						✓						✓
Croatia	B	B	B	E	E	C	✓	✓	✓	✓	✓	✓								✓	✓			
Romania	D	D	D	C	C	C*								✓										
Singapore	D	D	D	C	E	B	✓	✓	✓		✓	✓			✓									

Note: (1) School-based summative assessments refer to assessments designed and marked by the students' own teachers and implemented as part of regular classroom instruction, within lessons or at the end of a teaching unit, year level or educational cycle. Summative (as opposed to formative) assessments aim to summarise learning that has taken place, in order to record, mark or certify achievements. A = Assessments are administered in digital exam environments (i.e. written on digital devices); B = Some but not all assessments are administered in digital exam environments (e.g. some subjects or types of assessments); C = Assessments are administered on paper, but students may be required to use digital resources to solve tasks in some subjects (e.g. using excel, statistical software, etc.); D = The use of digital technologies for school-based assessment varies because it is at the discretion of teachers, schools or sub-central authorities.
(2) Central student examinations refer to standardised tests with formal consequences for students' progression through school or certification, defined at the highest level of authority in education in the jurisdiction. A = Central examinations are administered in digital exam environments (i.e. written on digital devices); B = Some but not all central examinations are administered in digital exam environments (e.g. some subjects or types of assessments); C = Central examinations are administered on paper, but students may be required to use digital resources to solve exam tasks in some subjects (e.g. using excel, statistical software, etc.); D = The use of technologies for central examinations is at the discretion of teachers, schools, or sub-central authorities; E = There are no central examinations at this level; F = Other.

Estonia: In grades 4 and 7, a random sample of students participate in level tests that are administered in a digital exam environment.
Greece: Central examinations at ISCED 3 are administered on paper and students are not allowed to use digital resources to solve exam tasks in any examined subjects.
Iceland: Central examinations at ISCED 1 and 2 are currently under revision. Previously, these examinations were administered in a digital exam environment.
Israel: Central exams are conducted on paper but from 2025, exams in grade 5 & 8 for Hebrew as a mother tongue, English and Arabic will transition to a digital test format, combined with AI tools for internal evaluation.
New Zealand: There is a general transition towards the digital delivery of the National Certificates of Educational Achievement (NCEA) school-leaving examinations.
NSW (Australia): At ISCED 3, national standardised assessments are administered using a digital platform, but some NSW-specific assessments are paper-based.
Slovak Republic: Students sit a central assessment at the end of ISCED 2 (*Testovanie 9*), which is administered on paper. Although the assessment has no formal consequences for students, some upper secondary schools consider its results in admissions decisions.
Sweden: For grade 6 and above, the mandatory national tests will become digital in some subjects starting 2024 and for all subjects with a national test by 2026.
Flemish Community of Belgium: Digital standardised tests (*Vlaamse toetsen*) in Dutch and mathematics will take place in Year 4 of primary education and Year 2 of secondary education from 2024. It is at the discretion of schools whether the test results are taken into account for student grading.
Romania: Central examinations at ISCED 3 are administered on paper, but teachers grade the scanned papers on a dedicated digital platform. ISCED 1 and 2 do not have access to the platform yet.
Singapore: Exams at ISCED 1 refer to the Primary School Leaving Examinations (PSLE); At ISCED 3, some but not all subjects in N-levels and O-levels are held in digital exam environments.
Source: Questions B.5, B.6 and B.8 of the Policy Survey on School Education in the Digital Age.

Annex Table 2.3. Policies on the pedagogical use of digital resources

Inclusion of digital education in school-level strategies and initiatives to foster the effective use of digital resources for teaching

	Requirements for schools to develop a plan or strategy concerning the use of digital resources for teaching (1)	Central initiatives to foster the effective use of digital resources for teaching					
		Official guidance on good practices for the use of digital resources for teaching	Official online platforms providing selected digital education content for teachers (2)	Official online platforms for teachers to share digital education content with peers	Publicly supported peer-to-peer training on the use of digital resources for teaching	Publicly supported initiatives on the use of AI for teaching	Other
OECD countries							
Austria	Yes (B)		✓	✓	✓	✓	
Chile	Yes (B)	✓	✓	✓	✓	✓	
Colombia	No	✓	✓	✓	✓		
Denmark	No	✓	✓				
Estonia	Yes (B)	✓	✓	✓	✓	✓	
Finland	Yes (B)	✓		✓			✓
France	No	✓	✓	✓	✓	✓	
Germany	Yes (A)	✓	✓	✓			
Greece	No	✓	✓	✓			
Iceland	Yes (B)		✓				
Israel	Yes (B)	✓	✓			✓	
Ireland	Yes (A)	✓	✓	✓	✓	✓	
Italy	Yes (A)		✓	✓	✓		
Japan	No		✓		✓	✓	
Korea	Yes (A)*	✓	✓	✓	✓	✓	
Lithuania	Yes (B)	✓	✓	✓	✓	✓	
Luxembourg	Yes (B)	✓	✓	✓	✓	✓	
Netherlands*	No			✓		✓	✓
New Zealand	No	✓	✓	✓	✓		
Norway	Yes (B)					✓	
Poland	No		✓		✓	✓	

	Requirements for schools to develop a plan or strategy concerning the use of digital resources for teaching (1)	Central initiatives to foster the effective use of digital resources for teaching					
		Official guidance on good practices for the use of digital resources for teaching	Official online platforms providing selected digital education content for teachers (2)	Official online platforms for teachers to share digital education content with peers	Publicly supported peer-to-peer training on the use of digital resources for teaching	Publicly supported initiatives on the use of AI for teaching	Other
Portugal	Yes (A)	✓	✓	✓	✓		
Slovak Republic	Yes (B)	✓	✓		✓		
Slovenia	No	✓	✓		✓		
Spain	Yes (A)	✓	✓	✓	✓	✓	
Sweden	No						✓
Other participants							
NSW (Australia)	Yes (B)	✓	✓				
Flemish Comm. (Bel)	No*		✓	✓	✓	✓	
French Comm. (Bel)	No	✓	✓	✓			
England (UK)	No		✓				
Northern Ireland (UK)	Yes (B)				✓	✓	
Scotland (UK)	No	✓	✓	✓	✓		
Wales (UK)	Yes (B)	✓	✓	✓	✓		
Partners							
Bulgaria	No		✓	✓			
Croatia	Yes (A)	✓	✓	✓	✓	✓	
Romania	Yes (B)	✓	✓	✓	✓		
Singapore	Yes (B)	✓	✓	✓	✓		

Note: (1) Requirements to include digital education in school-level strategies: Yes (A) = Yes, schools are required to develop plans or strategies concerning digital education; Yes (B) = Yes, digital education has to be covered by (more general) plans or strategies developed by the school.
(2) Digital education content refers to data that is produced, structured, distributed and presented in a way that aims to meet an educational objective. This includes education content in different formats, such as webpages, digital textbooks, movies, applications, etc.
Flemish Comm. (Bel): Schools are not required, but strongly encouraged and provided with tools to develop school-based ICT-policy plans. 70% of the Flemish schools have such a plan.
Korea: Only “research schools” and “leading schools” are required to develop school-level strategies / plans for digital education.
Netherlands: Following the implementation of an ongoing curriculum reform, it is expected that schools will be required to cover their approach to digital literacy in their school plans, starting in 2027.
Source: Questions B.1 and B.9 of the Policy Survey on School Education in the Digital Age.

Dimension 3: Governance, guidance and regulation for digital education

Annex Table 3.1. Regulation of the use of digital resources for education

Responsibility for regulating the use of digital education resources and existence of central guidelines and regulations

	Level of administration with primary responsibility for regulating the use of digital resources in education					Existence of central guidelines and regulations applicable to teachers or schools (1) A = There are central, non-binding guidelines on this issue B = There are central, binding regulations on this issue												
	Centra level	State / regional level	Local level	School level	Other	Students' well-being in digital environments	Students' learning in digital environments	Cyber security in education institutions	Use of algorithmic models in education	Transparency or interpretability of algorithms	Monitoring possible algorithmic bias	Students' use of generative AI outside of classrooms	Use of gen. AI by teachers / school staff outside of classrooms	Use of generative AI in the classroom	Accountability for digital resources in education	Use of open standards for digital resources (2)	Use of open standards for data in education	Use of other technical standards to improve interoperability	Other
OECD countries																		
Austria	✓					A	B	B				A	A	A					
Chile	✓			✓		A/B	A	A					A	A			A/B	A/B	
Colombia	✓	✓				A/B	A/B	A/B				A	A	A/B		A/B	A/B		
Denmark	✓		✓	✓		A	A	A/B						A					
Estonia	✓			✓	✓*	A		A/B					A	A		A	A	A	
Finland			✓			A	A	A								A			A
France	✓	✓	✓	✓		A/B	A/B	A/B								A		A	
Germany		✓	✓	✓		A	A	A	m	m	m	A	A	A	m	m	m	m	
Greece	✓					A/B	A/B	A/B						A		A/B	A/B		
Iceland	✓		✓	✓		A/B		A											A
Israel	✓					A/B	A/B	A/B				A/B	A	A/B	A				
Ireland	✓			✓		A/B	A	A											
Italy	✓	✓	✓	✓		A	A	A								A	A	A	A

	Level of administration with primary responsibility for regulating the use of digital resources in education					Existence of central guidelines and regulations applicable to teachers or schools (1) A = There are central, non-binding guidelines on this issue B = There are central, binding regulations on this issue													
	Centra level	State / regional level	Local level	School level	Other	Students' well-being in digital environments	Students' learning in digital environments	Cyber security in education institutions	Use of algorithmic models in education	Transparency or interpretability of algorithms	Monitoring possible algorithmic bias	Students' use of generative AI outside of classrooms	Use of gen. AI by teachers / school staff outside of classrooms	Use of generative AI in the classroom	Accountability for digital resources in education	Use of open standards for digital resources (2)	Use of open standards for data in education	Use of other technical standards to improve interoperability	Other
Japan			✓	✓				A		A		A	A	A		A	A	A	
Korea	✓*	✓*	✓*	✓*	✓*	A	A	A/B	A	A	A	A	A	A	A	A		A	A*
Lithuania	✓	✓	✓	✓		A	A	A										A	
Luxembourg	✓					A	A												
Netherlands					✓*	A	A	A/B								A	A		
New Zealand*				✓		A	A	A				A	A	A					
Norway			✓			A	A	A	A					A		A	A	A	
Poland	✓																		
Portugal	✓					A	A	A						A/B		A			
Slovak Republic				✓		A													
Slovenia	✓			✓		A													
Spain	✓	✓		✓		A/B	A/B	A/B						A*		B		B	
Sweden	✓		✓	✓													A	A	
Other participants																			
NSW (Australia)	✓			✓		A	A/B	A/B										A/B	
Flemish Comm. (Bel)		✓	✓	✓		A		A						A		B	B		
French Comm. (Bel)				✓	✓*			A					A	A					
England (UK)				✓				A											A/B
Northern Ireland (UK)			✓	✓		A	A	A							A				

	Level of administration with primary responsibility for regulating the use of digital resources in education					Existence of central guidelines and regulations applicable to teachers or schools (1) A = There are central, non-binding guidelines on this issue B = There are central, binding regulations on this issue													
	Centra level	State / regional level	Local level	School level	Other	Students' well-being in digital environments	Students' learning in digital environments	Cyber security in education institutions	Use of algorithmic models in education	Transparency or interpretability of algorithms	Monitoring possible algorithmic bias	Students' use of generative AI outside of classrooms	Use of gen. AI by teachers / school staff outside of classrooms	Use of generative AI in the classroom	Accountability for digital resources in education	Use of open standards for digital resources (2)	Use of open standards for data in education	Use of other technical standards to improve interoperability	Other
Scotland (UK)			✓	✓															
Wales (UK)	✓		✓	✓		A		A							A	A	A	A	
Partners																			
Bulgaria	✓			✓		A		A					A	A					
Croatia	✓	✓						A/B											
Romania	✓																		
Singapore	✓			✓		A	A	A/B	A	A	A	A	A	A	A	A	A	A	

Note: (1) Students' well-being in digital environments includes e.g. cyber-bullying or screen time; Students' learning in digital environments includes e.g. distractions through digital devices; Monitoring possible algorithmic bias includes e.g. ex-ante verification based on input data or ex-post verification based on effects of use; Students' use of generative AI outside of classroom includes e.g. its use for homework or assignments; Use of generative AI by teachers and other school staff outside of classroom includes e.g. its use to generate lesson plans or activities, to adapt education content to different students' abilities, to automate administrative tasks etc.
(2) Open standards are standards (technical or otherwise) that are made available to the general public, that are developed, approved and maintained through a central or consensus driven process, that facilitate interoperability and data exchange, and that are intended for widespread adoption.
Estonia: Responsibility for regulating the use of digital resources in education is also held by teachers.
French Community of Belgium: Responsibility for regulating the use of digital resources in education is also held by school boards and their associations (*pouvoirs organisateurs et leurs fédération*s).
Korea: Responsibilities for regulating the use of digital resources are shared between the Ministry of Education, Metropolitan and Provincial Offices of Education, District Offices, schools, and teachers. Guidelines and regulations: Other technical standards govern the development of AI digital textbooks.
New Zealand: The Safer Technology for Schools (ST4S) initiative is managed by Education Services Australia (ESA) on behalf of participating education jurisdictions, including the NZ Ministry of Education. ST4S provides an overview of whether digital tools meet a range of standards, including on interoperability, and allows providers to have their tools assessed against the standards.
Netherlands: School boards have the primary responsibility for regulating the use of digital resources in schools.
Spain: "Guide on the use of Artificial Intelligence in Education" (https://code.intef.es/wp-content/uploads/2024/07/Guidelines-on-the-use-of-AI-in-Education-INTEF_2024.pdf).
Source: Questions C.1. and C.2 of the Policy Survey on School Education in the Digital Age.

Annex Table 3.2. Data protection and quality assurance

Existence of central provisions to ensure privacy and data protection and to certify the quality / safety of digital resources

	Central provisions to ensure privacy and data protection in schools								Central processes to certify the quality and/or safety of the following digital resources for education (or their providers)					
	Privacy and data protection regulation that applies to schools	Guidance for schools on the implementation of privacy and data protection measures/regulations	Monitoring and enforcement of privacy and data protection measures/regulations in schools	Obligation for schools to designate a trained person to implement privacy and data protection measures	Mandatory training on privacy and data protection for school administrative staff	Mandatory training on privacy and data protection for teachers	Central initiatives to promote peer learning or exchange on privacy and data protection practices	Other	Digital devices for schools	Learning software for schools	Digital education content for teachers	Digital education content for students / parents	Assistive technologies for students with SEN (1)	Other
OECD countries														
Austria	✓	✓			✓		✓	✓*	✓	✓	✓**	✓**		
Chile	✓	✓												
Colombia	✓	✓					✓							
Denmark	✓	✓	✓	✓									✓	
Estonia	✓	✓	✓	✓			✓							
Finland	✓	✓		✓			✓							
France	✓	✓	✓	✓					✓	✓	✓	✓	✓	
Germany	✓	✓							m	m	m	m	m	
Greece	✓	✓	✓						✓	✓	✓	✓	✓	
Iceland	✓	✓	✓	✓										✓*
Israel	✓	✓	✓	✓	✓				✓	✓	✓	✓		
Ireland	✓	✓											✓	
Italy	✓	✓	✓	✓					✓	✓	✓	✓	✓	
Japan	✓	✓							m	m	m	m	m	

	Central provisions to ensure privacy and data protection in schools								Central processes to certify the quality and/or safety of the following digital resources for education (or their providers)					
	Privacy and data protection regulation that applies to schools	Guidance for schools on the implementation of privacy and data protection measures/regulations	Monitoring and enforcement of privacy and data protection measures/regulations in schools	Obligation for schools to designate a trained person to implement privacy and data protection measures	Mandatory training on privacy and data protection for school administrative staff	Mandatory training on privacy and data protection for teachers	Central initiatives to promote peer learning or exchange on privacy and data protection practices	Other	Digital devices for schools	Learning software for schools	Digital education content for teachers	Digital education content for students / parents	Assistive technologies for students with SEN (1)	Other
Korea	✓	✓	✓	✓	✓	✓	✓							
Lithuania	✓													
Luxembourg	✓								✓	✓				
Netherlands	✓	✓		✓			✓			✓*	✓*	✓*		
New Zealand	✓	✓	✓	✓						✓	✓		✓	
Norway	✓	✓	✓											✓*
Poland	✓	✓	✓	✓							✓	✓		
Portugal	✓	✓		✓					✓	✓	✓	✓	✓	
Slovak Republic	✓	✓												
Slovenia	✓	✓	✓	✓								✓		
Spain	✓	✓	✓						✓	✓	✓	✓	✓	
Sweden	✓													
Other participants														
NSW (Australia)	✓	✓	✓		✓	✓			✓	✓	✓	✓	✓	
Flemish Comm. (Bel)	✓	✓					✓						✓	
French Comm. (Bel)	✓	✓		✓							✓			
England (UK)	✓	✓		✓										
Northern Ireland (UK)	✓	✓		✓	✓	✓			✓	✓	✓	✓		
Scotland (UK)	✓													

	Central provisions to ensure privacy and data protection in schools								Central processes to certify the quality and/or safety of the following digital resources for education (or their providers)					
	Privacy and data protection regulation that applies to schools	Guidance for schools on the implementation of privacy and data protection measures/regulations	Monitoring and enforcement of privacy and data protection measures/regulations in schools	Obligation for schools to designate a trained person to implement privacy and data protection measures	Mandatory training on privacy and data protection for school administrative staff	Mandatory training on privacy and data protection for teachers	Central initiatives to promote peer learning or exchange on privacy and data protection practices	Other	Digital devices for schools	Learning software for schools	Digital education content for teachers	Digital education content for students / parents	Assistive technologies for students with SEN (1)	Other
Wales (UK)	✓		✓				✓		✓	✓	✓	✓	✓	
Partners														
Bulgaria	✓	✓		✓					✓	✓				
Croatia	✓			✓					✓			✓		
Romania	✓							✓*	✓	✓	✓	✓		
Singapore	✓	✓	✓	✓	✓				✓	✓	✓	✓	✓	

Note: Privacy and data protection regulations for schools include, for example, the European Data Protection Regulation (GDPR).
(1) Assistive technologies for students with special education needs (SEN) refer to digital learning resources and applications that specifically support students with SEN, such as speech-to-text tools.
Austria: *Each supervising authority for schools (*Bildungsdirektion*) has designated two Data Protection Officers (Art. 37 GDPR) for schools; **For digital educational content made available by textbook publishers through the central textbook campaign.
Iceland: There are quality standards for digital textbooks in compulsory education published by the Directorate of Education, but they do not apply to resources that are acquired from private parties by schools at the pre-primary and upper secondary levels or by municipalities.
Netherlands: Edu-V offers a voluntary quality mark for digital education suppliers and their products, which certifies their adherence to standards on privacy, information security and data exchange.
Norway: The central government provides tools to assess the quality of digital education resources locally.
Romania: The law on pre-university education and the normative act organising its implementation regulate the processing of personal data, including by teachers and school staff.
Source: Questions C.3 and C.4 of the Policy Survey on School Education in the Digital Age.

Dimension 4: Funding and procurement for digital education

Annex Table 4.1. Procurement and funding of digital resources

Typical responsibilities for the procurement of and sources of funding for different types of digital education resources

	Digital devices			Internet connection			Software for teaching and learning			Digital education content			Cyber security services		
	Procured by schools (1)	Procured at sub-central level (2)	Procured and funded at central level (3)	Procured by schools	Procured at sub-central level	Procured and funded at central level	Procured by schools	Procured at sub-central level	Procured and funded at central level	Procured by schools	Procured at sub-central level	Procured and funded at central level	Procured by schools	Procured at sub-central level	Procured and funded at central level
OECD countries															
Austria	✓(A+C)				✓(D+E)	✓	✓(A)	✓(D+E)	✓	✓(B+C)		✓	✓(A+B)	✓(E)	✓
Chile	✓(A+B+C)	✓(D+E)	✓	✓(A+B+C)	✓(D+E)	✓	✓(A+B+C)	✓(D+E)		✓(A+B+C)	✓(D+E)	✓	✓(A+B)		
Colombia	✓(B)	✓(D+E)	✓	✓(B)	✓(D+E)		✓(B)	✓(D+E)		✓(B)	✓(D+E)	✓	m	m	m
Denmark	✓(B+C)	✓(D+E)		✓(B+C)	✓(D+E)		✓(B+C)	✓(D+E)		✓(B+C)	✓(D+E)		✓(B+C)	✓(D+E)	
Estonia		✓(E)			✓(D+E)	✓		✓(D+E)	✓	✓(B)	✓(E)		✓(C)	✓(D+E)	✓
Finland	✓(C)			✓(C)			✓(C)			✓(C)			✓(C)		✓
France		✓(D+E)	✓		✓(E)		✓(A+B+C)	✓(E)	✓	✓(A+B+C)	✓(E)	✓		✓(D+E)	✓
Germany	✓(B)	✓(D+E)		✓(B)	✓(D+E)		m	m	m	m	m	m	m	m	m
Greece			✓			✓			✓			✓			✓
Iceland	✓(B+C)	✓(E)		✓(B)	✓(E)	✓	✓(B+C)	✓(E)			✓(E)	✓	✓(C)		✓
Israel	✓(C)	✓(D+E)		✓(C)	✓(D)		✓(C)	✓(D)			✓(D)			✓(D)	
Ireland	✓(B)				✓(D)		✓(B)			✓(B)			✓(B)		
Italy	✓(B)			✓(B)			✓(B)			✓(A)			✓(B)		
Japan*		✓(D+E)	✓		✓(E)		✓(C)	✓(E)		✓(A+B)	✓(E)	✓		✓(E)	
Korea	✓(B)	✓(E)	✓	✓(B)	✓(E)	✓	✓(B)			✓(B)			✓(B)	✓(E)	✓
Lithuania	✓(A+B)	✓(E)	✓	✓(A+B)	✓(E)	✓	✓(A+B)	✓(E)	✓	✓(A+B)	✓(E)	✓	✓(A)		✓
Luxembourg			✓			✓	✓(A+B)		✓	✓(A+B)		✓			✓

	Digital devices			Internet connection			Software for teaching and learning			Digital education content			Cyber security services		
	Procured by schools (1)	Procured at sub-central level (2)	Procured and funded at central level (3)	Procured by schools	Procured at sub-central level	Procured and funded at central level	Procured by schools	Procured at sub-central level	Procured and funded at central level	Procured by schools	Procured at sub-central level	Procured and funded at central level	Procured by schools	Procured at sub-central level	Procured and funded at central level
Netherlands	✓(C)			✓(C)			✓(C)			✓(C)			✓(C)	✓(D)	
New Zealand	✓(A+C)		✓	✓(A)		✓	✓(A+C)		✓	✓(A+C)			✓(A+C)		✓
Norway		✓(E)			✓(E)			✓(E)			✓(E)			✓(E)	
Poland		✓(D)			✓(D)			✓(D)			✓(D)			✓(D)	
Portugal			✓			✓	a	a	a			✓	a	a	a
Slovak Republic	✓(C)					✓	✓(C)			✓(C)			✓(C)		
Slovenia	✓(B)	✓(E)	✓	✓(C)*		✓*		✓(E)	✓		✓(E)	✓			✓
Spain	✓(B+C)	✓(D+E)			✓(D)		✓(B+C)	✓(D+E)		✓(B+C)	✓(D+E)		✓(B+C)	✓(D+E)	
Sweden	✓(C)	✓(E)		✓(C)	✓(E)		✓(C)	✓(E)		✓(C)	✓(E)		✓(C)	✓(E)	
Other participants															
NSW (Australia)	✓(A+B+C)	✓(D)	✓	✓(C)		✓	✓(A+B+C)	✓(D)	✓	✓(A+C)					✓
Flemish Comm. (Bel)	✓(B)			✓(B+C)			✓(B+C)			✓(B+C)		✓*	✓(B+C)		
French Comm. (Bel)	✓(B+C)	✓(E)	✓	✓(C)	✓(E)		✓(C)	✓(E)	✓	✓(B+C)			✓(C)		
England (UK)	✓(C)			✓(C)		✓	✓(C)			✓(C)		✓	✓(C)		
Northern Ireland (UK)		✓(D)			✓(D)			✓(D)			✓(D)			✓(D)	
Scotland (UK)		✓(E)			✓(E)			✓(E)			✓(E)			✓(E)	
Wales (UK)	✓(A+B+C)	✓(D+E)			✓(D+E)	✓	✓(B+C)	✓(D+E)	✓	✓(A+B+C)	✓(D+E)	✓		✓(D+E)	✓
Partners															
Bulgaria			✓			✓			✓			✓			✓
Croatia	✓(B)	✓(D+E)	✓		✓(D+E)	✓	✓(C)	✓(D+E)	✓			✓			✓
Romania	✓(B)	✓(D)		✓(B)		✓	✓(C)		✓	✓(B)			✓(A)		
Singapore	✓(B)					✓	✓(C)		✓			✓	✓(C)		✓

Note: (1) Procurement by schools: A = Without funds from (sub)central level; B = With earmarked funds from (sub)central level; C = With non-earmarked funds from (sub)central level.
(2) Procurement at sub-central level: D = With funding from central level; E = With sub-central funds.

Earmarked funding refers to funds that recipients (sub-central authorities or schools) are required to use for specific elements/types of current expenditure; Non-earmarked funding refers to funds that recipients (sub-central authorities or schools) can use at their own discretion; Digital devices incl. e.g. PCs, whiteboards, etc.; Internet connection in schools incl. installation, expansion and improvement; Software for teaching and learning in schools incl. e.g. licenses for Learning Management Systems (LMS), virtual learning environments; Digital education content for schools incl. licenses for digital textbooks.

Flemish Community (Belgium): Digital education content is centrally provided only in the form of open educational resources (e.g. via KlasCement or Meemoo) and for students with special education needs.

Japan: Municipal governments usually engage in joint procurement when purchasing digital devices and other items to reduce the administrative burden, generate economies of scale by reducing procurement and operating costs and improve operations by sharing expertise on the use of digital devices.

Slovenia: Schools are generally responsible for procuring and funding their Internet connection. However, newly built schools are connected to a fibre optics network and provided with free Internet access by the public infrastructure institute (ARNES).

Source: Question D.2 of the Policy Survey on School Education in the Digital Age.

Annex Table 4.2. Central support for the procurement of digital resources

Types of support provided at the central level for the purchasing / procurement process of different types of digital resources in schools

	Digital devices					Internet connection					Software for teaching and learning					Digital education content					Cyber security services				
	Pre-authorising resources (1)	Negotiations with suppliers (2)	Guidance (3)	Purchasing criteria (4)	Other	Pre-authorising resources	Negotiations with suppliers	Guidance	Purchasing criteria	Other	Pre-authorising resources	Negotiations with suppliers	Guidance	Purchasing criteria	Other	Pre-authorising resources	Negotiations with suppliers	Guidance	Purchasing criteria	Other	Pre-authorising resources	Negotiations with suppliers	Guidance	Purchasing criteria	Other
OECD countries																									
Austria		✓		C/D/E/F			✓	✓	C/E/F		✓	✓	✓	A/B/C/D/E/F		✓	✓		A/B/C/E/F			✓	✓	C/E	
Chile	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
Colombia			✓					✓					✓					✓					✓		
Denmark				C/E					C/E					C/E					C/E					C/E	
Estonia		✓					✓					✓					✓					✓			
Finland*					✓					✓					✓					✓					✓
France	a	a	a	a	a	a	a	a	a	a		✓		C/E			✓		C/E					E	
Germany			✓					✓					✓					✓			a	a	a	a	a
Greece		✓	✓	A/B/C/D/E/F						✓					✓					✓					✓
Iceland*	✓	✓				✓	✓					✓	✓				✓					✓	✓		
Israel		✓				✓	✓				✓	✓	✓			✓	✓	✓			✓				
Ireland	✓	✓	✓	D/E/F			✓	✓	D/E		✓	✓	✓	D		✓						✓	✓		
Italy	✓		✓	A/E/F					E			✓	✓	F			✓	✓	A/B/E/F		✓			A/B/C/D/E/F	
Japan			✓	E/F				✓																	
Korea				C/D/E/F			✓					✓	✓				✓	✓				✓	✓		
Lithuania	✓	✓	✓	C/E		a	a	✓	✓		✓	✓	a	C/D/E		✓	a	✓	C/D/E		a	a	✓	D/E	
Luxembourg		✓					✓					✓					✓					✓			
Netherlands*		✓	✓				✓	✓					✓				✓	✓				✓	✓		
New Zealand		✓				a	a	a	A	✓		✓	✓					✓			a	a	a	A	✓
Norway	a	a	a	a	a	a	a	a	a	a			✓	C/D/E									✓	E	
Poland	✓		✓	A/E		✓		✓	A/E				✓	A/E		✓		✓	A/E		✓		✓	A/E	

Portugal	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
Slovak Republic	a	a	a	a	a		✓				a	a	a	a	a		✓						✓		
Slovenia		✓				a	a	a	a	a		✓	✓					✓				✓	✓		
Spain	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
Sweden	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
Other participants																									
NSW (Australia)	✓	✓	✓	E/F			✓				✓	✓	✓	D/E		✓	✓	✓				✓			
Flemish Comm. (Bel)			✓				✓		C/E			✓	✓	B/C						✓	a	a	a	a	a
French Comm. (Bel)			✓			a	a	a	a	a	a	a	a	a	a	✓								✓	
England (UK)			✓					✓					✓					✓						✓	
Northern Ireland (UK)	✓	✓					✓				✓	✓	✓			✓	✓	✓				✓			
Scotland (UK)	✓	✓				a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
Wales (UK)	✓	✓	✓	C/D/E/F		✓	✓	✓	C/E/F		✓	✓	✓	C/D/E/F		✓	✓		C/D/E/F					E	
Partners																									
Bulgaria		✓					✓					✓				m	m	m	m	m	m	m	m	m	m
Croatia	✓						✓				m	m	m	m	m		✓				m	m	m	m	m
Romania	✓		✓	D/E				✓	D				✓	D				✓	D				✓	D	
Singapore	✓	✓	✓				✓				✓	✓	✓			a	a	a	a	a		✓	✓	E	

Note: (1) Refers to central authorities pre-authorising of a set of digital resources eligible to be purchased by (sub)central authorities or schools; (2) Refers to central authorities negotiating with suppliers of digital resources on the purchasing price and/or contractual modalities on behalf of education institutions; (3) Refers to central authorities providing the responsible actors with guidance on the procurement of digital resources (e.g. recommended resources or brochures/websites with steps to follow); (4) Refers to central authorities imposing any of the following criteria on the purchase of digital resources: A = Evidence of positive effect on educational outcomes; B = Evidence of effectiveness in other respects (e.g. reliability of diagnoses or predictive accuracy); C = Equity of access; D = Interoperability; E = Security (e.g. data protection, cyber security, etc.); F = Sustainability.
a = Not applicable / No procurement support available from central level.
Finland: There are central guidelines for municipalities on IT security, cloud services, the sustainability of digital resources, etc.
Iceland: The central support for the purchasing/procurement of software for teaching and learning and cyber security services applies to ISCED 3.
Netherlands: The selection and procurement of digital devices and services is the responsibility of schools. Responses refer to central, publicly subsidised organisations/initiatives providing guidance to schools (Kennisnet) and negotiations with suppliers (SIVON).
Source: Question D.3 of the Policy Survey on School Education in the Digital Age.

Dimension 5: Infrastructure and innovation for digital education

Annex Table 5.1. Ensuring students' access to digital devices

Approaches to ensuring students' access to digital devices for learning and provisions to support disadvantaged learners' access

	Most common approach to ensuring students' access to digital devices for learning																					Provisions to support disadvantaged students' access to digital devices (if provision is not universal)														
	1:1 initiative at school (1)			1:1 initiative at school and at home (2)			"Bring-Your-Own-Device" policy (3)			Mixed strategy (4)			No portable devices (5)			At discretion of sub-central authorities / schools			Other			Leasing offers (6)			Schools provide devices for disadv. students			Voucher programmes			No central provisions for disadv. students			Other		
ISCED level	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
OECD countries																																					
Austria*					✓				✓							✓		✓								✓			✓			✓					
Chile*					✓											✓	✓	✓							✓	✓	✓									
Colombia*																			✓	✓	✓																
Denmark																✓	✓	✓							✓	✓								✓	✓	✓
Estonia																✓	✓	✓													✓	✓	✓			
Finland			✓			✓										✓	✓							a			a			a	✓	✓	a			
France*													✓				✓	✓																✓	✓	✓
Germany																✓	✓	✓													✓	✓	✓			
Greece*																			✓	✓	✓							✓	✓	✓						
Iceland	✓	✓							✓			✓																		✓	✓	✓			
Israel*																✓	✓	✓							✓	✓	✓									
Ireland*										✓	✓	✓	✓	✓	✓																		✓	✓	✓
Italy							✓	✓	✓	✓	✓	✓																					✓	✓	✓
Japan	✓	✓	✓	✓	✓	✓			✓			✓															✓			✓			✓			
Korea*	✓	✓	✓	✓	✓	✓				✓	✓	✓				✓	✓	✓				✓	✓	✓	✓	✓	✓									
Lithuania													✓	✓	✓										✓	✓	✓									
Luxembourg					✓	✓										✓						m	✓	✓	m			m			m					

	Most common approach to ensuring students' access to digital devices for learning																					Provisions to support disadvantaged students' access to digital devices (if provision is not universal)														
	1:1 initiative at school (1)			1:1 initiative at school and at home (2)			"Bring-Your-Own-Device" policy (3)			Mixed strategy (4)			No portable devices (5)			At discretion of sub-central authorities / schools			Other			Leasing offers (6)			Schools provide devices for disadv. students			Voucher programmes			No central provisions for disadv. students			Other		
ISCED level	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Netherlands																✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓						
New Zealand																✓	✓	✓																✓	✓	✓
Norway	✓	✓	✓	✓	✓	✓										✓	✓	✓							✓	✓	✓				✓	✓	✓			
Poland										✓	✓	✓	✓	✓	✓										✓	✓	✓									
Portugal				✓	✓	✓																a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
Slovak Republic																✓	✓	✓							✓	✓	✓			✓						
Slovenia													✓	✓	✓										✓	✓	✓									
Spain											✓	✓	✓			✓	✓	✓							✓	✓	✓									
Sweden																✓	✓	✓													✓	✓	✓			
Other participants																																				
NSW (Australia)										✓	✓	✓													✓	✓	✓									
Flemish Comm. (Bel)	✓	✓	✓																			a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
French Comm. (Bel)											✓	✓				✓						m	✓	✓	m	✓	✓	m			m					
England (UK)																✓	✓	✓				m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Northern Ireland (UK)*					✓	✓			✓	✓	✓	✓				✓	✓	✓							✓	✓	✓									
Scotland (UK)																✓	✓	✓																✓	✓	✓
Wales (UK)																✓	✓	✓							✓	✓	✓									
Partners																																				
Bulgaria	✓	✓	✓	✓	✓	✓																			✓	✓	✓									
Croatia	✓	✓																✓				a	a		a	a		a	a		a	a	✓			
Romania										✓	✓	✓							✓	✓	✓							✓	✓	✓						
Singapore*					✓	✓													✓				a	a	✓	a	a		a	a		a	a	✓		

Note: Jurisdictions were asked to select the answer(s) that best describe the approach used in their system.

(1) All students receive a laptop or tablet to use in school; (2) All students receive a laptop or tablet to use at school and at home; (3) Students use their personal devices for teaching and learning; (4) An example of a mixed strategy would be some students using private devices, but schools providing them for students who lack private access; (5) Students use desktop computers in schools and private devices for learning at home; (6) Leasing offers that allow students to rent laptops under favourable conditions.
Austria: School surveys indicate that most upper secondary schools operate BYOD policies. While there is no central provision for disadvantaged students at ISCED 3 level, some students still have access to rental devices that were given out during the COVID-19 pandemic.
Chile: Schools/municipalities are responsible for deciding how to ensure students' access to digital devices, but many schools apply a mixed strategy. An ICT scholarship was launched for students in Grade 7 to bridge gaps in access to digital devices for disadvantaged students.
Colombia: Schools in Colombia receive digital devices from the central and local governments. Students can use digital devices in schools, with a student-to-computer ratio of approximately one device for every eight students.
Greece: Students are not allowed to bring their own portable devices to schools, but some schools have a limited number of portable devices (laptops and tablets) and PCs for student use in schools.
France: The MDPH (*maison départementale des personnes handicapées*) provides students with special education needs with computers or other devices, as required.
Ireland: Schools use their ICT Grant to purchase ICT infrastructure, including laptops. Disadvantaged schools receive additional resources, which they can use to provide disadvantaged students with devices (e.g. through loan schemes) at their discretion.
Israel: The distribution of computers to schools is at the discretion of local authorities, but there have been national programmes, e.g. to provide computers during the COVID-19 pandemic and a 2014 initiative to provide a personal laptop for each student in 200 selected schools. The Ministry of Education also operates a programme ("*Mitchashvim*") to provide computers to disadvantaged students.
Korea: A 1:1 device policy is in the process of being rolled out. Provincial offices of education or schools can decide on the implementation method and whether laptops are only used within schools or also for homework. In addition, desktop computers are distributed in schools and students can also use their own devices.
Northern Ireland (UK): The Ministry provides a core set of devices for schools (mainly desktop and laptops). It is at the discretion of schools to then procure and use additional devices.
Singapore: Students in primary education are able to use school-provided laptops/tablets as a mobile resource, on a need-to-use basis.
Source: Questions E.1 and E.1.a of the Policy Survey on School Education in the Digital Age.

Annex Table 5.2. Central provision or subsidies of digital resources

Types of digital resources that are either centrally provided or subsidised in jurisdictions

	Software for system and institutional management					Software for teaching and learning					Online / digital ed. content		Hardware for teaching and learning					
	EMIS / SIS (1)	Digital credential systems (2)	Digital exam admin. systems (3)	Early warning systems (4)	Learning Management System (5)	Classroom analytics (6)	Assistive technologies for students with SEN	AI-based teaching assistants	AI tools for lesson planning	AI-based tutoring platforms for students	Static digital education content (7)	Interactive digital education content (8)	Interactive whiteboards	Digital devices for students	Digital devices for teachers	Desktop PCs for students	Desktop PCs for teachers	Data projectors
OECD countries																		
Austria	✓	✓	✓		✓						✓	✓		✓				
Chile				✓										✓	✓	✓		
Colombia											✓	✓	✓	✓		✓	✓	
Denmark	✓		✓				✓											
Estonia	✓	✓	✓								✓	✓						
Finland		✓	✓															
France	✓		✓			✓		✓										
Germany					✓													
Greece	✓	✓			✓		✓				✓	✓	✓	✓	✓	✓	✓	
Iceland	✓										✓*							
Israel													✓	✓	✓	✓	✓	✓
Ireland	✓				✓		✓				✓	✓	✓	✓	✓	✓	✓	✓
Italy	✓		✓															
Japan			✓								✓	✓		✓				✓
Korea	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Lithuania	✓		✓		✓		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
Luxembourg	✓	✓	✓		✓		✓	✓			✓	✓	✓	✓	✓			
Netherlands																		
New Zealand			✓				✓											

	Software for system and institutional management					Software for teaching and learning					Online / digital ed. content		Hardware for teaching and learning					
	EMIS / SIS (1)	Digital credential systems (2)	Digital exam admin. systems (3)	Early warning systems (4)	Learning Management System (5)	Classroom analytics (6)	Assistive technologies for students with SEN	AI-based teaching assistants	AI tools for lesson planning	AI-based tutoring platforms for students	Static digital education content (7)	Interactive digital education content (8)	Interactive whiteboards	Digital devices for students	Digital devices for teachers	Desktop PCs for students	Desktop PCs for teachers	Data projectors
Norway			✓															
Poland																		
Portugal	✓		✓								✓	✓						
Slovak Republic			✓		✓										✓	✓		✓
Slovenia					✓						✓	✓	✓			✓	✓	✓
Spain	✓	*			✓		✓				✓	✓	✓	✓	✓	✓	✓	✓
Sweden			✓*															
Other participants																		
NSW (Australia)	✓										✓	✓	✓	✓		✓		
Flemish Comm. (Bel)	✓	✓	✓				✓					✓		✓	✓			
French Comm. (Bel)	✓	✓			✓						✓			✓	✓			
England (UK)	✓										✓							
Northern Ireland (UK)	✓		✓		✓	✓	✓		✓		✓	✓		✓	✓	✓	✓	
Scotland (UK)	✓																	
Wales (UK)					✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓
Partners																		
Bulgaria	✓		✓			✓					✓		✓	✓	✓	✓	✓	✓
Croatia	✓			✓	✓		✓				✓	✓	✓	✓	✓			
Romania	✓	✓									✓	✓	✓	✓	✓	✓	✓	✓
Singapore	✓		✓		✓	✓					✓	✓		✓	✓	✓		✓

Note: (1) Education Management and Information System (EMIS) / Student Information System (SIS); (2) Digital credential systems refer to systems that award, recognise, manage and verify digital credential such as digital degrees, badges, transcripts, certificates and awards; (3) Digital exam administration systems range from computer-based systems to conduct online examination to proctoring solutions for remote exams or digital platforms for examiners; (4) Early warning systems (EWS) collect Early Warning Indicators to predict which students are at risk of a negative outcome (usually dropout or failure to graduate); (5) Learning Management Systems (LMS) refer to software applications used for the administration, documentation, tracking, reporting, automation, and delivery of educational courses, training programmes, or learning and development programmes; (6) Classroom analytics refer to all digital solutions that allow teachers to collect teaching and learning data from their classroom, analyse them and use them to improve learning (in real time or after class); (7) Static digital education content includes electronic textbooks and other learning resources; (8) Interactive digital education content includes learning resources, games, simulations, quizzes that provide guidance or adapt to learner's progress.
Iceland: The Directorate of Education and School Services provides free digital textbooks for schools in compulsory education (not at the upper secondary level).
Spain: A central digital credential system is provided in the two autonomous cities Ceuta and Melilla.
Sweden: The National Agency for Education is providing a web-based platform for national tests. To administer their own school-based tests in digital format, schools need to purchase the respective tools.
Source: Question E.2 of the Policy Survey on School Education in the Digital Age.

Annex Table 5.3. Support for EdTech innovation, research and development

Supports provided by central authorities for the development of digital education technologies or innovation among EdTech companies/organisations

	Monetary incentives for development of digital education content	Monetary incentives for development of education software	Monetary incentives for development of AI-based EdTech solutions	Investing in start-up companies (1)	Competitive grants for R&D and EdTech innovation	Incentivising R&D on EdTech through tax credits (2)	Developing EdTech / carrying out R&D through public agencies	Commissioning the development of EdTech solutions (3)	Other
OECD countries									
Austria							✓	✓	
Chile									
Colombia							✓	✓	
Denmark	m	m	m	m	m	m	m	m	m
Estonia	✓	✓	✓	✓			✓	✓	
Finland*									✓
France	✓	✓	✓		✓		✓		
Germany									
Greece	✓	✓	✓					✓	
Iceland	✓	✓			✓	✓			
Israel	✓	✓	✓	✓	✓		✓	✓	
Ireland*	✓	✓	✓	✓	✓	✓	✓		
Italy									✓
Japan*									✓
Korea	✓	✓	✓	✓	✓		✓	✓	
Lithuania							✓	✓	
Luxembourg				✓	✓			✓	
Netherlands	✓		✓	✓	✓		✓		
New Zealand						✓			
Norway	✓				✓				
Poland					✓	✓	✓	✓	
Portugal								✓	
Slovak Republic									

	Monetary incentives for development of digital education content	Monetary incentives for development of education software	Monetary incentives for development of AI-based EdTech solutions	Investing in start-up companies (1)	Competitive grants for R&D and EdTech innovation	Incentivising R&D on EdTech through tax credits (2)	Developing EdTech / carrying out R&D through public agencies	Commissioning the development of EdTech solutions (3)	Other
Slovenia									
Spain									
Sweden					✓				
Other participants									
NSW (Australia)									
Flemish Comm. (Bel)	✓			✓	✓		✓	✓	
French Comm. (Bel)									
England (UK)					✓			✓	
Northern Ireland (UK)							✓	✓	
Scotland (UK)									
Wales (UK)	✓								
Partners									
Bulgaria					✓		✓		
Croatia								✓	
Romania	✓							✓	
Singapore								✓	

Note: (1) Includes e.g. subsidies for young companies that offer EdTech solutions, participation in venture capital funds; (2) Includes tax credits offered through education-specific or general programmes; (3) For example through public calls for tender.
Finland: Grants are awarded to education providers for the development of digital education projects.
Ireland : Enterprise Ireland offers support in these areas across sectors, including EdTech.
Japan: Angel investors and entrepreneurs are encouraged to invest in start-up companies through an “Angel Tax System”.
Source: Question E.3 of the Policy Survey on School Education in the Digital Age.

Dimension 6: Capacity building for digital education

Annex Table 6.1. Initial teacher education on digital resources and certification of teachers' digital skills

Training on the use of digital resources in initial teacher education (ITE) programmes and central efforts to measure or certify teachers' digital skills

	Training on the use of digital resources for teaching in ITE programmes (1)			Central efforts to measure and/or certify teachers' digital skills or their effective use of digital resources for teaching											
				Competency framework for teachers' digital skills or effective use of digital education resources			License or certification process for teachers' digital skills or effective use of digital education resources			Accreditation of training programmes to support teachers' digital skills or effective use of digital education resources			Other		
ISCED level	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
OECD countries															
Austria	A	A	A	✓	✓	✓									
Chile	B	B	B												
Colombia	B	B	B	✓	✓	✓				✓	✓	✓			
Denmark	A	A	m	m	m	m	m	m	m	m	m	m			
Estonia	A	A	A	✓	✓	✓				✓	✓	✓			
Finland	B	B	B												
France	A	A	A	✓	✓	✓	✓	✓	✓						
Germany	m	m	m	m	m	m	m	m	m	m	m	m			
Greece	A	A	A				✓	✓	✓						
Iceland	B	B	B	✓	✓	✓									
Israel	A	A	A	✓	✓	✓				✓	✓	✓			
Ireland	A	A	A	✓	✓	✓									
Italy	A	A	A										✓	✓	✓
Japan	A	A	A							✓	✓	✓			
Korea	B	B	B	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Lithuania	B	B	B							✓	✓	✓			
Luxembourg	B	B	B	✓	✓	✓				✓	✓	✓	✓	✓	✓
Netherlands	B	B	B												

	Training on the use of digital resources for teaching in ITE programmes (1)			Central efforts to measure and/or certify teachers' digital skills or their effective use of digital resources for teaching											
				Competency framework for teachers' digital skills or effective use of digital education resources			License or certification process for teachers' digital skills or effective use of digital education resources			Accreditation of training programmes to support teachers' digital skills or effective use of digital education resources			Other		
ISCED level	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
New Zealand	A	A	A												
Norway	A	A	A	✓	✓	✓									
Poland	m	m	m												
Portugal	B	B	B	✓	✓	✓				✓	✓	✓			
Slovak Republic	D	D	D												
Slovenia	B	B	B												
Spain	A	A	A	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Sweden	A	A	A												
Other participants															
NSW (Australia)	B	B	B										✓	✓	✓
Flemish Comm. (Bel)	B	B	B	✓	✓	✓									
French Comm. (Bel)	A	A	A												
England (UK)	B	B	B												
Northern Ireland (UK)	B	B	B												
Scotland (UK)	B	B	B												
Wales (UK)	D	D	D			✓							✓	✓	✓
Partners															
Bulgaria	B	B	B							✓	✓	✓			
Croatia	B	B	B	✓	✓	✓									
Romania	A	A	A	✓	✓	✓	✓	✓	✓						
Singapore	A	A	A	✓	✓	✓									

Note: (1) Refers to ITE programmes for general subject teachers: A = Mandatory for all ITE programmes (e.g. part of accreditation criteria); B = At the discretion of ITE institutions; C = At the discretion of students; D = Other. No jurisdiction reported that no training on the use of digital resources for teaching was offered in ITE programmes.
Source: Questions F.1 and F.2 of the Policy Survey on School Education in the Digital Age.

Annex Table 6.2. Teachers' continuing professional learning on digital education resources

Central requirements or incentives for teachers to engage in continuing professional learning (CPL) on the use of digital resources for teaching

	Teachers' participation in CPL on digital education is considered in their appraisal (1)	Training on digital education is linked to teachers' career advancement (2)	Teachers are required to undertake in-service training on digital education	Teachers are offered in-service training on digital education free of charge	Teachers' CPL on digital education is officially recognised in different formats (3)	Central support for peer learning on digital education (4)	Other
OECD countries							
Austria				✓	✓	✓	
Chile				✓		✓	
Colombia							
Denmark	m	m	m	m	m	m	
Estonia				✓		✓	
Finland							
France				✓	✓		
Germany	m	m	m	m	m	m	
Greece	✓	✓	✓	✓	✓		
Iceland				✓	✓	✓	
Israel	✓			✓	✓	✓	
Ireland				✓	✓	✓	
Italy			✓	✓	✓		
Japan				✓	✓	✓	
Korea		✓		✓	✓	✓	
Lithuania	✓	✓		✓	✓		
Luxembourg				✓	✓	✓	
Netherlands							
New Zealand*				✓			
Norway				✓	✓	✓	
Poland							
Portugal	✓	✓	✓	✓	✓		

	Teachers' participation in CPL on digital education is considered in their appraisal (1)	Training on digital education is linked to teachers' career advancement (2)	Teachers are required to undertake in-service training on digital education	Teachers are offered in-service training on digital education free of charge	Teachers' CPL on digital education is officially recognised in different formats (3)	Central support for peer learning on digital education (4)	Other
Slovak Republic				✓		✓	
Slovenia	✓	✓		✓	✓		
Spain	✓	✓		✓	✓	✓	
Sweden	✓	✓		✓			✓
Other participants							
NSW (Australia)				✓			
Flemish Comm. (Bel)				✓		✓	
French Comm. (Bel)				✓		✓	
England (UK)							
Northern Ireland (UK)							
Scotland (UK)	✓						
Wales (UK)					✓	✓	
Partners							
Bulgaria	✓	m	m	✓	m		
Croatia		✓	✓	✓	✓		
Romania	✓	✓		✓	✓	✓	
Singapore	✓		✓	✓	✓	✓	

Note: (1) In this table, "digital education" refers to the use of digital resources for teaching; (2) Includes links to teachers' compensation, career progression, license renewal, etc.; (3) Recognition in a range of formats (incl. e.g. online MOOCs and other micro-credentials), e.g. to satisfy professional development requirements; (4) For example mentoring schemes or communities of practice.
New Zealand: Funding is available for professional development on digital fluency (as one of the 7 national priorities) if a school/*kura* identifies a need for its setting. Accessing this funding is not mandatory.
Source: Question F.3 of the Policy Survey on School Education in the Digital Age.

Annex Table 6.3. Strengthening school leaders' capacity for digital education

Provisions at the central level to support school leaders (or school leadership teams) in managing the digital transformation of their schools

	School leaders (SL) are required to undertake in-service training on the subject	SL are offered free in-service training on the subject	Central support for professional networks or school improvement support services on the subject	SL are provided with central guidance on the subject	SL are provided with materials to self-evaluate their schools' digital capacity and digital ed. strategies	SL can obtain financial support for the digital transformation of their schools (1)	Other
OECD countries							
Austria		✓	✓	✓	✓	✓	
Chile				✓		✓	
Colombia	✓	✓	✓	✓	✓	✓	
Denmark	m	m	m	m	m	m	
Estonia				✓	✓		
Finland						✓	
France		✓		✓			
Germany	m	m	m	m	m	m	
Greece				✓	✓		
Iceland							
Israel	✓	✓	✓	✓		✓	
Ireland		✓	✓	✓	✓		
Italy		✓	✓		✓	✓	
Japan		✓	✓	✓			
Korea		✓	✓	✓	✓	✓	
Lithuania	✓	✓	✓	✓	✓	✓	
Luxembourg		✓	✓		✓		
Netherlands							
New Zealand		✓	✓			✓	
Norway		✓		✓		✓	
Poland				✓		✓	
Portugal	✓	✓	✓	✓	✓	✓	

	School leaders (SL) are required to undertake in-service training on the subject	SL are offered free in-service training on the subject	Central support for professional networks or school improvement support services on the subject	SL are provided with central guidance on the subject	SL are provided with materials to self-evaluate their schools' digital capacity and digital ed. strategies	SL can obtain financial support for the digital transformation of their schools (1)	Other
Slovak Republic		✓			✓		
Slovenia		✓					
Spain	✓	✓	✓	✓	✓		
Sweden		✓					
Other participants							
NSW (Australia)				✓	✓		
Flemish Comm. (Bel)		✓	✓	✓	✓	✓	
French Comm. (Bel)		✓	✓	✓	✓	✓	✓*
England (UK)				✓	✓		
Northern Ireland (UK)		✓	✓	✓	✓		
Scotland (UK)							
Wales (UK)			✓	✓	✓	✓	
Partners							
Bulgaria	m	✓	m	m	m	✓	
Croatia	✓		✓	✓	✓		
Romania		✓	✓		✓	✓	
Singapore		✓	✓	✓	✓	✓	

Note: (1) Financial support for the digital transformation of their schools can, for example, take the form of earmarked funding or project grants.
French Community of Belgium: The *Service Général du Numérique Éducatif* (SGNE) SGNE is developing a practical guide for school communities to direct them towards existing tools and support them in implementing an integrated approach to digital technology.
Source: Question F.5 of the Policy Survey on School Education in the Digital Age.

Annex Table 6.4. Strengthening parents' digital skills and capacity

Central initiatives aimed at strengthening parents' digital skills and their ability to support their children's effective and safe use of digital resources

	Information material or guidelines for parents on the subject (1)	Information sessions or workshops for parents on the subject	Mentoring schemes to build parents' digital competency	Programmes organised at the discretion of sub-central authorities or schools	Other
OECD countries					
Austria	✓	✓		✓	
Chile					
Colombia	✓	✓	✓		
Denmark	m	m	m	m	
Estonia	✓	✓		✓	
Finland	✓				
France	✓	✓		✓	
Germany					
Greece	✓			✓	
Iceland					
Israel	✓	✓			
Ireland	✓	✓		✓	
Italy					
Japan		✓		✓	
Korea	✓	✓	✓	✓	
Lithuania					
Luxembourg	✓	✓		✓	
Netherlands				✓	
New Zealand	✓	✓			
Norway					
Poland	✓				
Portugal	✓	✓	✓		
Slovak Republic					
Slovenia	✓	✓			
Spain	✓*	✓*		✓	

	Information material or guidelines for parents on the subject (1)	Information sessions or workshops for parents on the subject	Mentoring schemes to build parents' digital competency	Programmes organised at the discretion of sub-central authorities or schools	Other
Sweden					
Other participants					
NSW (Australia)	✓				
Flemish Comm. (Bel)	✓	✓			
French Comm. (Bel)					
England (UK)					
Northern Ireland (UK)	✓				
Scotland (UK)	✓				
Wales (UK)	✓				
Partners					
Bulgaria	✓	m	m	✓	
Croatia	✓				
Romania	✓	✓		✓	
Singapore	✓	✓	✓		

Note: (1) Information material or guidelines for parents (for example on issues like screen time, the use of cell phones in schools, etc.)
Spain: The website "AseguraTIC" provides information and tools for educators, families, students, education centres and administrations to protect minors in their interactions with the Internet and to support the adults in their environment to help them.
Source: Question F.6 of the Policy Survey on School Education in the Digital Age.

Dimension 7: Human resource policies for digital education

Annex Table 7.1. Teachers' professional standards and appraisal frameworks

Coverage of teachers' use of digital resources in professional standards and formal appraisal or evaluation frameworks

	The use of digital resources for teaching is included in teachers' professional standards or formal descriptions of their roles and responsibilities (1)			Teachers' work with digital resources is considered in formal appraisal/evaluation frameworks at the central level (2)		
ISCED level	1	2	3	1	2	3
OECD countries						
Austria	a	a	a	a*	a*	a*
Chile	✓	✓	✓	✓	✓	✓
Colombia				✓	✓	✓
Denmark	✓	✓	✓	a	a	a
Estonia	✓	✓	✓	✓	✓	✓
Finland	a	a	a	a	a	a
France	✓	✓	✓	✓	✓	✓
Germany	a	a	a	m	m	m
Greece	✓	✓	✓	✓	✓	✓
Iceland	✓	✓	✓	a	a	a
Israel	✓	✓	✓			
Ireland	a	a	a	a	a	a
Italy	✓	✓	✓	a	a	a
Japan	a	a	a	a	a	a
Korea	✓	✓	✓			
Lithuania	✓	✓	✓	✓	✓	✓
Luxembourg	✓	✓	✓	a	a	a
Netherlands						
New Zealand				a	a	a
Norway	✓	✓	✓			
Poland	a	a	a			
Portugal	✓	✓	✓	a	a	a

	The use of digital resources for teaching is included in teachers' professional standards or formal descriptions of their roles and responsibilities (1)			Teachers' work with digital resources is considered in formal appraisal/evaluation frameworks at the central level (2)		
ISCED level	1	2	3	1	2	3
Slovak Republic						
Slovenia						
Spain	✓	✓	✓	✓	✓	✓
Sweden	a	a	a	a	a	a
Other participants						
NSW (Australia)	✓	✓	✓			
Flemish Comm. (Bel)				a	a	a
French Comm. (Bel)						
England (UK)				a	a	a
Northern Ireland (UK)	a	a	a			
Scotland (UK)	✓	✓	✓	a	a	a
Wales (UK)	✓	✓	✓	a	a	a
Partners						
Bulgaria	✓	✓	✓	✓	✓	✓
Croatia	✓	✓	✓	✓	✓	✓
Romania	✓	✓	✓	✓	✓	✓
Singapore	✓	✓	✓	✓	✓	✓

Note: (1) Jurisdictions without central professional standards or formal descriptions of teachers' roles and responsibilities were coded as "a" (not applicable); (2) Jurisdictions without central evaluation or appraisal framework for teachers were coded as "a" (not applicable).
Austria: The Federal Ministry of Education, Science and Research and some federal states recommend that school leaders use the digi.kompP framework (https://www.virtuelle-ph.at/digikomp/) to appraise the digital skills of their teachers, but the framework's use is not mandatory.
Source: Questions G.1 and G.2 of the Policy Survey on School Education in the Digital Age.

Annex Table 7.2. Responsibilities for the use of digital resources and maintenance of digital devices in schools

	Dedicated staff positions with responsibilities related to the use of digital resources for teaching (1)																Staff responsible for maintaining digital resources in schools														
	Teachers (Part-time role) (2)			Teachers (Full-time role)			Technical support staff (3)			Depending on school size or other school characteristics			Discretion of schools or local authorities			Other	Teachers (Part-time or full-time role)			Technical support staff (3)			External contract ors			Depending on school size or other school characteristics			Discretion of schools or local authorities			Other
ISCED level	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
OECD countries																																
Austria	A	A	A					B	B													B					*		*			
Chile*																																
Colombia																																
Denmark*																																
Estonia																																
Finland																																
France	A	B	B																	B	B	B										
Germany																																*
Greece																*																*
Iceland													*	*	*																	
Israel	B	B	B				B	B	B																				*	*	*	
Ireland																																
Italy																*																
Japan							B	B	B																							*
Korea							A*	A*	A*	*	*	*								A*	A*	A*				*	*	*				
Lithuania																																
Luxembourg		A	A					A/B	A/B												A/B	A/B										
Netherlands																																
New Zealand	A/B	A/B	A/B				A/B	A/B	A/B																							
Norway																																
Poland	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m																
Portugal																																
Slovak Republic																																

	Dedicated staff positions with responsibilities related to the use of digital resources for teaching (1)																Staff responsible for maintaining digital resources in schools												
	Teachers (Part-time role) (2)			Teachers (Full-time role)			Technical support staff (3)			Depending on school size or other school characteristics			Discretion of schools or local authorities			Other	Teachers (Part-time or full-time role)			Technical support staff (3)			External contractors			Depending on school size or other school characteristics			Discretion of schools or local authorities			Other
ISCED level	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
Slovenia	A	A							A																				*	*		
Spain	A/B	A/B	A/B																													
Sweden																				A/B	A/B	A/B										
Other participants																																
NSW (Australia)													*	*	*														*	*	*	
Flemish Comm. (Bel)	B	B	B				A/B	A/B	A/B				*	*	*					A/B	A/B	A/B							*	*	*	
French Comm. (Bel)	A	A	A																													
England (UK)																																
Northern Ireland (UK)								A/B	A/B																							
Scotland (UK)																																
Wales (UK)																																
Partners																																
Bulgaria	A	A	A																													
Croatia							B	B	B											B	B	B										
Romania																																
Singapore*	A	A	A				A/B	A/B	A/B																							

Note: Cells shaded in blue = Yes; Cells shaded in white = No; a = There are no centrally defined staff positions with responsibilities related to the use of digital resources for teaching / for maintaining digital resources in schools at this level.

(1) Dedicated staff positions with responsibilities related to the use of digital resources for teaching include, for example, ICT co-ordinators supporting teachers with technical queries or helping them to integrate digital technologies into their practice; (2) A = Part-time roles associated with reduced teaching load; B = Part-time roles associated with additional remuneration; (3) A = Technical support staff based in one school; B = Technical support staff responsible for multiple schools.

Austria: For ISCED 1, municipalities are responsible for school maintenance, including ICT, and often hire external contractors for this. There are also teachers with reduced timetables providing IT support (e.g. for school management software) to several schools; For ISCED 2, responsibilities vary by school type (as at ISCED 1 for locally run schools, as at ISCED 3 for federal schools).

Chile: Although not a formal role, most schools (ISCED 1-3) have ICT co-ordinators with varying emphasis on technical and pedagogical aspects.

Denmark: Schools/municipalities decide whether to create roles for ICT advisors or co-ordinators, but part-time roles for teachers (with reduced teaching load) are a common practice.

Germany: Responsibility for ICT maintenance lies with the local school administration. Computer Science teachers usually serve as the "Head of the Computer Science Laboratory" and are responsible for all digital devices in the lab. They or other teachers with relevant knowledge usually also assume responsibility for the maintenance of other digital devices in the school.
Greece: School heads assign the responsibility for maintaining schools' computer science (CS) labs to a CS teacher. In addition, there are dedicated staff positions at the district level with responsibilities related to the use of digital resources. In each Directorate of Education, "PLINET" (IT and New Technologies) technical support staff are assigned to assist all schools within their district. At the national level, the Panhellenic School Network (*Πανελλήνιο Σχολικό Δίκτυο*) technically supports teachers and schools in matters related to web applications and digital infrastructure.
Iceland: Assigning responsibilities for the use of digital resources in schools is at the discretion of local authorities. Responsibilities are commonly assigned to teachers in the school on a part-time basis (ISCED 1-3), to teachers with increased remuneration (ISCED 3) or to technical support staff shared between several schools (especially at ISCED 1 and 2).
Italy: As part of the Digital Plan, each school (ISCED 1-3) has a teacher serving as "digital animator". Digital animators are part of a national network and have undergone dedicated training. With the school management team, they promote digital innovation in their school by organising trainings and workshops for staff and the wider school community and identifying sustainable digital solutions to integrate in their school.
Israel: The Ministry of Education provides schools with a budget for computer maintenance, which they can use to pay for a service supplier selected by the ministry or through the local authority.
Japan: The school founder is responsible for maintaining digital resources in schools (as defined in Article 2(2) of the School Education Act).
Korea: Tutors (ISCED 1) and IT Support Specialists (ISCED 1-3) are provided. Local governments can decide on their deployment based on the size and characteristics of each school and schools can take their own decisions on staff positions.
Slovenia: At ISCED 1 & 2, every school has at least one ICT co-ordinator responsible for the maintenance of digital infrastructure. However, schools can decide to outsource these tasks.
NSW (Australia): Schools decide how to assign responsibilities related to the use and the maintenance of digital resources (e.g. teachers or technical support staff). However, the assignment must adhere to established roles, responsibilities and relevant awards.
Flemish Community (Belgium): Schools decide how to allocate responsibilities for their digital resources but, as part of its digital strategy, the Flemish Community is emphasising the importance and potential of ICT teams comprised of different roles (as opposed to single ICT administrators). For further information: Towards team-oriented ICT coordination at school.
French Community (Belgium): By law, schools can employ a *délégue-référent au numérique* (a member of the teaching staff that benefits from a reduction in teaching load to do digital-related tasks). Creating this position is at the discretion of schools but this is commonly done.
Singapore: All schools receive IT support from a headquarter-based ICT partner responsible for 1-2 school clusters. In addition, schools are encouraged to create positions for a Head of Department (ICT) and a school-based ICT Manager/Associate to support teachers in the use of digital resources.
Source: Questions G.3 and G.4 of the Policy Survey on School Education in the Digital Age.

Dimension 8: Monitoring and evaluation for digital education

Annex Table 8.1. Data sources used to monitor different domains of digital education policy at the central level

	External school evaluations (reviews or inspections)	School self-evaluations	Mandatory school-level reporting (administrative data collections)	Surveys of school leaders (or leadership teams)	Teacher surveys	Student surveys	Other
OECD countries							
Austria	A	A/D	B/C/E		A/D	A/D	
Chile	C	B	B	A/B/C/D/E	A/D/E	A/D/E	
Colombia	A/B/C/D	A/B/D	A/B/C/D/E	A	A/B/D	A/B	
Denmark				A/B/D/E	A/B/D/E	A/B/D/E	
Estonia			B	D	A/B/D	A/B	
Finland							A/B/C/D/E*
France	A/B/C/D	A/B/C/D					A/B/C/D/E*
Germany	C						
Greece		A	A				B*
Iceland	A/D	A/D					
Israel	A/B/C/E	A/B/C/E	A/B/C/D/E		A/B/C/D/E	A/B/C/D/E	
Ireland	A/B/C/D						A/B/C/D/E*
Italy		A/B/D		A/B/C/D/E	A/B/C/D/E	A/B/C/D/E	
Japan			A/B/C/D				E*
Korea		D	A*	B/C/E	A/B/C/D/E		
Lithuania	D		A/B/C/E				
Luxembourg		A/B	A		A/B/C/D	A/D	
Netherlands		A/D		B/C/E	A/B/C/D/E		
New Zealand				A/B/C/D	A/B/C/D	A/B/C/D	
Norway		A	B	B	A/D		
Poland		A/B/C/D/E		A/B/C/D/E			
Portugal	A/B/C/D			A/B/C/D/E	A/B/C/D/E		
Slovak Republic			A/B/C/D/E				

	External school evaluations (reviews or inspections)	School self-evaluations	Mandatory school-level reporting (administrative data collections)	Surveys of school leaders (or leadership teams)	Teacher surveys	Student surveys	Other
Slovenia				B	A/B/D	A	C/E*
Spain	B/C/D	A/B/C/D/E	B/C/D				
Sweden	A/B			A/D	A/B/C/D/E	A/B/C	B/C/D/E*
Other participants							
NSW (Australia)					A		A*
Flemish Comm. (Bel)		A/B/C/D/E		A/B/C/D/E	A/B/C/D/E	A/B/C/D/E	
French Comm. (Bel)							
England (UK)				A/B/C/D/E	A/B/C/D/E	A/B/C/D/E	
Northern Ireland (UK)	A/B/C/D/E	A/B/C/D/E		A/B/C/D/E	A/B/C/D/E	A/B/C/D/E	
Scotland (UK)							
Wales (UK)	A/B/C	B/C/E					
Partners							
Bulgaria	A/B/C/D/E	A/B/C/D/E		A/B/C/D/E	A/B/C/D/E		
Croatia	A/B/C/D/E	A/B/C/D/E		A/B/C/D/E	A/B/D	A/B/D	
Romania							
Singapore	A/B/C/E	A/B/C/D/E	B/C/E		D		

Note: Letters indicate the digital policy domains that are monitored using a given type of data collected at the central level: A = Use of digital resources in schools; B = Availability and quality of digital devices in schools; C = Access to fast and reliable Internet in schools; D = Teachers' skills for incorporating digital resources into teaching; E = Availability of technical support staff.
Finland: Finland conducts research across these policy domains but does not systematically collect data to monitor them.
France: France is collecting data on the use of digital resources in schools, the availability and quality of digital devices in schools, the access to fast and reliable Internet in schools and teachers' digital skills to establish a national dashboard for digital education, which is still under development.
Greece: Data on the availability and quality of devices in schools is accessible through the "myschool" education management and information system.
Ireland: The Department of Education has commissioned a longitudinal study on the implementation of the digital learning framework, which gathers data on many of these policy domains.
Korea: Applies only to "research schools" and "leading schools".
NSW (Australia): Data on the use of digital resources in schools is also collected using focus groups and metadata is available for some digital resources.
Slovenia: Data on schools' Internet connection is only available when it is supplied by the public provider ARNES; Data on the availability of technical support staff is available through administrative records.
Sweden: Data on these policy domains is available through the International Computer and Information Literacy Study (ICILS) ICT co-ordinator questionnaire.
Source: Question H.2 of the Policy Survey on School Education in the Digital Age.

Annex Table 8.2. Evaluating the impact of digital education

Types of outcomes covered, and methods used when evaluating the impact of digital education policies at the central level

	Outcomes for which the impact of digital education policies is systematically evaluated								Methods used to evaluate the impact of digital education policies			
	Students' cognitive skills	Students' subject competency and content knowledge	Students' digital skills	Students' social and emotional skills	Students' well-being and ability to navigate digital risks	Teachers' well-being	Broader social and labour market outcomes	Other	Piloting digital education policies in selected schools and evaluating results	Commissioning academic research	Analysing data on students / schools with different exposure to digital education	Using classroom analytics data to assess effectiveness of different teaching and learning methods
OECD countries												
Austria		✓	✓		✓				✓		✓	
Chile			✓	✓	✓				✓			
Colombia											✓	
Denmark	✓	✓	✓	✓	✓				✓	✓	✓	
Estonia			✓		✓	✓			✓	✓	✓	✓
Finland										✓		
France			✓							✓	✓	✓
Germany			✓						✓		✓	
Greece											✓	
Iceland											✓	
Israel	✓	✓	✓	✓	✓	✓			✓	✓		✓
Ireland									✓	✓		
Italy											✓	✓
Japan			✓						✓		✓	
Korea	✓	✓	✓	✓	✓				✓	✓	✓	✓
Lithuania		✓								✓	✓	✓
Luxembourg								✓	✓	✓		
Netherlands									✓	✓	✓	
New Zealand												

	Outcomes for which the impact of digital education policies is systematically evaluated								Methods used to evaluate the impact of digital education policies			
	Students' cognitive skills	Students' subject competency and content knowledge	Students' digital skills	Students' social and emotional skills	Students' well-being and ability to navigate digital risks	Teachers' well-being	Broader social and labour market outcomes	Other	Piloting digital education policies in selected schools and evaluating results	Commissioning academic research	Analysing data on students / schools with different exposure to digital education	Using classroom analytics data to assess effectiveness of different teaching and learning methods
Norway	m	m	m	m	m	m	m	m		✓		
Poland	✓		✓				✓			✓	✓	
Portugal	✓	✓	✓	✓	✓	✓			✓	✓	✓	
Slovak Republic			✓								✓	
Slovenia		✓										
Spain	✓	✓	✓	✓	✓	✓					✓	
Sweden			✓								✓	
Other participants												
NSW (Australia)									✓			
Flemish Comm. (Bel)	✓	✓	✓	✓	✓	✓	✓			✓	✓	
French Comm. (Bel)										✓		
England (UK)								✓*	✓	✓		
Northern Ireland (UK)	✓		✓			✓			✓		✓	
Scotland (UK)												
Wales (UK)									✓			
Partners												
Bulgaria	m	✓	✓	m	m	m	m	m	m	m	✓	m
Croatia		✓	✓									✓
Romania												
Singapore			✓						✓	✓		

Note: The evaluations reported in this table employ different methodologies with different degrees of rigour (mostly observational studies without causal designs) and may not be comparable.
England (United Kingdom): The impact of digital education policies on workload and spending on technology is systematically evaluated.
Source: Questions H.3 and H.4 of the Policy Survey on School Education in the Digital Age.

Strand 2: The teaching profession in the digital age

Annex Table 9.1. Subject areas and schools affected by teacher shortages

Jurisdictions currently experiencing significant teacher shortages

	Significant teacher shortages	Subject areas particularly affected by teacher shortages (1)									Types of schools particularly affected (1)				
		Reading, writing and literature	Mathematics	Science	Social studies / humanities	Foreign languages	Technology / computer studies	Arts	Vocational subjects	Other subjects	Rural areas	Urban areas	Disadvantaged schools	Special needs schools	Other types of schools
OECD countries															
Austria	✓	2	2	2		2/3	2/3				2/3	2/3	2/3	1/2	
Chile	✓	1/2/3	1/2/3	1/2/3	1/2/3	1/2/3	1/2/3	1/2/3	3		1/2/3	1/2/3	1/2/3		
Colombia		a	a	a	a	a	a	a	a		a	a	a	a	a
Denmark	✓										1/2	1/2			
Estonia	✓	2/3	2/3	2/3							2/3	2/3	2/3	2/3	
Finland	✓									1/2	1/2	1/2	1/2		
France	✓		2/3	2/3		2/3				1*			2/3		
Germany	✓	m	m	m	m	m	m	m	m		m	m	m	m	m
Greece		a	a	a	a	a	a	a	a		a	a	a	a	a
Iceland	✓		1/2	1/2		2	2		2	1/2/3*	1/2	2	2		
Israel	✓	1/2/3	1/2/3	1/2/3	1/2/3	1/2/3	1/2/3	1/2/3	1/2/3			1/2/3	1/2/3		
Ireland	✓	1	1/2/3	1/2/3	1	1/2/3	1/2/3	1	2/3		1/2/3	1/2/3	1/2/3		
Italy		a	a	a	a	a	a	a	a		a	a	a	a	a
Japan*	a	a	a	a	a	a	a	a	a		a	a	a	a	a
Korea		a	a	a	a	a	a	a	a		a	a	a	a	a
Lithuania	✓		2/3	2/3			2/3				1/2/3		1/2/3		
Luxembourg*	✓	1/2/3	1/2/3	1/2/3		1/2/3	1/2/3		3						
Netherlands	✓	2/3	2/3	2/3		2/3	2/3			1*		1/2/3	1/2/3	1/2/3	
New Zealand	✓		1/2/3	1/2/3		1/2/3	1/2/3		1/2/3		1/2/3	2/3	2/3	1/2/3	

	Significant teacher shortages	Subject areas particularly affected by teacher shortages (1)									Types of schools particularly affected (1)				
		Reading, writing and literature	Mathematics	Science	Social studies / humanities	Foreign languages	Technology / computer studies	Arts	Vocational subjects	Other subjects	Rural areas	Urban areas	Disadvantaged schools	Special needs schools	Other types of schools
Norway		a	a	a	a	a	a	a	a		a	a	a	a	a
Poland	✓	1/2/3		1/2/3					1/2/3		1/2/3		1/2/3		
Portugal	✓	2/3	2	2/3	2/3		2/3					2/3			
Slovak Republic	✓		2/3	2/3		2/3	2/3		3				1/2/3		
Slovenia	✓		2/3	2/3			2/3		3	1	1/2/3	1/2/3		1/2/3	
Spain	✓		2/3	2/3			2/3								
Sweden*	a	a	a	a	a	a	a		a	a	a	a	a	a	a
Other participants															
NSW (Australia)	✓		1/2/3	1/2/3							1/2/3				
Flemish Comm. (Bel)	✓	1/2/3	1/2/3	3	1/2/3	2/3	1/2/3	1/2/3	3		1/2/3	1/2/3	1/2/3	1/2/3	
French Comm. (Bel)	✓		2/3	2/3		1/2/3	2/3		2/3						
England (UK)	✓		2/3	2/3	2/3	2/3	2/3						2/3		
Northern Ireland (UK)	✓		2/3	2/3								2/3	2/3		
Scotland (UK)		a	a	a	a	a	a	a	a		a	a	a	a	a
Wales (UK)	✓		2/3	2/3		2/3	2/3						2/3	2/3	2/3*
Partners															
Bulgaria	✓	1/2/3	1/2/3			1/2/3	2/3		3		1/2/3	1/2/3	m	m	
Croatia	✓		1/2/3	1/2/3		2/3			3		1/2/3				
Romania	✓	1/2/3	1/2/3	1/2/3	1/2/3	1/2/3	1/2/3	1/2/3	1/2/3		1/2/3		1/2/3	1/2/3	
Singapore		a	a	a	a	a	a	a	a		a	a	a	a	a

Note: (1) Cells shaded in blue indicate that jurisdictions are currently experiencing significant teacher shortages in a given subject area or type of school. The numbers in the cells indicate the levels of education at which the shortage is experienced (ISCED 1, 2 or 3) and the darkness of the cells corresponds to the number of levels affected.
France: There are teacher shortages in primary schools, but teachers at this level (ISCED 1) are not subject-specific.
Iceland: Other areas of teacher shortages include teachers with knowledge of teaching diverse group of students and teachers of Icelandic as a second language (ISCED 1-3).
Japan: The extent of teacher shortages varies from municipality to municipality.
Luxembourg: Teachers are distributed centrally to schools, so the shortage affects all schools equally.
Netherlands: There are teacher shortages in primary schools, but teachers at this level (ISCED 1) are not subject-specific.

Sweden: Due to the absence of complete information, the Swedish National Agency for Education (*Skolverket*) has chosen not to issue a response to this question.
Wales (United Kingdom): Other school types with shortages include Welsh medium schools (ISCED 2 and 3).
Source: Questions I.1 and I.1.a of the Policy Survey on School Education in the Digital Age.

Annex Table 9.2. Teachers' career structures

Stages of teachers' career structures, criteria and process for stage advancement, and duration of appointment

	Number of career stages (1)			Criteria for stage advancement (2)			Process for stage advancement (3)			Duration of appointment to a career stage (4)		
ISCED level	1	2	3	1	2	3	1	2	3	1	2	3
OECD countries												
Austria	A	A	A	a	a	a	a	a	a	a	a	a
Chile	B (5)	B (5)	B (5)	B/C	B/C	B/C	A	A	A	B	B	B
Colombia	m	m	A	A/B/C/E	A/B/C/E	A/B/C/E	B	B	B	A/B	A/B	A/B
Denmark	A	A	A	a	a	a	a	a	a	a	a	a
Estonia	B (3)	B (3)	B (3)	A/B/E	A/B/E	A/B/E	A	A	A	A/B	A/B	A/B
Finland	A	A	A	a	a	a	a	a	a	a	a	a
France	A	A	A	a	a	a	a	a	a	a	a	a
Germany	m	m	m	m	m	m	m	m	m	m	m	m
Greece	A	A	A	A/B/C/D/E	A/B/C/D/E	A/B/C/D/E	A/B	A/B	A/B	B	B	B
Iceland	A	A	A	a	a	a	a	a	a	a	a	a
Israel	B (4)	B (4)	B (4)	A/B/C/D/E	A/B/C/D/E	A/B/C/D/E	A/B	A/B	A/B	A	A	A
Ireland	A	A	A	a	a	a	a	a	a	a	a	a
Italy	A	A	A	A	A	A	B	B	B	B	B	B
Japan	m	m	m	m	m	m	m	m	m	m	m	m
Korea	B (3)	B (3)	B (3)	A/B/C/D/E	A/B/C/D/E	A/B/C/D/E	A	A	A	A	A	A
Lithuania	B (4)	B (4)	B (4)	A/B/C	A/B/C/D/E	A/B/C/D/E	A	A	A	A	A	A
Luxembourg	A	A	A	a	a	a	a	a	a	a	a	a
Netherlands*	B (4)	B (4)	B (4)	A/B/C	A/B/C	A/B/C	A	A	A	A	A	A
New Zealand	B	B	B	A/B/C	A/B/C	A/B/C	A/B	A/B	A/B	A	A	A
Norway	A	A	A	a	a	a	a	a	a	a	a	a
Poland	B (3)	B (3)	B (3)	A/B	A/B	B	A	A	A	A	A	A
Portugal	B (10)	B (10)	B (10)	C/D/E	C/D/E	C/D/E	A/B	A/B	A/B	B	B	B
Slovak Republic	B (4)	B (4)	B (4)	A/B/C/E	A/B/C/E	A/B/C/E	A/B	A/B	A/B	A	A	A
Slovenia	B (5)	B (5)	B (5)	B/C/E	B/C/E	B/C/E	A	A	A	A	A	A
Spain	B (3)	B (3)	B (3)	m	A/B/C/E	A/B/C/E	A/B	A/B	A/B	B	B	B

	Number of career stages (1)			Criteria for stage advancement (2)			Process for stage advancement (3)			Duration of appointment to a career stage (4)		
Sweden	B (2)	B (2)	B (2)	A/B/C/D/E	A/B/C/D/E	A/B/C/D/E	A	A	A	A/B	A/B	A/B
Other participants												
NSW (Australia)	B (4)	B (4)	B (4)	B/C/D	B/C/D	B/C/D	A	A	A	A/B	A/B	A/B
Flemish Comm. (Bel)	B (2)	B (2)	B (2)	A/B/C	A/B/C	A/B/C	A	A	A	A/B	A/B	A/B
French Comm. (Bel)	m	m	B	A/B/C/E	A/B/C/E	A/B/C/E	A/B	A/B	A/B	A	A	A
England (UK)	B (3)	B (3)	B (3)	A/B/C/D/E	A/B/C/D/E	A/B/C/D/E	A	A	A	A/B	A/B	A/B
Northern Ireland (UK)	B (4)	B (4)	B (4)	A/B/C	A/B/C	A/B/C	A	A	A	A	A	A
Scotland (UK)	B (3)	B (4)	B (4)	A/B/C/D	A/B/C/D	A/B/C/D	A/B	A/B	A/B	A	A	A
Wales (UK)	B (4)*	B (4)*	B (4)*	A/B/C	A/B/C	A/B/C	A/B	A/B	A/B	A	A	A
Partners												
Bulgaria	B (3)	B (3)	B (3)	A/B/C/D/E	A/B/C/D/E	A/B/C/D/E	A/B	A/B	A/B	A	A	A
Croatia	B (4)	B (4)	B (4)	A/B/C/D/E	A/B/C/D/E	A/B/C/D/E	A/B	A/B	A/B	B	B	B
Romania	B (4)	B (4)	B (4)	A/B/C/D/E	A/B/C/D/E	A/B/C/D/E	A/B	A/B	A/B	B	B	B
Singapore	B	B	B	B/C/D/E	B/C/D/E	B/C/D/E	A	A	A	A	A	A

Note: (1) A = Single stage career structure; B = Multi-stage career structure (number of stages in brackets); (2) A = Qualifications; B = Competencies; C = Experience; D = Performance; E = Professional development; (3) A = Evaluation; B = Certification; (4) A = Open ended; B = Fixed term.
Teachers' career stages here refer to a structured succession of formal positions with distinct task profiles and progressive responsibilities (distinct from salary increments), while typically maintaining classroom teaching responsibilities.
Wales (United Kingdom): The career stages correspond to induction, teacher, middle leader, senior leader.
Source: Question I.3 of the Policy Survey on School Education in the Digital Age.