7 England (United Kingdom)

This note provides an overview of England's digital education ecosystem, including the digital tools for system and institutional management and digital resources for teaching and learning that are publicly provided to schools and educational stakeholders. The note outlines how public responsibilities for the governance of digital education are divided and examines how England supports the equitable and effective access to and use of digital technology and data in education. This includes through practices and policies on procurement, interoperability, data privacy and regulation, and digital competencies. Finally, the note discusses how England engages in any initiatives, including with the EdTech sector, to drive innovation and research and development towards an effective digital ecosystem.

Key features

- In England (United Kingdom) (hereinafter England), the responsibility for providing access to digital infrastructure for education is split between the Department for Education and schools themselves. Schools receive set funding from central government to spend as they see fit. For local-authority-maintained schools, funding is managed by the authority; or by the trust if the school is part of a Multi-Academy Trust.
- The Department does not mandate individual products, such as student information systems and learning management systems. Schools are free to procure whichever system to meet their own requirements in relation to their educational contexts and circumstances. Though, the department maintains several dashboards which schools can use to draw data about schools and students.
- The department commissions other institutions and agencies to develop and provide digital teaching and learning resources (e.g. *Oak National Academy*). Schools may independently choose to acquire and use additional resources. The department offers various guidelines to help schools make decisions, but the use of any resources is not mandatory.
- Computing is a statutory part of the national curriculum from key stages 1 to 4.[1] Organising digital skills trainings for in-service teachers, specifying the use of digital technologies in curriculum, and developing students' digital literacies fall within the remit of schools themselves. However, the department provides several kinds of training opportunities for teachers and students.
- England's digital education strategy previously focused on building connectivity as a precondition for digital education. This work is ongoing and detailed below. Hardware provision was prioritised during the COVID-19 outbreak, to ensure an equitable access to and use of digital technologies – including various initiatives and grants targeting towards students from disadvantaged backgrounds. The department's current policies and programmes as well as future priorities are set out below.
- There is a UK wide digital strategy, encompassing topics wider than education, which focuses on six key themes: digital foundations, ideas and intellectual property, digital skills and talent, financing digital growth, spreading prosperity and levelling up, and enhancing the UK's place in the world. [1]

General policy context

In England, the Department for Education is responsible for children's services and education at all levels of state-funded schools.[2] These schools include local-authority-maintained schools, faith schools, academies, free schools and grammar schools, and they receive funding through either their local authority or directly from the government.[3] By contrast, fee-charging private education institutions – sometimes called "public schools" or "independent schools" in England – receive no government funding and do not have to follow the national curriculum. They are also exempted from benefitting from most government support programmes, which are only open to schools who meet certain criteria, for example high levels of deprivation. However, independent schools do have to be registered with the government and are inspected regularly.[4]

Division of responsibility

In England, the responsibility to provide schools with a digital education infrastructure is split between the Department for Education and schools themselves – as well as local authorities (for local-authority-maintained schools). For example, the department provides several digital systems to support schools directly, such as the Get Information about Schools database, and also guidance for schools on various topics, for instance their data and technology standards. Schools themselves procure other solutions for

school management, such as learning management systems and administrative function systems. They are also free to procure additional digital resources for teaching and learning from private vendors and education stakeholders, such as philanthropic organisations (for example, the *British Library*), education publishers (for example, *FlashAcademy*), teachers, and the country's public broadcaster *British Broadcasting Corporation* (BBC). As the responsibility for procuring a large proportion of digital infrastructure is devolved to schools, private companies have opportunities to provide privately developed digital solutions and resources for education.

To help schools make well-informed decisions regarding their procurement, various guidelines are provided by the Department for Education and public bodies. In addition, the rules that govern the access to and use of data and digital technologies in education, including data and privacy protection, are enacted by the central government. The United Kingdom General Data Protection Regulation (UK GDPR) – the UK implementation of the EU GDPR (with some minor modifications) – sits alongside the Data Protection Act 2018, governing all processing of personal data from individuals in the United Kingdom (hence, including students, teachers, and other education stakeholders in England).

The *Keeping children safe in education* (KCSIE) statutory guidance provides schools and colleges with information on what they should be doing to protect students online.[6] This includes specifying that schools have responsibility for: providing staff with regular safeguarding and child protection updates (including online safety); ensuring filtering and monitoring software is in place and regularly review its effectiveness; including online safety in relevant policies and considering it while planning the curriculum, any teacher training, the role and responsibilities of the designated safeguarding lead and any parental engagement; including the school's approach to personal mobile phone use in their behaviour policy.

Digital education strategy

The UK government has made efforts to digitalise various domains of the public service. The *Central Digital and Data Office* and the *Government Digital Service*, part of the UK Cabinet Office, are dedicated to providing digital service and enforcing several rules and policies across the government departments.[5] They are also working to streamline, personalise and modernise the Department for Education's digital and data services, automating processes and saving time at every level of the system.

In the context of digitalising public service sits a nationwide *Digital Strategy*, which the UK government published in June 2022.[6] The strategy is aimed at "harnessing digital transformation and building a more inclusive, competitive and innovative digital economy [in the United Kingdom]". It contains a section on education in England, which highlights cultivating digital skills and talents of students and people in various ways. For instance, by providing teachers with training on digital skills; equipping schools with the knowledge and facilities to teach students computing and related courses; encouraging the uptake of computer science subject in academic qualifications (GCSE and A-Levels, i.e. end of lower secondary and upper secondary diplomas); offering lifelong digital skills trainings for adults.

Taking into account this strategy and the aftermath of the COVID-19 pandemic, the Department for Education has made changes in their digital education policies and expenditure to enhance the digital infrastructure in schools, improving broadband, Wi-Fi and mobile coverage in schools, as well as providing digital devices to schools and students. The findings from a department-commissioned survey in 2021 confirm that the majority of schools has invested in new or upgraded technologies, including devices for students and teachers, to enable remote teaching and learning to take place smoothly.[7]

In terms of promoting the use of digital education infrastructure during the pandemic, the department offered the *Get Help with Remote Education* service that served as a one-stop-shop for teachers, providing guidance and resources for facilitating remote learning, including information about supporting vulnerable students and keeping students safe in digital education.[8] Technical support and training for accessing educational platforms (e.g. Google Classroom, Microsoft 365) were also provided: for example, the *EdTech*

Demonstrator Programme offered free peer-to-peer support on the effective use of digital technologies in education to over 2 500 state-funded schools and VET institutions.[9]

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The department has also started running a biennial *Technology in Schools Survey*, to capture up-to-date data to understand the current state, use and spread of technologies within primary and secondary schools in England, and thereby to support their policy commitments and inform future interventions.[12] Findings from the first *Technology in Schools* survey will be published in summer 2023.

In future years, the department will continue investing in hardware infrastructure, including broadband and Wi-Fi connections in schools (see *Equity of access* section later for details). Standards on broadband, Wi-Fi, and cybersecurity have been published, and the sets of standards on filtering, monitoring, cloud services and storage are forthcoming, to help schools and multi-academy trust leaders better understand their needs, maintain security, and support online safety. The department is intervening in cases where schools lack budget to meet these standards, for example their connectivity programmes which upgrade broadband or Wi-Fi to schools in priority areas who fall below these standards. In parallel, England's digital strategy for education will also focus on building a strong evidence base for effective use of technologies and embedding this evidence across their school system.

The public digital education infrastructure

This section reviews two aspects of the public digital infrastructure in England: digital solutions for system and school management, and digital resources for teaching and learning.

Digital ecosystem for system and school management

Student information system and school information system

To facilitate system and school management, the Department for Education manages a central education database, the *National Pupil Database* (NPD), which is created by linking individuals' personal information collected from data provided by schools and local authorities via statutory data collections (e.g. the school census) and attainment data from awarding bodies.[13] The database thus stores a broad range of students' data – from their name and date of birth, to standardised assessment results, special educational needs, family background and eligibility for free school meals. This data is tagged with the *Unique Pupil Number*, a unique identifier that tracks all students in state-funded schools throughout their schooling regardless of changes in their situation. Independent schools are not required to issue the *Unique Pupil Number* for their students, though some do so on a voluntary basis.

The National Pupil Database (NPD) is contained within the *Get Information About Pupils Service,* which is a student information system where schools and local authorities can find student-level NPD data and Pupil Premium funding information.[14] Access to this database is restricted as it contains confidential pupil information. Each school has a super user/approver who controls access to school users, and appropriate members of the local authorities also have access to this service.

Together with the Office for Standards in Education (Ofsted), the department has developed Analyse School Performance (ASP).[15] This system is designed to help education stakeholders – school principals, governors, local authorities, multi-academy trusts, dioceses, *Ofsted* and the Department for Education – to review and compare *both* school and student-level performances, and thereby plan school improvement. *Analyse School Performance* is a secure web-based service that gives school leaders, governors, Local Authorities, Multi-Academy Trusts, dioceses, the department, and Ofsted access to official detailed pupil level performance data. The service is designed to support accountability policy and helps schools improve by providing accurate attainment data. ASP is accessible via the department's single sign-on (SSO) service which offers users access to a number of systems. However, ASP is not interoperable with other Department for Education data websites. ASP reports use tables, graphs and charts to show the attainment and progress of the school and a wide range of different pupil groups. ASP data comes from a mix of collections, including census and performance data that is either sent directly to the Department for Education by schools or local authorities, or is collected on behalf of the department directly, some of which is a legal requirement.[16] Schools do not need to directly input data into ASP. This data is part of the assessment process, and schools cannot opt out of having this data collected: if their students participate in national examinations then their results will be collected. The type of information end-users can access on this system varies depending on their status (for instance, governors and trustees will only be entitled to view non-student-specific information).

ASP is only available only to schools, governors, trust leaders, inspectors, local authority and the Department for Education staff, but the *Find and Check School Performance* tool is a public dashboard.[17] Any parents or other members of the public can access this dashboard and look at a range of information available about any school in England. *Find and Check School Performance* draws data from *Analyse School Performance*; however, it is not as extensive. For instance, it does not contain Key Stage 1 (ages 5-7, Years 1 and 2) or phonics data, or detailed group and individual student performance data. Neither *Analyse School Performance* nor *Find and Check School Performance* is updated in real time. However, certain information about schools and their governance (e.g. the appointment or removal of headteachers, changes in contact detail) is updated on the *Get Information About Schools,* an online register for schools in England and Wales, whenever any of the fields associated with their record is changed. *Get Information about Schools* data is drawn from other national data collections in the same way as *Get Information about Pupils*.

In addition to these systems, *Ofsted* maintains the *Inspection Data Summary Report* system, its own web-based page accessible via *Analyse School Performance* or a separate *Ofsted* sign-in. This system is designed to show data for *Ofsted* inspectors to use when preparing for and during school inspections; though schools may require an account and associated permissions to access the information.

Analyse School Performance, *Find and Check School Performance*, *Get Information about Schools* and *Get Information about Pupils* are all separate systems, but they do pull data from each other. For instance, on a daily basis, the former two systems will pull some information (e.g. name, address) from *Get Information about Schools*.

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Digital assessment and career guidance systems

The Department for Education and its executive agency, the *Standards and Testing Agency*, administer *Multiplication Tables Check*, a statutory digital assessment for all Year 4 students (8-9 years old, primary education).[18] Another statutory assessment for measuring English and maths skills of new primary school students, *Reception Baseline Assessment,* is currently administered partially digitally, but the department is considering digitalising it further. In addition, a new *Digital Test for Literacy and Numeracy* is currently in the pipeline, which will involve a series of short digital activities and will be taken by Year 9 students (13-14 years old, secondary education).[19]

Digital assessments are also used in some VET and technical qualifications – for instance, in *Functional Skills Qualifications* delivered within apprenticeship standards, and also to adults. Some awarding organisations have developed qualifications to support teachers in the implementation of this digital assessment. There is no digital assessment used in GCSE and A-Levels, though all four of the main exam boards are now piloting digital exams and assessments. The department is also working with the *Office of Qualifications and Examinations Regulation* (*Ofqual*) to explore the potential opportunities and implications of further use of digital assessment in qualifications. Students using assistive technology for assessment has increased in England, as evidenced by a Department for Education study in 2021.[20]

The department also offers *Get into Teaching* an online career guidance platform for teachers and would-be teachers.[21] In addition, through the *National Careers Service*, the department also funds a digital careers advice platform for anyone over the age of 13 that provides skills self-assessment and connection to a professional advisor.[22] The *Careers and Enterprise Company*, which the department grant funds, complements this by supporting schools to fulfil their statutory duty to provide good career guidance for their students. This includes an online resource directory to support schools and colleges to manage their careers programme, plan careers activities, target support and collect student feedback systematically.[23]

Digital ecosystem for teaching and learning

Digital teaching and learning resources

The department provides various digital teaching and learning resources that schools may choose to use. Static digital learning resources (notably video lessons) targeted at early childhood, primary and secondary educational levels, as well as resources for students with special educational needs and disabilities (e.g. therapy-based lessons), are made openly available via the *Oak National Academy* website.[24] Established in response to the COVID-19 outbreak, the *Oak National Academy* operates independently, although it is strategically aligned to (and partly funded by) the Department for Education. Their resources therefore cover a broad range of subjects, and all are aligned with the curriculum objectives and classified according to a central (England-specific) taxonomy. Schools can choose to use these resources, and they often additionally procure interactive digital learning resources from the EdTech market. The department does not actively back or mandate individual products, and instead allows individual educational establishments to decide what technology they need to meet their requirements in relation to their educational contexts and circumstances. Yet, the Department for Education does operate the *Get help buying for schools* service, which offers free and impartial advice and guidance from procurement specialists for all state-funded schools in England on buying goods and services.

Some digital teaching and learning resources are also openly accessible to anyone in the country. In addition to the contents from *Oak National Academy*, the BBC, the country's main public broadcaster, delivers educational contents at primary and secondary levels via their public radio and television channels. They also maintain the *BBC Teach* website that supports teachers by curating curriculum-related content for the classroom, and the *BBC Bitesize* that provides educationally approved, curriculum-relevant self-study and home-learning materials to 5-16 year olds.[25] The resources on the *BBC Bitesize* are directly curriculum-relevant, although they are not developed in partnership with the Department for Education, instead using a small roster of education resource providers to co-produce curriculum content.[26] Students and teachers do not need to pay the TV licence fee to access the *BBC Teach* or *BBC Bitesize*.

Enabling the use of digital solutions and resources

Providing a public digital education infrastructure or funding to use digital resources does not necessarily mean that schools and teachers will use them. Different rules and guidelines can therefore support access to, and the use of, digital technologies in education.

Ensuring access and supporting use

Equity of access

England has undertaken a diversity of efforts to ensure an equitable access to educational opportunities at all levels of school. Building on the GBP 30 million (EUR 35 million) investment made available in 2021 for the *Connect the Classroom* pilot programme, which targeted schools with weak educational outcomes, the Department for Education is investing up to a further GBP 150 million (EUR 173 million) to upgrade schools that fall below their Wi-Fi connectivity standards in priority areas.[27] *Connect the Classroom* investment is targeted at all schools in the 24 Priority Education Improvement Areas, as part of intensive investment to address entrenched causes of underperformance and barriers to improvement.

The Department for Education and the Department for Digital, Culture, Media and Sport are investing a joint GBP 82 million (EUR 94 million) to accelerate gigabit capable broadband roll-out to schools to enable all schools to have access to a high-speed connection by 2025. The programme will cover the costs of connecting up to 3 000 rural schools not likely to be connected by commercial roll-out, and currently using outdated copper cables.

During the COVID-19 outbreak, the department rolled out 1.95 million laptops and tablets through the *Get Help with Technology* programme to disadvantaged students, assisting in their remote learning.[28] The laptops and tablets distributed through the Department for Education are now owned by schools, trusts, local authorities or VET providers, who can lend them to children and young people who need them the most. The department also provided grant funding to schools, local authorities and VET providers to contribute towards the technical support costs of setting up or resetting these devices. They also provided support for over for over 130 000 families to get online through uplifts in mobile data and 4G wireless routers. This included partnering with the country's leading mobile operators to provide free data to help over 33 000 disadvantaged children get online, and delivering over 100 000 4G wireless routers for students without connection at home.

In addition, albeit not specific to the education sector, wider efforts to tackle the digital divide and provide support for disadvantaged groups are underway by other government departments. For instance, the Department for Digital, Culture, Media and Sport funded a GBP 2.5 million (EUR 2.9 million) *Digital Lifeline* project to reduce the digital exclusion of people with learning disabilities, offering them free devices, data and digital support.

The Department for Education is currently in the process of creating a set of standards to support schools to understand their digital environment and know what technology they should have in place. Uneven access to digital learning platforms and resources will be a possible challenge as schools procure themselves their digital resources with no guidance or oversight.

Supporting students with special educational needs and disabilities (SEND)

In November 2020, the department-commissioned report *Rapid Literature Review on Assistive Technology in Education* evaluated studies of using these technologies with SEND students.[29] The report concluded that assistive technologies are under-utilised in the education sector, and recommended to develop assistive technology training courses for educators.

In March 2021, the department piloted training for mainstream school staff on how to use assistive technology effectively. The course focused on the technology that schools already have available or can easily obtain, such as text-to-speech tools. It aimed to give staff the confidence and capability to take full advantage of the range of technologies available in the classroom to support students with SEND. The findings from the independent evaluation of the pilot were promising, with participants reporting improved awareness, understanding and confidence in using assistive technologies, and feeling that the training would contribute towards removing barriers to learning for all students.[30]

Following the results of the pilot, the government is running another training course, with more schools, over a longer period, and with a more in-depth evaluation, to add to the evidence base in this area. This programme will continue to use the resources created for the pilot, including case studies, videos, short introductions, and a self-audit tool which schools can use to identify their key areas for development. They are publicly available in the *National Association for Special Educational Needs* online assistive technology resource bank.[31] The Office of Qualifications and Examinations Regulation (Ofqual*)* has also published a study on the use of assistive technologies for assessment.[20]

Supporting the use of digital tools and resources

Most centrally provided digital solutions and resources, such as the career guidance platforms and the *Oak National Academy* contents, are used on an opt-in basis, and schools may choose to acquire additional solutions and resources. There is no other direct government involvement in procuring digital education infrastructure. However, the department seeks to facilitate the uptake of digital tools and resources by providing guidelines and professional learning opportunities. For instance, comprehensive guidelines exist on procuring and using digital technologies in education, and include a detailed list of privately-developed learning management systems (called "school management information systems" in the list), digital and technology standards, as well as the department-approved framework for buying digital goods and services.[32] Further guidance is provided for schools at upper secondary and VET levels from the *Joint Information Systems Committee* (JISC), a government-funded non-profit organisation. Also, the *EdTech Demonstrator Programme* mentioned earlier (offering peer-to-peer support on the use of digital technologies) created a peer-to-peer network to support schools move to a more sustained use of technology to reduce workload, improve outcomes, support school improvement, and create a more inclusive curriculum.

More supports were available during the COVID-19 outbreak. In addition to the *Get Help with Technology* programme providing devices for disadvantaged students, the department launched the *Digital Platform* programme, for which primary and secondary schools could use earmarked grants to buy the virtual learning environment.

Cultivating the digital competence of education stakeholders

The Department for Education has published standards for the minimum level of practice expected of primary and secondary teachers in England, which include their digital competence.[33] During the pandemic, extra measures were introduced to enhance teachers' digital skills, such as the *Get Help with Remote Education,* the *EdTech Demonstrator Programme*, and the *Assistive Technology Training Pilot*.

The department also funds the *National Centre for Computing Education*, which offers a variety of services to support teachers and students with the computing curriculum.[34] This includes funding of 34 Computing Hubs, which offer continuous professional development opportunities for teachers, and guidance and support to local schools and colleges, to improve the teaching of computing and increase participation in computer science qualifications.[35] Computing Hubs receive funding directly from the department, and then make free or subsidised courses available to local schools. All state-funded schools and colleges, special schools and alternative provision setting in England are eligible for support, but some hubs only target specific phases of education. In addition, *T Levels*, new vocational and technical-based qualifications at upper secondary level (for England only) was launched in September 2020, including qualifications on the digital skills, data analysis as well as software development.[36]

While these initiatives should help enhance teachers' and students' digital skills and competence, some disparities in their digital capacity will likely remain considering that teacher standards are not strictly enforced and the responsibility for the actual provision of digital trainings to both in-service teachers and students is devolved to the schools themselves. Some schools (e.g. academies, free schools, private schools) have considerable autonomy and can decide whether and how to teach students digital skills

throughout the curriculum; their teaching staff are also not required to meet the minimum level of practice expected of teachers in England, including those around digital competence.[37]

The department also engages with parents, carers and students via its *Parents and Pupils omnibus survey*. The panel consists of 11- to 17-year-olds who attend state-funded secondary schools in England and their parents or carers. Questions are submitted via policy teams, and sometimes include questions on digital and technology-based topics.[66] This is also the case for the School and College panel, a regular online survey which gathers views from senior leaders and classroom teachers in state-funded primary and secondary schools and colleges.[67]

Governance of data and digital technologies in education

Supporting the use of digital technology and the data it generates can only work if stakeholders recognise that this use will not work to their detriment. There are thus rules about protecting the data and privacy of education stakeholders, and ensuring the interoperability across digital education ecosystem. As schools are also responsible for providing access to components of the digital education infrastructure, part of the regulatory efforts concerns offering relevant guidelines to support schools in their decision-making.

Protecting data and privacy in education

In education, as in other sectors in England, data and privacy protection falls under the Data Protection Act 2018 and the UK GDPR.[38] There is no further rule that *specifically* covers the protection of data and privacy of students, or of teachers and school staff; although the department provides guidelines about these aspects, including the resources for understanding schools' responsibilities after the Brexit.[39] There is also a statutory guidance on what schools and college should be doing to protect students online, such as: providing teachers and school staff with regular safeguarding and child protection updates; ensuring filtering and monitoring software is in place and regularly reviewing its effectiveness; considering online safety while planning the curriculum; including in schools' behaviour policy their approach to personal mobile phone use, and so forth.[40]

In terms of access to education data (including student data), there are several specific rules that govern the equitable access to and use of data in England.[41] These rules specify that, subject to the Data Protection Act and the UK GDPR, non-child identifiable data can be shared upon request with third parties that conduct research, conduct educational statistics, evaluate education policies, or provide information, advice or guidance for promoting the education and well-being of children as well as for the public good. As part of the department's commitment to transparency, they publish details of all organisations with whom they have shared personal data, and a short description of the project.[42] These details are updated quarterly and include details of all shared in the quarter after data sharing agreement is signed.

The department also provides suggested wording for privacy notices to schools, local authorities and other organisations that are the initial data controllers in the data supply chain, and with whom parents typically have the most active and visible relationship.[43] These notices include specific sections of how government uses the data. Alongside this, the department's overarching personal information charter outlines to data subjects how they use their personal data, and their rights and responsibilities.[44] Sitting below the charter will be dataset or system-specific privacy materials specifically informing how data might be used within a certain system or dataset. For instance, the Longitudinal Education Outcomes privacy notice or the National Pupil Database privacy notice.[45]

The use of automated decision-making, AI-powered algorithmic model, and digital proctoring in education currently remains limited. Therefore, few regulations exist to govern these aspects (other than the restriction imposed by the UK GDPR). Given the prominence of the AI and algorithm-related issues today, however, some regulatory efforts are in the pipeline, such as a 2020 review into bias in algorithmic decision-making and the National AI Strategy.[46] Also, albeit not education-specific, a standard about

algorithmic transparency in public decision-making processes was recently published in early 2023 by the *Central Digital and Data Office*, an agency of the UK Cabinet Office.[47]

Enhancing interoperability

In light of the diverse digital solutions developed by different private companies and education stakeholders, interoperability of digital technologies and the data they generate is currently a crucial issue in England. To enhance the interoperability and facilitate data portability across systems, the department specifies the *Common Transfer File*, a specific technical standard which is used to transfer student data in a consistent format when a student transfers from one school to another.[48] This ensures the receiving schools receive information necessarily to support the student continuing education and welfare. Detailed guidelines are offered to help with this data transfer process.[49] While using this standard is not mandatory for non-local-authority-maintained schools like academies and free schools, it is still highly encouraged.

The department maintains a Common Basic Data Set (CBDS) which is a file containing definitions for common data items that schools and local authorities use in certain software systems, for example school management information systems.[48] The CBDS also gives information on the structure and standards used within many department data collections relating to schools and local authorities.

The Department for Education (DfE) has also set up *DfE Sign-in*, a secure single sign-on (SSO) service, which offers eligible end-users with access to a number of the department's data systems, including two student information systems (*Analyse School Performance* and Get *Information About Pupils*) and online register for schools (*Get Information About Schools*).[50]

Supporting innovation and research and development (R&D) in digital education

In the last five years, the Department for Education has supported innovation in digital education in various ways. It has published white papers to clearly communicate their innovation priorities about digital technologies and data in education. The department has also commissioned academics, universities and research organisations to actively research various aspects of digital education. This includes a report on the use of assistive technology for SEND students, and a comparative analysis of 14 countries' policies and strategies on EdTech usage.[51] There is also a suite of four reports on the EdTech industry in England, which aim to understand the current market, consider future opportunities, better understand EdTech implementation, and learn from the experience of using technology for remote teaching.[52] As noted in the previous section, there are rules ensuring that researchers and research institutions can equitably access educational data for R&D purposes (subject to rigorous processes).

Since 2023, the department runs a biennial *Technology in Schools survey (TiSS)* to understand the current state, use and spread of technology within primary and secondary schools in England. This allows them to support various strands of their current policy commitments and to inform future interventions.

In addition, the department has endowed the *Education Endowment Foundation*, an independent charity, with a further GBP 137 million (EUR 157 million) to encourage innovative and effective evidence-based teaching, including using digital technology.[53] The foundation gathers evidence for raising the attainment of students from socio-economically disadvantaged backgrounds, including the evidence on the use of digital technologies to improve student learning and support enhanced teaching.[54] Their upcoming research trials will explore teaching approaches using EdTech, which features of the technology, and how they are used, may support academic attainment.[55] The trials will cover three focus areas: EdTech for formative assessment; EdTech used to support the development of specific skills in mathematics, literacy, and modern foreign languages (current trials, and; Computer adaptive learning (CAL) or Artificial Intelligence (AI) technologies for teaching and learning).

In terms of public-partner partnerships, there is no particular policy in England for financially supporting the development of the EdTech sector (e.g. through formal subsidies, tax credit, or direct investment in start-up companies). Incentives to foster public-private collaborations are therefore mostly non-monetary. For instance, the government has worked with the *British Education Suppliers Association* on the *LearnED* roadshow – a national series of free educational technology conferences for educators between 2021 and 2022. The Department for Education has also collaborated with the same association in the *Great British Classroom* events, which showcased the education products and services, including EdTech materials.[56]

Notes

[1] "Key stages" are blocks of years into which the national curriculum in England is organised: key stage 1 (5-7 years old), key stage 2 (7-11 years old), key stage 3 (11-14 years old), key stage 4 (14-16 years old).

[2] The three other constituent nations of the United Kingdom, i.e. Scotland, Wales and Northern Ireland, have their own devolved government department responsible for education.

[3] For a detailed explanation on the types of schools, see https://www.gov.uk/types-of-school.

[4] https://www.gov.uk/types-of-school/private-schools#:~:text=Private%20schools%20(also%20known%20as,being%20funded%20by%20the%20government. For this reason, "schools" is used in this country note to refer to state-funded schools, unless otherwise stated.

[5] *Central Digital and Data Office*: https://www.gov.uk/government/organisations/central-digital-and-data-office; *Government Digital Service*: https://www.gov.uk/government/organisations/government-digital-service

[6] https://www.gov.uk/government/publications/uks-digital-strategy

[7] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1057817/Education_Technology_EdTech_Survey.pdf

[8] https://www.gov.uk/guidance/get-help-with-remote-education

[9] For the full list of supporting programmes and initiatives, see:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1057817/Education_Technology_EdTech_Survey.pdf

[10] https://www.gov.uk/guidance/get-help-with-remote-education

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https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1057817/Education_Technology_EdTech_Survey.pdf

[12] https://portal.iffresearch.com/mrIWeb/mrIWeb.dll?I.Project=J12069O&id=

[13] https://find-npd-data.education.gov.uk/

[14] Pupil premium is funding to improve education outcomes for disadvantaged pupils in schools in England. For more information: https://www.gov.uk/government/publications/pupil-premium/pupil-premium.

[15] https://www.analyse-school-performance.service.gov.uk/

[16] For instance, if their students participate in national examinations, schools cannot opt out of having the exam data collected.

[17] https://www.gov.uk/school-performance-tables

[18] https://www.gov.uk/government/collections/multiplication-tables-check. While this is a statutory assessment, it is not an exam, and students do not re-sit regardless of their result.

[19] Further details about this new assessment (e.g. sample or whole cohort, launch date) are to be confirmed. Currently, there is also a whole cohort assessment at the end of primary education (Year 6), but this is paper based.

[20] 2021 Study on the use of assistive technology: for assessment https://www.gov.uk/government/publications/the-use-of-assistive-technologies-for-assessment/the-use-of-assistive-technologies-for-assessment

[21] https://getintoteaching.education.gov.uk/

[22] https://nationalcareers.service.gov.uk/

[23] https://www.careersandenterprise.co.uk/careers-leaders/gatsby-benchmarks/

[24] https://www.thenational.academy/

[25] *BBC Teach*: https://www.bbc.co.uk/teach; *BBC Bitesize*: https://www.bbc.co.uk/bitesize

[26] https://www.bbc.com/aboutthebbc/whatwedo/publicservices/learning#:~:text=BBC%20Bitesize%20supports%20students%20with%20their%20educational%20needs,reception%20age%20through%20to%20school-leaving%20exams%20and%20beyond

[27] The *Connect the Classroom* programme is targeted at schools in the "Education Investment Areas" selected by the department, as part of the investment to address entrenched causes of educational underperformance and barriers to improvement. All schools within the areas, and particularly those below the Ofsted rating of "Good" (i.e. rated "requires improvement" or "inadequate") are the main target of the *Connect the Classroom*. For further details on the selection of Education Investment Areas, see: https://www.gov.uk/government/publications/education-investment-areas-selection-methodology

[28] https://www.gov.uk/government/collections/get-help-with-technology-for-remote-education

[29] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/937381/UKAT_FinalReport_082520.pdf

[30] https://www.gov.uk/government/publications/assistive-technology-training-pilot-evaluation

[31] https://nasen.org.uk/assistive-technology/

[32] https://www.gov.uk/government/collections/using-technology-in-education#buying-ict-hardware-and-services. The Department of Education also operates the *Get help buying for schools* service, which offers free and impartial advice and guidance from procurement specialists for all state-funded schools in England on buying goods and services in general: https://www.gov.uk/guidance/get-help-buying-for-schools.

[33] https://www.gov.uk/government/publications/teachers-standards

[34] https://computingeducation.org.uk/

[35] https://teachcomputing.org/

[36] https://www.gov.uk/government/publications/introduction-of-t-levels/introduction-of-t-levels

[37]https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1026591/Staff_Advice_Handbook_Update_-_October_2021.pdf

[38] Data Protection Act 2018: https://www.gov.uk/data-protection; UK GDPR: https://ico.org.uk/for-organisations/guide-to-data-protection/guide-to-the-general-data-protection-regulation-gdpr/

[39] https://www.gov.uk/guidance/eu-exit-guide-data-protection-for-education-providers

[40] https://www.gov.uk/government/publications/keeping-children-safe-in-education--2

[41] For example: *The Education (Individual Pupil Information) (Prescribed Persons) (England) Regulations 2009*; *The Education (Information About Children in Alternative Provision) (England) Regulations 2007*; *The Education (Student Information) (England) Regulations 2015*. For the full list, see: https://www.gov.uk/guidance/data-protection-how-we-collect-and-share-research-data .

[42] https://www.gov.uk/government/publications/dfe-external-data-shares

[43] https://www.gov.uk/government/publications/data-protection-and-privacy-privacy-notices

[44] https://ukc-word-edit.officeapps.live.com/we/error/error.html?aspxerrorpath=/we/Our%20personal%20information%20charter%20tells%20you%20how%20and%20why%20the%20Department%20for%20Education%20(DfE)%20uses%20your%20personal%20data%20and%20your%20rights%20and%20responsibilities

[45] https://www.gov.uk/government/publications/longitudinal-education-outcomes-study-how-we-use-and-share-data/longitudinal-education-outcomes-leo-privacy-notice; https://www.gov.uk/government/publications/national-pupil-database-npd-privacy-notice/national-pupil-database-npd-privacy-notice

[46] https://www.gov.uk/government/publications/cdei-publishes-review-into-bias-in-algorithmic-decision-making/main-report-cdei-review-into-bias-in-algorithmic-decision-making; https://www.gov.uk/government/publications/national-ai-strategy

[47] https://www.gov.uk/government/publications/guidance-for-organisations-using-the-algorithmic-transparency-recording-standard/algorithmic-transparency-recording-standard-guidance-for-public-sector-bodies

[48] https://www.gov.uk/government/collections/common-transfer-file. For more information on what the CTF comprises, see https://www.gov.uk/government/publications/common-basic-data-set-cbds-database.

[49] https://www.gov.uk/government/publications/school-to-school-guides-for-schools-and-local-authorities

[50] For the full list of services accessible via DfE sign-in, see: https://services.signin.education.gov.uk/. These services are not always necessarily interoperable with one another; for example, *Analyse School Performance* is not interoperable with other department data websites.

[51] https://www.gov.uk/government/publications/assistive-technology-at-stakeholder-reports;

https://www.gov.uk/government/publications/international-evidence-on-decision-making-on-technology

[52] https://www.gov.uk/government/publications/the-education-technology-market-in-england; https://www.gov.uk/government/publications/future-opportunities-for-education-technology-in-england; https://www.gov.uk/government/publications/implementation-of-education-technology-schools-and-colleges; https://www.gov.uk/government/publications/education-technology-for-remote-teaching

[53] https://educationendowmentfoundation.org.uk/

[54] https://educationendowmentfoundation.org.uk/education-evidence/guidance-reports/digital

[55] The trials will cover three focus areas: (1) EdTech for formative assessment; (2) EdTech used to support the development of specific skills in mathematics, literacy, and modern foreign languages [current trials]; (3) Computer adaptive learning or Artificial Intelligence (AI) technologies for teaching and learning.

[56]

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/958990/International-Education-Strategy-_2021-Update.pdf