2022-23 Technology in Schools Survey

Research report

November 2023

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Glossary of terms

CPD – Continuing professional development

EdTech - Education technology

Formative assessment – assessments carried out as part of day-to-day activities

FSM – Free school meals

Gbps – Gigabits per second

GIAS – Get Information About Schools

HR – Human resources

OS – Operating system

SEND – Special educational needs and disabilities

SLT – Senior leadership team

Summative assessment – exams and tests

UPS – Uninterrupted Power Supply

Executive Summary

The use of technology in education has the potential to support a range of efficiencies in school delivery alongside inclusive teaching practices and improved pupil outcomes. Released in March 2022, the Department for Education (DfE) schools White Paper sets out a range of ambitions in this context[1]:

- For every school in the country to have the right infrastructure in place to make the most of modern digital technology for pupils, including the tools provided by England's growing market in education technology.

- The creation of an environment where schools can use technology to support innovation and the spread of evidence-based practices.

- Funding of £150m (subsequently raised to £200m) to support schools in priority areas to upgrade their connectivity to meet new digital and technology standards.[2]

In late 2022, IFF Research was commissioned to conduct a five-wave biennial Technology in Schools Survey (TiSS) to help the DfE to understand how best to support schools to embed and use technology in ways that support cost savings, workload reductions and improved pupil outcomes. The TiSS survey builds on its predecessor, the EdTech Survey 2020-21, but in most cases it is not directly comparable due to changes in the questionnaire design and methodology. Indicative findings are nevertheless referenced where appropriate.

The TiSS was commissioned to better understand a range of objectives which can be broadly grouped as:

- Schools' decision-making and planning around the use of technology, including who makes these decisions and what information they use.

- What technology is being used for and how effective it is.

- The advantages of and barriers to effective technology implementation and use.

- The quality of the technology (hardware / software) being used, and the extent to which schools are meeting standards for digital and technology.

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[1] Opportunity for all: strong schools with great teachers for your child - GOV.UK (www.gov.uk)
[2] The department's "Meeting digital and technology standards in schools and colleges" service (available at: https://www.gov.uk/guidance/meeting-digital-and-technology-standards-in-schools-and-colleges) also provides guidance to schools on key areas of their technological infrastructure, with all standards due to be published by the end of 2023. At present, these cover broadband, network switching and cabling, and wireless networks (including connection speeds, safeguarding, security, etc).

- Schools' use and experience of DfE digital services.

It is intended that the findings will also be used to help the education technology sector understand the technology landscape of the school sector.

Methodology

The research focused on primary and secondary schools in England, including LA maintained schools and academies. Independent schools and special schools were not in scope of this research.[3] Due to the broad range of topics covered, there were separate questionnaires for Headteachers (or other members of the school's senior leadership team such as Deputy or Assistant Headteachers, or business professionals such as school business/operational managers), teachers, and school information technology (IT) leads.

The questionnaires were developed in collaboration with DfE and were cognitively tested with 15 school staff before the start of survey fieldwork. The surveys took place between January and June 2023. They were mainly conducted online, with some targeted telephone interviewing among leaders to boost response. Per the approach used for the EdTech Survey 2020-21, the programme was designed to obtain completed responses from leaders, teachers and IT leads in the same school. However, having leaders share contact details for teachers and IT leads in their schools or disseminate the survey via direct links proved to be ineffective for this iteration of the surveys. As a result, different methods were used to increase the volumes of teachers and IT leads taking part in the research including disseminating the survey links via a teachers' panel, social media and websites targeting school IT leads. These methodological differences (along with some differences in the survey questionnaires) mean that the TiSS and the EdTech surveys are not directly comparable in all cases.

In total, 1,877 individual schools completed a survey, encompassing 770 school leaders (31% of whom took part by telephone), 1,186 teachers, and 323 IT leads. More than one response was received per school in the following scenarios:

- Multiple teacher responses: more than one teacher responded to the teacher survey across 140 participating schools. A small number of these schools also responded via the IT lead and/or school leaders survey (39 in total).

- Multiple responses across the three surveys: A small number of schools (16 in total) saw a response to all three surveys. A further 85 saw a response to both the teacher and leader surveys, 33 to the teacher and IT lead surveys and 30 to the IT and school leaders survey.

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[3] This was because Independent schools, special schools and colleges have different mechanisms of support and were likely to experience different barriers.

The data for school leaders and IT leads were weighted to be representative of the population of mainstream primary and secondary schools in England (using profile data from the DfE's Get Information About Schools database). The data for teachers were weighted to be representative of the equivalent population of teachers in England, using the School Workforce Census.

Key findings

Strategic planning and decision making about technology

Indicative comparison shows that more schools have a digital strategy in place in 2023 compared with 2020-21, increasing from 54% to 68% of secondary schools and from 38% to 55% of primary schools.

Leaders most commonly reported that the school headteacher had overall strategic responsibility for the use of technology (39%), followed by the senior leadership team (SLT) (27%). Primary leaders were significantly more likely to indicate that the headteacher had strategic responsibility compared with secondary leaders (42%, vs. 17% of secondary leaders). Findings suggest that many teachers do not feel engaged in strategic decisions about education technology in their schools. Around one-third of teachers agreed that their school/trust provided opportunities to feedback on the use of education technology in classes (33%), engaged with teachers in the planning stages (31%), and monitored the effectiveness of technology in the classroom (30%).

Teachers have more input about decisions to use technology in the classroom with half (51%) of teachers saying they were guided by school policy but could also make their own decisions. A further 15% had autonomy to make their own decisions because there was no school policy. Conversely, 30% teachers said that they were fully bound by school policy.

How technology is being used in schools

Availability and use of devices

The ratios of devices available to teachers and pupils (as reported by IT leads) varied widely according to type of device and school phase.

For teachers, 75% of primary schools reported having a ratio of at least 1 laptop per teacher, compared with 63% of secondary schools, with a rise in the prevalence of laptops for all teachers in primary schools since 2020-21. The proportion of schools reporting a ratio of at least 1 tablet per teacher or 1 desktop per teacher was similar to that reported in 2020-21. Tablets were more prevalent in primary schools (42% of primary schools reported a ratio of at least 1 tablet per teacher vs. 9% of secondary

schools) and desktops were more prevalent in secondary schools (64% of secondary schools reported a ratio of at least 1 desktop to every teacher vs. 37% of primary schools).

For pupils, laptops were more commonly available than either tablets or desktops, with just over 9 in 10 primary and secondary schools reporting that they had 'any' laptops available for pupils. Tablet availability for pupils was higher in primary than secondary schools (77% of primary schools reported that any were available vs. 54% of secondary schools), whereas desktop availability was higher in secondary schools (95% of secondary schools reported that any were available vs. 43% of primary schools). The proportion of primary schools reporting that they had no tablets or desktops available for pupils increased compared with 2020-21. It is possible that the figures for 2020-21 were affected by the Covid pandemic although there has not been a similar change in secondary schools.

Most teachers reported that they had used interactive whiteboards (86%), laptops/ notebooks (86%), desktop computers (74%) and tablet computers (65%) as part of their lessons. Specialist assistive devices were the least used, by 34% of primary and 40% of secondary teachers, as well as being the type of hardware that was least likely to be available in schools at all (reportedly not available in 38% of primaries and 25% of secondaries). Investment in technology to support pupils with SEND was one of the top areas for investment for leaders over the next 3 years.

Use of technology

Both leaders and teachers used technology across a range of classroom activities, most commonly for delivering lessons (99% of leaders and 98% of teachers). Technology was least used for both formative and summative assessments, though with summative assessments this is not surprising as paper-based exams and tests remain the norm in schools.

In terms of supporting teaching and learning, technology was most commonly being used to support homework and collaborative learning (90% and 80% of teachers involved in these activities said they used technology to some extent for these tasks).

Leaders were using technology across the range of their school management activities. For example, almost all leaders across primary and secondary schools alike reported that they used technology for pupil / student data management (99%), parental / carer engagement (99%), communication with and delivery of governance and financial management (95%). Overall, technology was used to a wider extent to support school management activities in secondary schools compared with primary schools, in particular for timetabling (100% of secondaries compared with 65% of primaries).

Quality and impact of technology used

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Suitability of technology

Overall, the majority of teachers regarded interactive whiteboards, desktops, laptops/ notebooks and tablets used in school to be completely or mostly fit for purpose. Teachers in primary schools were more positive about whiteboards, laptops, tablets and specialised assistive devices being fit for purpose, while those in secondaries were more positive about desktops.

For devices that did not completely meet the needs of the school, IT leads reported that wear and tear was the main reason for interactive whiteboards (51%), desktop computers (57%) and laptops / notebooks (56%), whereas for tablet computers it was unsupported / outdated software or operating systems (56%). This is likely to be a greater issue for primary schools, where the use of tablets is more widespread.

Over nine-in-ten IT leads thought their email and productivity suite (97%), digital storage (94%), and servers (90%) were fit for purpose. For each of these, IT leads in secondaries had higher levels of confidence than their counterparts in primaries.

Benefits of technology: workloads

Over seven-in-ten leaders felt that technology saved time on the following tasks: parental/carer engagement and communication (78%), managing staff and delivering CPD (72%), and communication with and delivery of governance (70%). The tasks where fewest leaders thought technology saved time were timetabling (32%), supporting flexible working practices (50%) and financial management (54%).

Over half of teachers felt that technology saved time for collaborating and sharing resources with others (63%), supporting remote teaching and learning (59%) and planning lessons/ curriculum content (53%). The tasks which fewest teachers thought technology brought positive impacts on time spent were formative assessments and summative assessments (34% each).

Overall, leaders were more positive than teachers about the impact of technology on workload. Over four-in-ten (44%) leaders thought that technology had reduced staff workload over the last three academic years (with 32% who said it had made no difference and 18% who said it had increased). This compared with 30% of teachers who thought technology had reduced their workload, alongside 45% who said it had made no difference and 23% who said it had increased. Leaders were more optimistic about future benefits, with 55% anticipating that technology would reduce staff workload over the next three academic years, compared with 37% of teachers. Leaders with a digital strategy in place were more likely to report that technology had already reduced staff workload (49% vs. 38% of other leaders) and that it would reduce staff workload in the future (59% vs 50%).

Secondary school leaders (54%) and teachers (36%) were more likely than their counterparts in primary schools (42% and 25% respectively) to believe that technology had reduced staff workloads over the last three years. Similarly, they were more optimistic about the impact of technology on workloads over the next 3 years – 64% of leaders and 42% of teachers in secondaries anticipated this, compared with 53% and 33% in primaries. Teachers who reported their devices at their school were not fit for purpose were more likely to feel that their workload had increased compared to those who reported that their school's devices were fit for purpose.

Benefits of technology: pupil attainment

Both leaders and teachers considered that technology particularly supported 4 classroom activities 'extremely well': collaborating and sharing resources (48% of leaders and 42% of teachers), planning lessons/curriculum content (50% of leaders and 40% of teachers), delivering lessons (47% of leaders and 39% of teachers), and tracking pupil progress (48% of leaders and 32% of teachers). Teachers were also very positive about technology in respect of safeguarding, with around a half (48%) saying it supported this area 'extremely well'. In contrast, education technology was rated less well in terms of supporting formative assessments, summative assessments or supporting pupils with SEND.

Overall, education leaders were more positive than teachers about the impact of technology on pupil attainment; 67% of leaders thought that technology had contributed to improved pupil attainment over the last three academic years, as compared with 45% of teachers. Looking to the future, 83% of leaders predicted that technology would contribute to improve pupil attainment over the next three academic years, as compared with 64% of teachers.

Barriers to increased uptake of technology

Leaders and teachers cited a number of barriers preventing the increased uptake of technology in their schools. Financial barriers were by far the biggest, with 96% of leaders and 89% of teachers citing budgetary constraints, followed by the high cost of some technology (93% of leaders and 90% of teachers). Primary school teachers were more likely to cite these than secondary teachers, but there was no difference by phase among leaders.

The cost of Continuing Professional Development (CPD) to learn how to use technology was also cited by 63% of leaders and 65% of teachers, and was a bigger barrier for primary school leaders and teachers than those in secondary schools. Lack of time for CPD to learn how to use technology effectively was also a key barrier, cited by 68% of leaders and 75% of teachers (with no difference by phase). Interestingly, while 60% of

leaders deemed staff skills and confidence with technology to be a barrier, only 39% of teachers agreed this was the case.

It is important to note that barriers around CPD may not be specific to technology. For instance, the 'Working Lives of Teachers and Leaders core report' found that the biggest barriers to accessing any forms of CPD was the lack of time for CPD due to workload or competing priorities (66%), the funding/the cost of CPD (42%), and lack of cover (41%)[4] .

Teachers regarded some pupil-related factors to be barriers to the increased update of education technology in their work, in particular the availability of technology in pupils' homes (82%), internet connectivity in pupils' homes (75%), and pupils' digital skills (59%). Secondary teachers were more likely than primary teachers to cite internet connectivity (80% compared with 70%).

Wi-Fi and broadband connectivity in school were less common barriers although still mentioned by around half of leaders (53% and 46% respectively) and over half of teachers (62% and 55%). Notably, primary school leaders were more likely to raise these as barriers – 55% cited Wi-Fi connectivity (compared with 45% of secondary leaders) and 49% cited broadband (compared with 31%).

Decisions about future investment

Investment decisions about the use of technology were mainly made at school level (59%), followed by a mixture of school and trust/local authority level (32%). Primary leaders were more likely to report decisions being taken mainly at school level than secondary leaders (60% vs. 52%).

Around nine-in-ten leaders (88%) were confident that their school had the expertise needed to buy the right technology, which was mirrored among IT leads (86% felt confident). Leaders in schools with a digital strategy reported higher confidence levels in having the expertise to buy the right technology compared to those without (or unsure if they had) a digital strategy (94% vs. 79%).

Leaders reported that investment decisions were influenced primarily by the school budget (95%), but evidence of best practice was also important (79%). The top 3 sources of information that leaders used to inform these decisions were Network, IT or business managers (41%), other schools that use technology (38%), and research bodies (31%).

Leaders' top areas for technology investment in teaching-related activities over the next 3 years were devices for pupils (62%), supporting pupils with SEND (55%), and delivering lessons (45%). Overall, leaders were less likely to be planning investment in school administration/management activities compared with teaching-related activities, with the

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[4] Working lives of teachers and leaders - wave 1: core report (publishing.service.gov.uk)

most common school administration/management activities they had investment plans for being moving storage and systems to the cloud (41%), pupil/student data management (40%) and parental/carer engagement/communications (32%).

Infrastructure and digital standards

The technical survey of IT leads collected a range of data on school infrastructure including wired end-user bandwidth delivery, on-premises versus cloud-based storage, information on the main operating systems used by schools, and information on critical data back-ups and cyber security. Many of these align with the digital and technology standards[5] for schools and therefore provide a baseline against which future progress can be mapped.

Around three-quarters of IT leads (72%) were aware of the digital and technology standards highlighted in 'Meeting digital and technology standards in schools and colleges', published by the DfE, consisting of 29% who were fully aware, and 43% who were aware of it, but not in detail. A quarter of IT leads surveyed were unaware of the standards (25%).

Of those that were aware of the published standards, one-in-six IT leads (16%) reported that their school met all current infrastructure standards. A further four-in-ten reported that their school did not meet all the current infrastructure standards but have either put additional plans in place (outside of any involvement in a DfE programme) to meet them (31%) or were involved with a DfE programme and will meet requirements once they had received this support (12%). Around a quarter of IT leads (23%) reported that their school did not meet current requirements and had no additional plans to meet them.

Views on the efficacy of the school Wi-Fi, broadband and network switching capabilities were often more positive among those who reported that their school adhered to associated requirements. At the overall level, 77% agreed that the broadband connection in the school was reliable, for example. This rose to 85% among those who reported that their school uses a full fibre connection for its broadband speed and 92% among those who reported that their school had a back-up broadband connection if the main one goes down.

Cyber security

Among IT leads there was limited awareness of different safety and cyber security arrangements at the school, particularly in primary schools and especially around business and disaster recovery plans in the event of a cyber attacks (37% of primary IT leads were unsure whether their school had one of these vs. 13% of secondary IT leads).

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[5] Meeting digital and technology standards in schools and colleges - Guidance - GOV.UK (www.gov.uk)

IT leads were asked how often, if at all, various safety and cyber security incidents had happened to the school in the previous 12 months. Staff receiving fraudulent emails was by far the most commonly reported issue overall, with 62% of IT leads reporting this had happened at least once in the 12-months prior and 11% explaining that it happened on a daily basis. This rose to 19% among secondary IT leads specifically (compared with 9% among primary IT leads). The next most commonly reported issue was schools being impersonated in emails or online (23%) and computers becoming infected with viruses, spyware or malware (19%).

In the last 12 months, 73% of leaders said their school had provided cyber security training for staff, while 62% of teachers reported completing it. Provision of this training was higher in secondary than primary schools (81% vs. 72%), as was completion by teachers (66% vs. 59%).

Over half (55%) of IT leads said that staff undergo cyber security awareness training every 12 months, although a significant minority (18%) were unsure on this point. This training was more likely to be compulsory for all staff in secondary than in primary schools (58% vs. 37%).

Staff training

The vast majority of leaders (84%) thought that over half of their teaching staff were confident using technology in the classroom. In contrast 15% of leaders thought fewer than half their teaching staff were confident.

Staff training was most often provided on tracking student progress (mentioned by 94% of leaders), tracking student wellbeing (81%) or delivering lessons (75%); the latter two were more likely to be provided in secondary than primary schools. Fewer leaders said their school or trust provided training on planning lessons (56%), assistive technologies (46%) or workload management (43%).

Seven-in-ten teachers (70%) had done training on how to use education technology since September 2021. This was most typically training on how to ensure pupils stay safe when using education technology tools (43%), or on how to use a new software platform or product (41%); fewer had been trained on using technology to improve pedagogy/learning outcomes (21%), using new hardware (18%), or using accessibility features (13%). Primary school teachers were more likely than secondary school teachers to have undertaken training around pupil safety when using education technology tools (48% vs. 37%), and to have already applied this learning (89% vs. 77%, of those being trained).

The 3 top mentions that teachers cited to improve their knowledge of how to use technology effectively were opportunities to trial new technology (cited by 54% of

teachers), subject or programme specific support about using technology effectively (52%), and ability to talk to other schools that are using technology effectively (49%). High levels of demand for CPD should be taken in context of the relatively high proportion of leaders and teachers citing time and cost of CPD as a barrier to further uptake of technology.

Interaction with DfE guidance

Leaders were most likely to use gov.uk for relevant guidance documents, for information on new education policy announcements and for information about funding available. Leaders were less likely to be using gov.uk for advice on the management and recruitment of staff or for advice on the management of buildings / infrastructure - around a quarter of leaders reported that they never used it for either of these aspects.

Ease of use ratings for DfE guidance and services on gov.uk and views on whether the site saved them time and school money were mixed, with evidence that gov.uk could be difficult to use for some activities. The area that caused the most difficulty for leaders centred on finding information about funding available; almost a half (47%) of leaders using gov.uk for this aspect rated the site as difficult to use.

Academies vs. LA maintained schools

Findings for academies and LA maintained schools were similar for many aspects of technology and education technology, but there was evidence that primary academies were more digitally mature than their LA maintained school counterparts.

Primary academies were more likely than primary LA maintained schools to have a digital technology strategy in place (60% vs 51%), to have a Business or IT continuity plan (46% vs. 26%), and a formal policy covering cyber security risks (39% vs. 20%). Primary academies were also more likely than primary LA-maintained schools to have in-house technical support (79% vs. 50%).

Further to this (and perhaps related to a higher incidence of having digital strategies in place, as well as in-house support), teachers in primary academies were more likely than their counterparts to have received training on how to use education technology since the start of the academic year, and to have undertaken cyber security training over the last 12 months. Primary academies were also more likely to test their cyber attack plans at least annually, and to be confident with their digital storage capabilities. Leaders in primary academies also indicated a higher intention to invest in technology for some of their school management and administration activities over the next 3 years, compared with their counterparts in primary LA maintained schools.

Generally secondary schools had higher levels of digital maturity than primary schools, and the differences between academy and LA maintained schools were less pronounced[6]. That said, secondary academies were more likely to have governance or risk management arrangements in place (e.g. a business continuity plan, a staff member whose job role including information security or governance) compared to secondary LA schools.

Changes over time

Questionnaire changes and the introduction of new topics to the 2023 survey means that only limited comparisons can be made to the EdTech Survey 2020-21. However, and as noted earlier, indicative comparison show that more schools have a digital strategy in place in 2023 compared with 2020-21.

In terms of the ratio of hardware to teachers and pupils some indicative differences were evident for primary schools, with a fall in the proportion of primary schools that had either tablets available for teachers and pupils, or desktops for pupils. Instead, however, there was an increase in the proportion of primary schools who reported that they had laptops available for 100% (or more) of their teachers (up from 57% of primary schools in 2020-21 to 75% in 2023). No changes in hardware provision were recorded across time for secondary schools.

Other findings from the survey suggest that there has been an uplift in cyber security training for staff both in secondary and primary schools, that the level of support for pupils to use accessibility features built into mainstream devices has increased, that more secondary schools are now using technology for financial management, and the proportion of secondary teachers using technology for safeguarding has increased.

In terms of barriers to increased use of technology and investment planning, indicative comparisons with 2020-21 shows that there has been a decline in some of the barriers, including a decline in mentions around connectivity, availability, staff confidence, safeguarding concerns, and limited procurement guidance. That said, financial barriers have remained consistently high with 93% of leaders citing the high cost of technology as a barrier in 2023 (vs. 99% in 2020-21) and 96% citing budgetary constraints (vs. 97% in 2020-21).

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[6] Sample sizes for secondary schools were also lower which limits the ability to report on differences at the 95% confidence level.

1. Introduction

Education technology (EdTech) refers to the practice of using technology to support teaching, learning and the effective day-to-day management of education institutions and their business operations. It includes infrastructure, hardware, software and services that help aid teaching and the daily running of education institutions.

The use of technology in education has the potential to support a range of efficiencies in school delivery alongside inclusive teaching practices and improved pupil outcomes. Released in March 2022, the Department for Education (DfE) schools White Paper sets out a range of ambitions in this context[7]:

- For every school in the country to have the right infrastructure in place for making the most of modern digital technology for pupils, including the tools provided by England's growing EdTech market.

- The creation of an environment where schools can use technology to support innovation and the spread of evidence-based practices.

- Funding of £150m (subsequently raised to £200m) to support schools in priority areas to upgrade their connectivity to meet new digital and technology standards.[8]

In late 2022 DfE commissioned IFF Research – an independent research agency – to conduct a five-wave biennial Technology in Schools Survey (TiSS) to help track progress against these objectives and to provide a nationally representative estimate of technology use and digital maturity in English primary and secondary schools. The research builds on the Education Technology (EdTech) survey[9] conducted in 2020-21 but the results are not always directly comparable due to changes made to the survey questionnaires and to the methodology.

Aims and objectives of the research

The research will help the DfE to understand how best to support schools to embed and use technology in ways that support cost savings, workload reductions and improved pupil outcomes. More specific aims and objectives within this include building an understanding of:

- Schools' decision-making and planning around the use of technology, including who makes these decisions and what information they use.

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[7] Opportunity for all: strong schools with great teachers for your child - GOV.UK (www.gov.uk)
[8] Meeting digital and technology standards in schools and colleges - Guidance - GOV.UK (www.gov.uk)
[9] Education technology (EdTech) survey: 2020 to 2021 - GOV.UK (www.gov.uk)

- What technology is being used for and how effective it is.

- The advantages of and barriers to effective technology implementation and use.

- The quality of the technology (hardware / software) being used, and the extent to which schools are meeting standards for digital and technology.

- Schools' use and experience of DfE digital services.

It is intended that the findings will also be used to help the education technology sector understand the technology landscape of the school sector.

Methodology

As with the 2020-21 study, the research focused exclusively on mainstream primary and secondary schools.[10] Due to the range of issues addressed, three distinct audiences were targeted. These covered headteachers (or other members of the school's senior leadership team such as Deputy or Assistant Headteachers, or school business professionals such as school business/operational managers), teachers and IT leads. Bespoke questionnaires were developed for each audience.

The questionnaires were developed in collaboration with DfE and cognitively tested in advance of main survey fieldwork. This exercise was designed to check that the questions across the 3 surveys were clear, unambiguous and that schools were able to select appropriate responses. The cognitive interviews were conducted online between 7th November and 1st December, with 15 school staff (senior leaders, teachers and IT leads).

Sample and fieldwork outcomes

In total, 1,877 individual schools completed the survey, encompassing 770 school leaders (31% of whom took part by telephone), 1,186 teachers, and 323 IT leads. More than one response was received per school in the following scenarios:

- Multiple teacher responses: more than one teacher responded to the teacher survey across 140 participating schools. A small number of these schools also responded via the IT lead and/or school leaders survey (39 in total).

- Multiple responses across the three surveys: A small number of schools (16 in total) saw a response to all three surveys. A further 85 saw a response to both the

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[10] This is because special schools and colleges have different mechanisms of support and are likely to experience different barriers.

teacher and leader surveys, 33 to the teacher and IT lead surveys and 30 to the IT and school leaders survey.

All English primary and secondary schools were in scope of the research, with the exception of Pupil Referral Units (PRUs), alternative provision (APs), special schools[11] and independent schools. The full breakdown audience type, phase and school type is outlined in Table 1.1 below. More detailed breakdowns available in in Appendix 1.[12]

Table 1.1 Completed surveys by key subgroup

	Total	**Academies**	**LA maintained**
Primary Leaders	526	190	336
Primary Teachers	350	126	224
Primary IT Leads	155	51	104
Secondary Leaders	244	187	57
Secondary Teachers	836	623	213
Secondary IT Leads	168	116	52

Source: Technology in Schools Survey 2022-23

Per the approach used for the EdTech Survey 2020-21, the programme was designed to obtain completed responses from leaders, teachers and IT leads in the same school. However, having leaders share contact details for teachers and IT leads in their schools or disseminate the survey via direct links proved to be ineffective for this iteration of the surveys. As a result, different methods were used to increase the volumes of teachers and IT leads taking part in the research including disseminating the survey links via a teachers' panel, social media and websites targeting school IT leads. These methodological differences (along with some differences in the survey questionnaires) mean that the TiSS and the EdTech surveys are not directly comparable in all cases.

There were four stages in total:

- Stage 1 (original design): an initial sample of 8,632 leaders was drawn from the register of schools and colleges in England, 'Get information about schools' (GIAS). Individualised survey links were created for each record, which closed once the specified leader took part. At the end of the survey, leaders were asked for contact information for IT leads and up to 4 teachers at their school. IFF

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[11] This was because such schools and colleges have different mechanisms of support and are likely to experience different barriers as a result.
[12] FSM quintiles are used as a proxy for deprivation levels. Schools with the lowest proportion of students eligible for Free School Meals are considered the least deprived and those with the highest proportion are considered the most deprived.

Research then disseminated individualised teacher and IT professional survey links to the contacts provided.

- Stage 2: a "top-up" sample of 5,000 leaders was drawn from the School Workforce Census (SWC) to address lower than anticipated levels of response to stage 1. Instead of asking for contact information of teachers and IT professionals, IFF Research created an open link that participating leaders could forward to relevant individuals in their school. This approach was used to mitigate concerns around data sharing expressed by some leaders during stage 1.

- Stage 3: 2 research panels[13] were used in order to bolster the number of teacher interviews further. An open link was used at this stage and sent to the panel members to boost survey responses.

- Stage 4: to maximise IT lead responses, the open link was also disseminated via leading media outlets in the education sphere.

Further information on each stage is available in the Technical Appendix.

Weighting

The data was weighted to ensure the final analysis was representative of the national profile of schools (for leaders and IT leads) and teachers (for teachers) in England. Different databases were consulted depending on the audience type:

- A single response per school was sought for the leader and IT lead surveys. As such, the data was weighted to school level in England (focusing on state-funded mainstream schools) using GIAS data.

- As noted, multiple responses were possible with participating schools for the teacher survey, with this occurring in 140 schools in total. In addition, as the teachers' survey asks about teacher's individual experiences and views of using educational technology, profile data from the School Workforce Census (SWC) was used to weight the results to the teaching population in England.

Weights were applied to each audience's datasets separately. For leaders, school phase weighting was first applied to align the survey data against the proportion of primary and secondary schools in England. After assessing the demographics against GIAS after applying this weight, it was decided to also add weights on Multi or Single Academy Trust (MAT/ SAT) status and the proportion of pupils eligible for Free School Meal (FSM) quintiles. For IT leads, the same process was followed but this dataset was additionally weighted by primary and secondary school size.

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[13] A panel is a group of people (in this case, teachers) who have agreed to receive communications about taking part in relevant survey research.

For teachers, a school phase weight was applied to align the proportion of primary and secondary school teachers in England. Following this, further weights were applied to align the dataset to the age profile of teachers as well as the proportion who teach in academies and LA-maintained schools in England using the SWC.

Statistical confidence

Although the sample has been weighted to be nationally representative, the data is still subject to sampling error. The extent of sampling error depends on:

- The sampling approach: the closer it is to a random sample the less the sampling error.

- The sample size: the larger the sample the lower the likely sampling error.

- The survey result: the closer to 50% the less confident statistically we can be in the finding.

The confidence intervals associated with each survey are outlined in Table 1.2. Taking the leaders survey as an example, the sample of 770 means that, statistically, we can be 95% confident that the 'true' value of any survey finding of 50% will lie within a +/- 3.5% range (i.e., 46.5% - 53.5%).

Table 1.2 Confidence intervals across the three surveys

95% CI	Survey finding at 10% or 90%	Survey finding at 30% or 70%	Survey finding at 50%
770 leaders	2.1	3.2	3.5
1,186 teachers	1.7	2.6	2.8
323 IT leads	3.3	5.0	5.5

Reporting conventions

Subgroup differences are only referenced in this report when they are statistically significant at the 95% confidence level. These are depicted in tables and charts with the use of an asterisk (*), unless otherwise stated.

Figures based on fewer than 50 responses are not reported as standard. If any such figures are reported, this will be explicitly stated. Any conclusions drawn from these figures should be treated with caution.

2. Strategic planning and decision making

This chapter starts by looking at the prevalence of digital technology strategies in schools. We then consider the different areas these cover (where they exist), before exploring awareness and adherence with DfE's digital technology standards.[14]

Whether schools have a digital technology strategy in place

Having any form of digital technology strategy was more common in secondary settings (68%) than in primaries (55%). In particular, secondaries were almost twice as likely to have a standalone digital technology strategy (reported by 30% vs. 17% of primary leaders). By contrast, primary leaders were more likely to report that they did not have a strategy in place, nor was there one planned (19% vs. 6% of secondary leaders) (Figure 2.1). This is perhaps unsurprising; it is generally accepted that requirements around technology are greater at secondary schools when compared with primary schools and as such, more likely to need / warrant an associated strategy.

Figure 2.1 Whether school/trust has a digital technology strategy in place (Leaders)
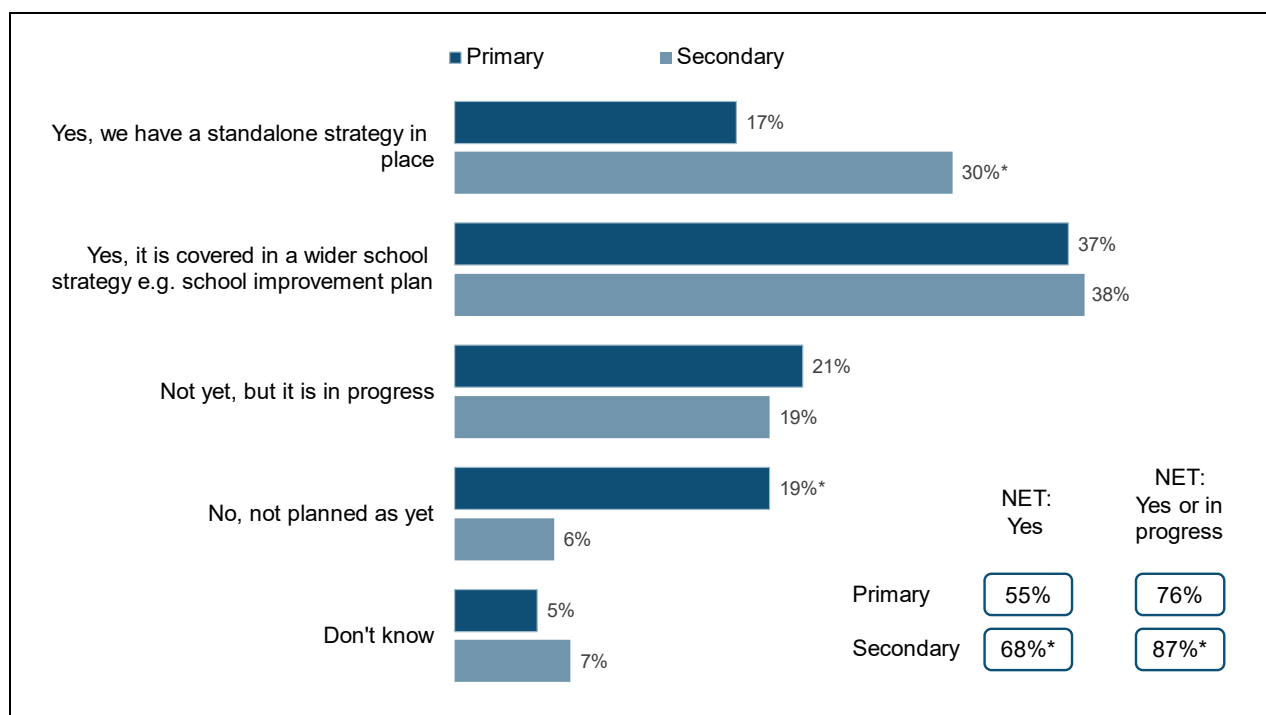
F1.Base: Primary (n=526). Secondary (n=244).
*indicates a significant difference between primary and secondary.
Source: Technology in Schools Survey 2022-2023 (Leaders survey).

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[14] Meeting digital and technology standards in schools and colleges - Guidance - GOV.UK (www.gov.uk)

Within primary schools, there was also a difference according to academy status, with 60% of leaders in primary academies reporting the existence of a digital strategy compared with 51% of leaders in primary LA maintained schools.

In schools which already had a digital technology strategy in place, responsibility for developing this strategy most commonly sat with the Senior Leadership Team (SLT) in both primaries (46%) and secondaries (52%). In primary schools, this was followed by the Headteacher (19%). In secondaries, it was more common for this responsibility to sit with the Network or IT Manager (18%) than with the Headteacher (9%). There was a similar pattern for implementing digital strategy (as opposed to developing it). In primaries and secondaries alike, this most commonly sat with the SLT (mentioned by 68% of primaries and 71% of secondaries). But primaries were more likely to mention Headteachers (50%, compared with 26% of secondaries), and secondaries were more likely to mention a Network or IT Manager (54%, compared with 38% of primaries). Appendix 2 provides further detail about the roles and responsibilities surrounding digital technology at schools, the number of years existing strategies cover and how frequently they are reviewed.

Although the question wording was revised slightly for the 2022-23 survey, which means direct comparisons are not possible, the indication is that there has been an increase in the presence of a digital strategy over the past few years. In the 2020-21 survey:

- 38% of primary leaders said they had a digital strategy, which has now increased to 55%.[15]

- 54% of secondary leaders said they had a digital strategy, which has now increased to 68%.[16]

Coverage of existing / planned strategies

Most leaders reported that their digital technology strategy covered (or will cover) a technology maintenance plan (85%), adapting approaches to teaching (79%), and an infrastructure refresh plan (77%). The full list of areas covered is shown in Figure 2.2. Almost all leaders (96%) indicated that their digital technology strategy does/will cover at least one these elements.

[15] Source: 2020-21 survey – Question 10. Is there a digital technology strategy for your school?; 2022-23 survey Does your school or trust have a digital technology strategy in place? This may sometimes be referred to as a "digital action plan" or similar, or could be integrated into a broader whole-school improvement plan.
[16] Ibid.

The coverage of the digital technology strategy was generally similar by phase, except that secondary leaders were more likely to cover an infrastructure refresh plan than primary leaders (89% vs. 74%).

Figure 2.2 What is covered in the school digital technology strategy (Leaders)

Category	Percentage
A technology maintenance plan	85%
Adapting approaches to teaching or learning	79%
An infrastructure refresh plan	77%
An approach to sustainable use of technology	66%
Assistive technologies e.g., Braille devices, digital communication aids	44%
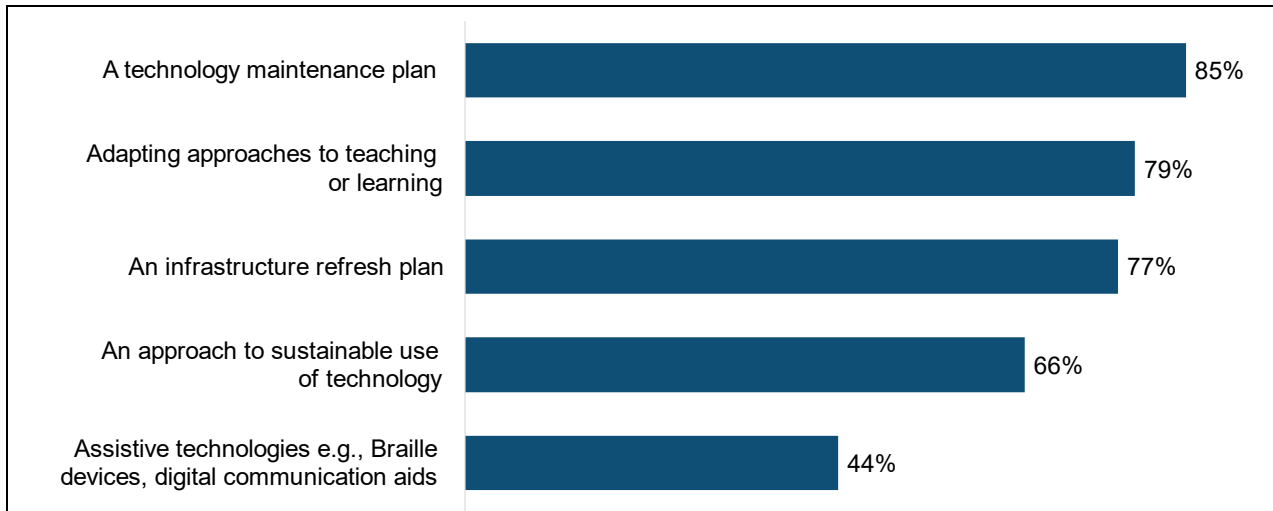
F3D. Base: All leaders with a strategy in place (n=608).
Source: Technology in Schools survey 2022-2023 (Leaders).

Teachers' engagement with digital technology strategy in schools

Around a third of teachers agreed that their school/trust provided opportunities to feedback on the use of education technology in classes (33%), engaged with teachers in the planning stages (31%), and monitored the effectiveness of education technology in the classroom (30%). However, for all of these statements, a similar proportion said they disagreed (Figure 2.3). Likewise, more teachers disagreed than agreed that their school/trust clearly communicated its digital strategy to teachers (40% disagreed, 23% agreed).

Figure 2.3 Teacher engagement with education technology in schools (teachers)
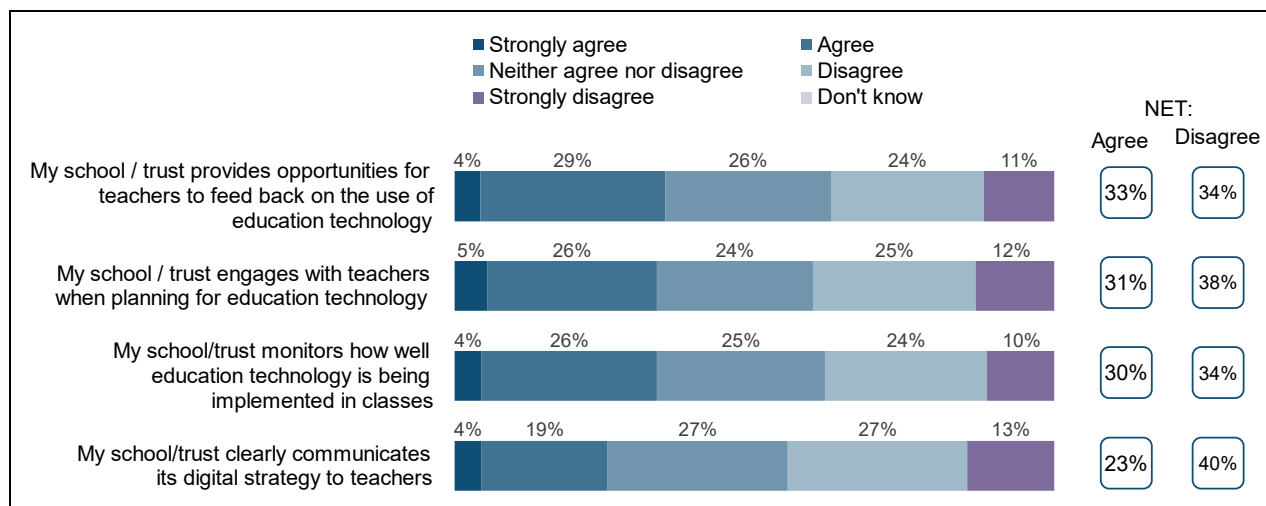
Despite the finding that having a digital technology strategy was less common in primary schools, primary teachers were more likely than secondary teachers to agree that their school/trust:

- Engages with teachers when planning for education technology (38% vs. 24%)

- Monitors how well education technology is being implemented in classes (37% vs. 21%)

- Provides opportunities for teachers to feed back on the use of education technology (36% vs. 30%)

- Clearly communicates its digital strategy to teachers (26% vs. 19%).

Digital and technology standards

The Department for Education are continuing to develop digital and technology standards in schools and colleges.[17] These are aimed at providing support and guidance for education providers on the use of the right digital, infrastructure and technology.[18]

Awareness

Overall, around three-quarters of IT leads (72%) reported that they were aware of the standards. This was higher among secondary IT leads (80%) than those in primaries (70%). Within primaries, awareness was higher among IT leads in academies compared with those in LA-maintained schools (79% compared with 63%) – there was no difference

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[17] Meeting digital and technology standards in schools and colleges - Guidance - GOV.UK (www.gov.uk)
[18] Using technology in education - GOV.UK (www.gov.uk)

for secondary schools. This is consistent with the finding that digital technology strategies were more common at the secondary phase.

Breaking this 72% figure down, 29% reported that they were fully aware of the standards and 43% reported that they were aware, but not in detail. There were no differences by phase within these categories.

By academy status, IT leads working in primary academies were more likely to be aware of the standards, either to some extent or fully, than those working in primary LA maintained schools (79% vs. 63% and 41% vs. 18% respectively). There were no significant differences among secondary IT leads.

Meeting the standards

Of those explaining that they were aware of the published standards, one-in-six IT leads (16%) reported that their school met them all (Figure 2.4). A further two-in-five (43%) reported that their school met some, but not all. Those falling into this group had either:

- Put additional plans in place to meet the standards, outside of any involvement in a DfE programme (31%, rising to 42% of secondary IT leads vs. 28% of primary IT leads), or:

- Were involved with a DfE programme and would meet requirements once they had received this support (12%).

By contrast, around a quarter of IT leads (23%) reported that their school did not meet current requirements and had no additional plans to meet them. It is also worth noting that:

- One-in-five primary IT leads were unsure whether their school or trust was meeting the standards (20% vs. 10% of secondary IT leads). This is linked to them being less likely to be in a specialist IT role.

Those working at LA maintained primaries were much more likely to report that they did not meet all of the standards, nor did they plan to (32% vs. 15% working at primary academies).[19]

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[19] This again links back with the finding that primary schools were less likely to have a digital strategy in place when compared with secondary schools.

Figure 2.4 Whether schools are meeting the digital and technology infrastructure standards highlighted in 'Meeting digital technology standards in schools and colleges' (IT leads)
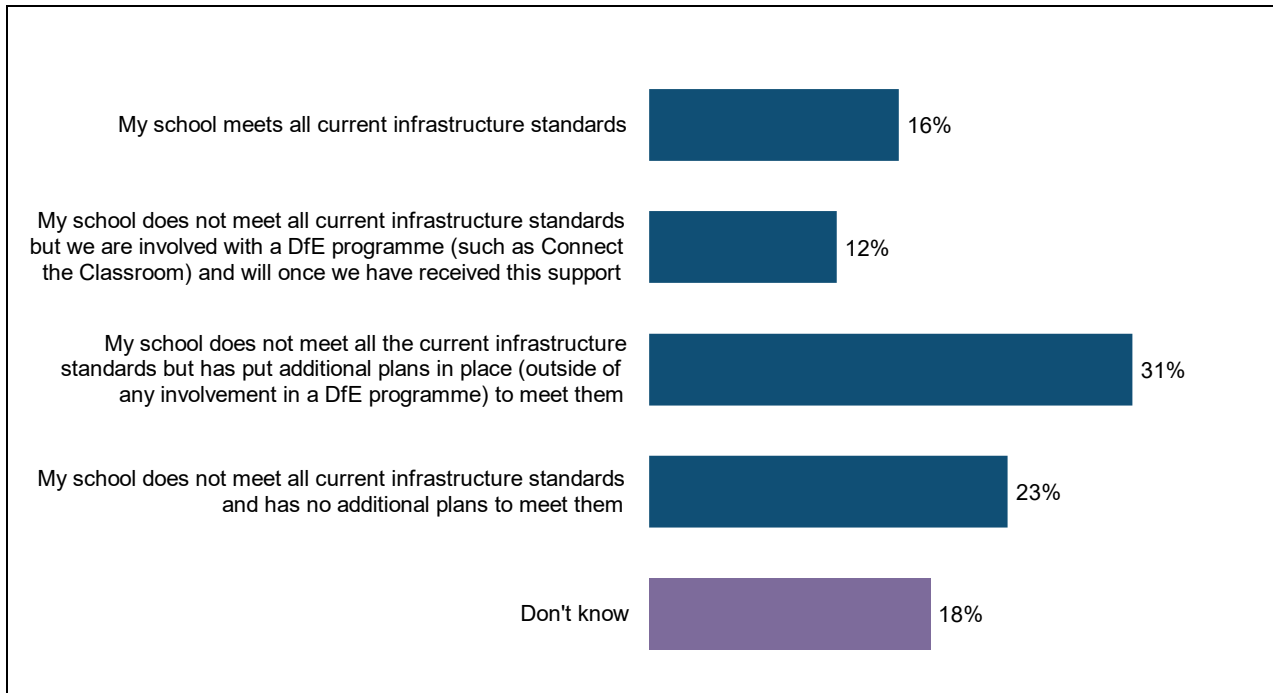
Base: IT leads aware of digital/technology standards (n=245).
Source: Technology in schools survey 2022-2023 (IT leads).

As well as asking IT leads whether their school met the current standards at the overarching level (as outlined in Figure 2.4), the IT survey also went into detail about whether specific technologies included in the standards were in place. The data from these questions is explored in depth in Chapter 6. Exploring these reveals a level of disconnect: among IT leads reporting that their school met all of the standards, significant minorities had reported that they did not have some of the specific technologies covered in practice. A range of examples are included in Figure 2.5.

Figure 2.5 Cross-analysis of meeting the digital and technology infrastructure standards

Legend: ■ Technology available ■ Technology not available ■ Don't know

Standard	Technology available	Technology not available	Don't know
All online devices and software are licensed for use	100%		
All devices in the school network have a configured boundary or software firewall	97%		3%
Network devices (e.g. routers, switches and servers) are known and recorded	93%		7%
School / contractor working on school's behalf regularly reviews the effectiveness of your filtering and monitoring system (at least once a year)	92%	4%	4%
Anti-malware and anti-virus software is used to protect all end-user devices in the network, including cloud based networks	92%	1%	6%
Network switches in the school have sufficient security features to protect users and data from unauthorised access	87%	11%	1%
School uses multi-factor authentication to access personal or sensitive operational data and functions	84%	14%	2%
Fully functional Wi-Fi signal throughout the school building and externally as required	82%	8%	10%
Full fibre connection for broadband speed	78%	10%	12%
Core network switches connected to at least 1 Uninterrupted Power Supply (UPS)	71%	20%	9%
A platform to centrally manage the network switching infrastructure	71%	17%	12%
Have two or more backup copies, with at least one backup copy being offsite	54%	38%	9%
School uses the latest wireless network approved standard by the Wi-Fi Alliance, Wi-Fi 6	52%	18%	30%
Back-up broadband connection if the main one goes down	19%	67%	14%

Base: IT leads reporting that their school currently meets all digital/technology standards (n=33).
**the proportions here represent the % agreed, % disagree and % that did not know or neither agreed nor disagree
Source: Technology in schools survey 2022-2023 (IT leads).

As shown, all online devices and software being licensed for use completely aligned with the response this group gave that their school met all current infrastructure standards.

This was not the case with other areas, with the availability of a back-up broadband connection (if the main one goes down) demonstrating the most variation: of those who reported that their school met all of the standards, just 19% reported that they had a back-up broadband connection in place. These discrepancies suggest that understanding of the specific standards is perhaps not fully realised. This being said, the relatively low base size should be taken into consideration when interpreting these results (only 33 IT leads reported that their school met all of the current standards).

Deciding what technology to use in classrooms

Overall, eight-in-ten teachers (82%) said that a school policy existed for them to use when deciding which technology to use in their classroom. When asked about how these decisions were made, half (51%) of teachers said they were guided by school policy but could also make their own decisions. A further 15% had autonomy to make their own decisions because there was no school policy. Conversely, 30% teachers said that they were bound by school policy (Figure 2.6).

Figure 2.6 How teachers decide which technology to use in their classroom (Teachers)
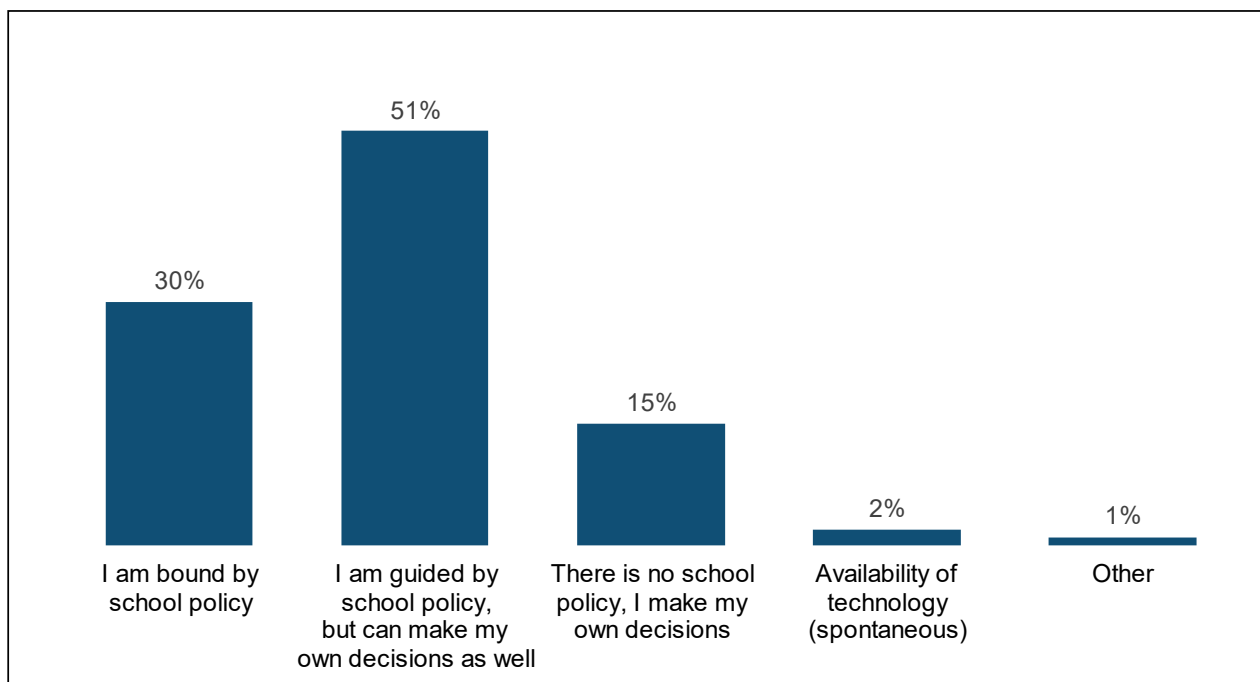
X1. Teachers (n=1,186).
Source: Technology in Schools Survey 2022-23 (Teachers survey).

There were no significant differences in the reported decision-making processes between primary and secondary school teachers, or between teachers in academy and LA maintained schools.

Sources valued for guidance on choosing technology

Teachers were asked what sources they would most value when choosing what technology to use. Findings show that teachers particularly value advice and guidance from their peers. The two top mentions were other teaching staff (40%) and other schools that use technology well (39%) (Figure 2.7). Other key mentions included research bodies (such as the Education Endowment Foundation) or academic journals, leading practitioners in the field of education technology, and leadership staff – all of which were mentioned by more than one-in-five teachers.

Figure 2.7 Sources most likely to value when choosing what technology to use (Teachers)

Source	Percentage
Other teaching staff (internal or external to my school)	40%
Other schools that use technology well / user reviews	39%
Research bodies (e.g., EEF) or academic journals	25%
Leading practitioners / researchers in field of EdTech	23%
Leadership staff	22%
In-house evaluations	17%
Interest groups or individuals active on social media	15%
Education sector publications / websites	12%
Network, IT or Business Managers	11%
Academy trust	9%

X3. All teachers (1,186)
Mentions of 9%+ shown.
Source: Technology in Schools Survey 2022-23 (Teachers survey).

There were a handful of differences by phase, with 28% of secondary teachers reporting the use of research bodies or academic journals (vs. 22% of primary teachers) and primary teachers more likely to report referring to leadership staff (30% vs. 14% of secondary teachers) and the academy trust (11% vs. 6% of secondary teachers).

Evaluating the effectiveness of technology

Around one-in-five leaders (19%) indicated that they had an evaluation plan or framework in place to monitor the effectiveness of the technology they used, while just over one-fifth of leaders (22%) monitored success in other ways, such as through survey feedback or pupil outcomes data. A quarter of leaders (25%) did not have an evaluation plan or framework in place at the time of the survey, but said one was planned. A similar proportion (24%) did not have an evaluation plan or framework and had no plans for one.

By phase, primary leaders were more likely to report that they did not have any plans or framework in place, nor were they planning to do so (25% vs. 17% of secondary leaders). This echoes earlier findings around whether schools had a digital strategy in place: deployment of a digital strategy appeared more common in secondary settings, and specifically a standalone strategy (30% vs. 17% of primary leaders).

Figure 2.8 Whether schools have an evaluation plan or framework (Leaders)
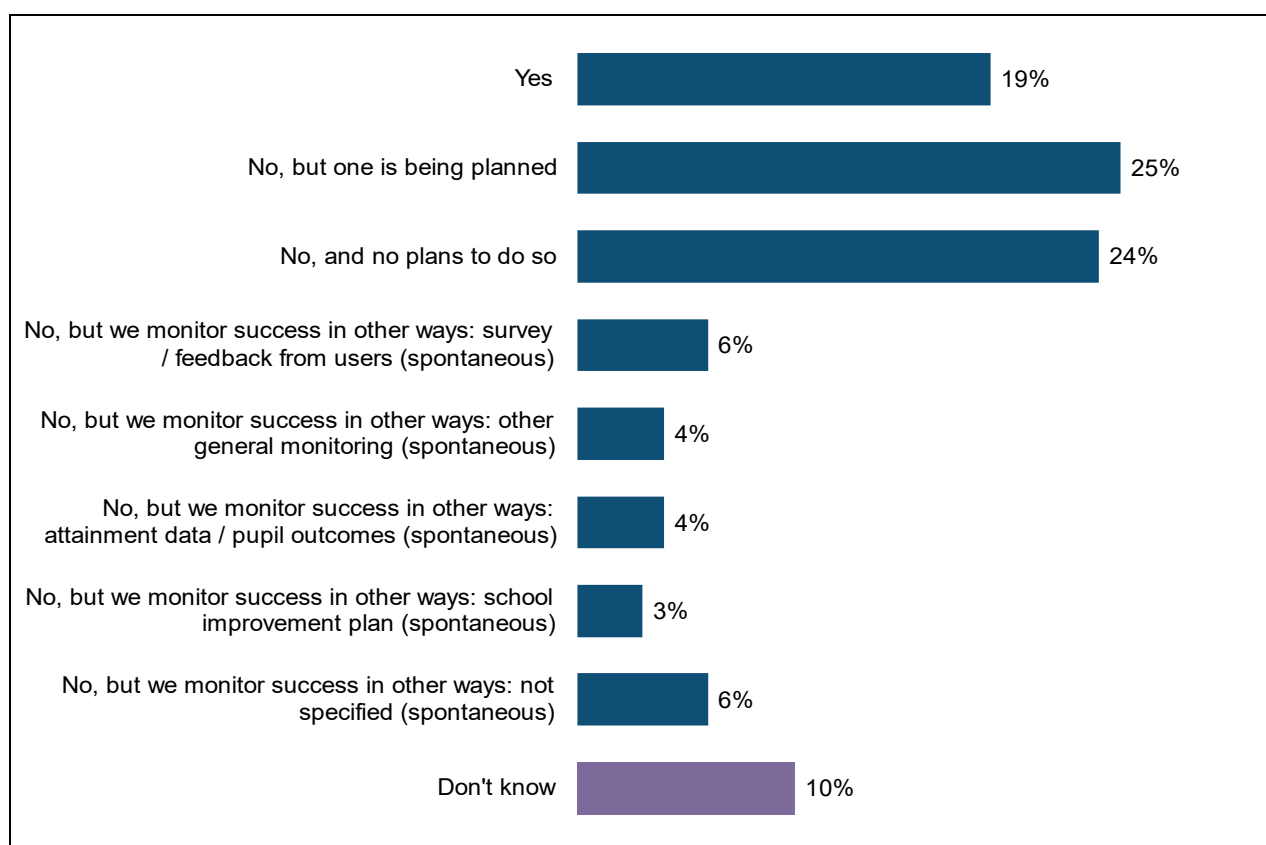
Teachers were also asked how they evaluated the effectiveness of the technology they used at work (Figure 2.9). More than two-in-five (41%) teachers said they evaluated technology through classroom observations, while just over a third did so by tracking pupil progress (35%) or via student feedback (34%). Although most teachers evaluated

technology effectiveness in some way, as shown in Figure 2.9, three-in-ten (31%) said they did not evaluate the technology they used.

Figure 2.9 How teachers evaluate the effectiveness of the technology they use (Teachers)
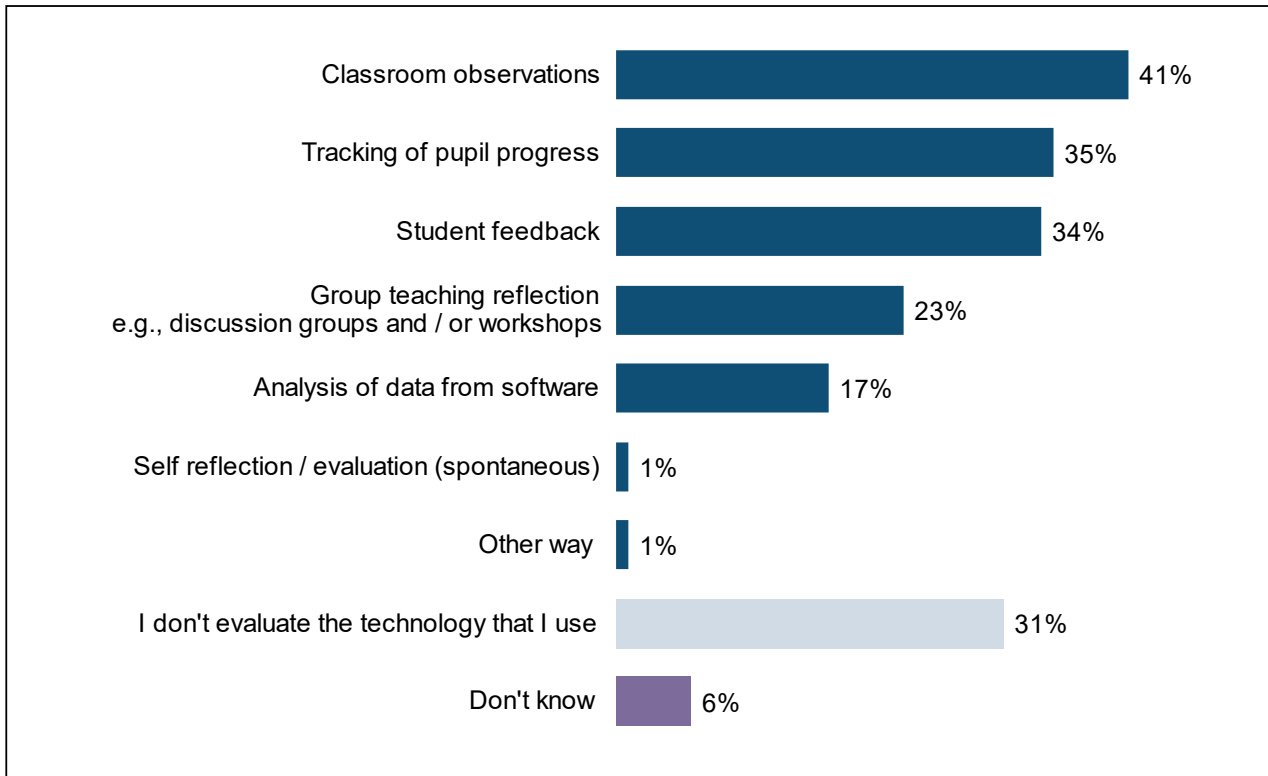
Ways of evaluating the effectiveness of technology were similar by phase and by academy status. The only marked difference was that teachers at secondary schools were more likely than those at primary schools to use student feedback (40% vs. 29%). In particular, LA maintained secondary schools were more likely to use student feedback, compared with secondary academies (48% vs. 37%).

3. Current usage levels

This chapter looks at access to and use of digital devices, hardware, and assistive technologies within schools, and the barriers to greater uptake. In particular it explores how technology is used across the different school functions, including school management, classroom activities and pastoral support. More detailed exploration of the school infrastructure is included later on in the report, in chapter 6.

Use of hardware in lessons

Digital devices available to use

IT leads were asked to comment on how many digital devices were available for teachers and pupils to use (including those provided on loan). Results from this are outlined in Table 3.1 and Figures 3.1 to 3.3, with the number of devices available calculated as a proportion of the number of teachers in school[20].

Devices available to teachers

As shown in Table 3.1, laptops were the most commonly available devices for teachers (95% of primary school and 93% of secondary school IT leads said these were available for teachers to use in their school), followed by desktops (81% and 88% respectively). Tablets were more prevalent in primaries, with 77% of primary IT leads reporting that they were available, compared with 62% of secondaries.

The proportion who reported that "none" of the devices were available for teachers to use was broadly on par with 2020-21, except for tablets for primary school teachers, which increased from 8% to 14% in 2023.

In terms of the proportion (or ratio) of devices to teachers in school, 75% of primary IT leads reported that there was at least one laptop for every teacher in their school (i.e. a ratio of 1:1 or more), compared with 63% of secondaries. This was the same pattern for tablets, where 42% of primary IT leads reported that there was at least one tablet per teacher, compared with 9% of secondary IT leads. When these two portable devices were combined, 84% of primary IT leads and 67% of secondary IT leads reported a ratio of at least one portable device (namely a laptop or a tablet) being available per teacher. The situation switched for desktop computers, with secondary IT leads (64%) more likely than primary IT leads (37%) to report a ratio of at least one desktop computer per teacher.

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[20] Data from the School Workforce Census was used to capture the number of classroom teachers in each school to calculate the ratios. IT leads were not restricted in the number they provided, and no data editing has been applied. Some schools have reported having more than one device per teacher.

In terms of the proportion of schools which had laptops for 100%+ of their teachers (a ratio of 1:1 or more for devices to teachers), this was broadly in line with 2020-21, with the exception of laptops available for primary school teachers to use, which increased from 57% to 75% in 2023.

There were no marked differences in the availability of digital devices for teachers to use by school status, with the exception that a higher proportion of IT leads in primary LA maintained schools reported that tablets were available for all teachers, compared with IT leads in primary academy schools (50% vs. 31%).

Table 3.1 Availability of devices for teachers to use (IT leads)

	Primary phase	Secondary phase
Any laptops available for teachers	95%	93%
No laptops available for teachers	1%	2%
Have laptops for 100% (or more) of teachers^	75%* (a)	63%
Ratio of laptops for teachers (median)	1.5:1	1.5:1
(2020-21: No laptops available for teachers)	*(3%)*	*(2%)*
(2020-21: Have laptops for 100% (or more) of teachers)	*(57%)*	*(62%)*
Any tablets available for teachers	77%*	62%
No tablets available for teachers	14% (a)	31%*
Have tablets for 100% (or more) of teachers^	42%*	9%
Ratio of tablets for teachers (median)	1:1	1:5
(2020-21: No tablets available for teachers)	*(8%)*	*(31%)*
(2020-21: Have tablets for 100% (or more) of teachers)	*(43%)*	*(11%)*
Any desktops available for teachers	81%	88%
No desktops available for teachers	16%*	8%
Have desktops for 100% (or more) of teachers^	37%	64%*
Ratio of desktops for teachers (median)	0.9:1	1.6:1
(2020-21: No desktops available for teachers)	*(17%)*	*(7%)*
(2020-21: Have desktops for 100% (or more) of teachers)	*(40%)*	*(66%)*

D1_1-3. Primary IT leads (n=155), Secondary IT leads (n=168).2020-21: Primary IT leads (n=619), Secondary IT leads (n=185).Ratio shown as the number of devices per teacher. ^This equates to a minimum ratio of 1:1 device per teacher. *Indicates significant difference by phase, significance testing shown for 2023 data only. (a) indicates a significant difference between 2020-21 and 2023. Source: Technology in Schools Survey 2022-23 (Teachers survey).

Figure 3.1 Laptops available to teachers (proportion of devices to the number of teachers in the school / minimum ratio equivalent of devices to teachers) (IT leads)

NET: Any available

Primary schools: 95%
Secondary schools: 93%

Proportion with access	None	<25%	25% - 32%	33% - 49%	50% - 99%	100%	Don't know
Primary	1%	2%	1%	6%	12%	75%*	4%
Secondary	2%	11%*	6%*	4%	9%	63%	4%
Minimum ratio equivalent (devices to teachers)	-	<1:4	1:4	1:3	1:2	1:1	-
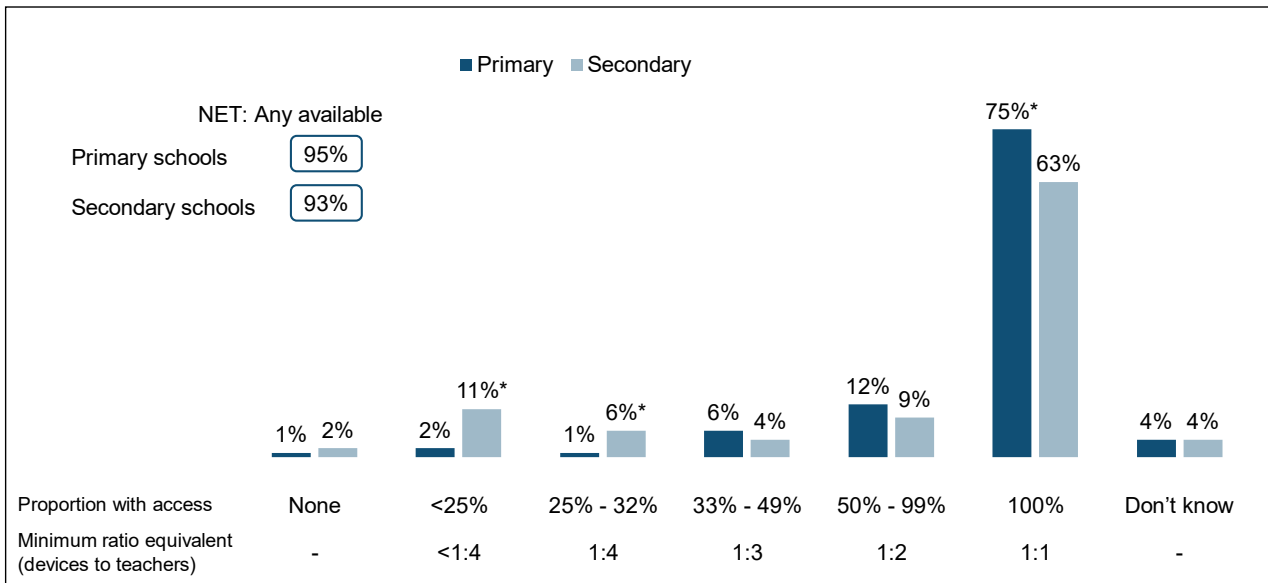
D1_3. Primary IT leads (n=155). Secondary IT leads (n=168).
*Indicates significant difference between primary and secondary.
Source: Technology in Schools Survey 2022-23 (IT leads survey).

Figure 3.2 Tablets available to teachers (proportion of devices to the number of teachers in the school / minimum ratio equivalent of devices to teachers) (IT leads)

NET: Any available

Primary schools: 77%*
Secondary schools: 62%

Proportion with access	None	<25%	25% - 32%	33% - 49%	50% - 99%	100%	Don't know
Primary	14%	4%	1%	5%	26%*	42%*	8%
Secondary	31%*	33%*	5%*	8%	7%	9%	7%
Minimum ratio equivalent (devices to teachers)	-	<1:4	1:4	1:3	1:2	1:1	-
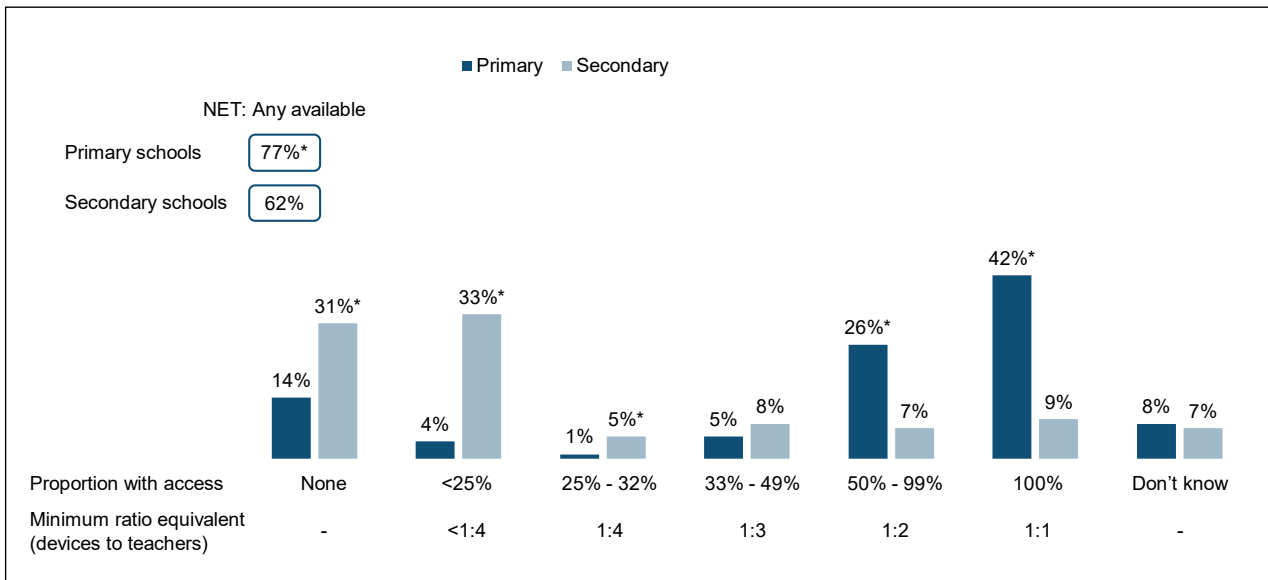
D1_2. Primary IT leads (n=155). Secondary IT leads (n=168).
*Indicates significant difference between primary and secondary.
Source: Technology in Schools Survey 2022-23 (IT leads survey).

Figure 3.3 Desktop computers available to teachers (proportion of devices to the number of teachers in the school / minimum ratio equivalent of devices to teachers) (IT leads)
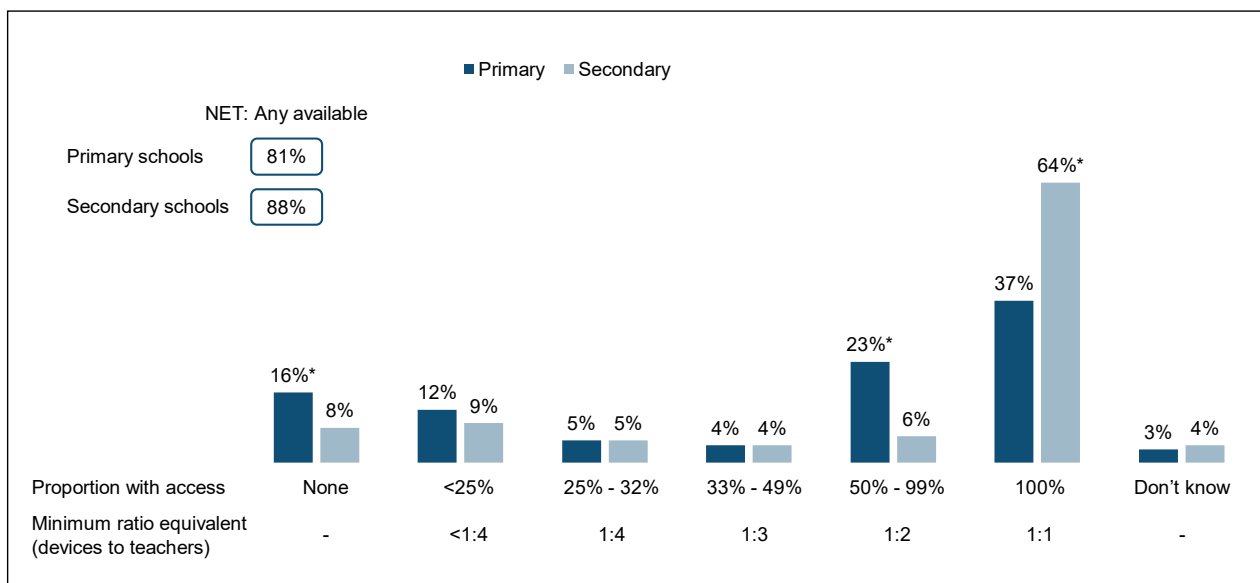
D1_1. Primary IT leads (n=155). Secondary IT leads (n=168).
*Indicates significant difference between primary and secondary.
Source: Technology in Schools Survey 2022-23 (IT leads survey).

Devices available to pupils

Table 3.2 and Figures 3.4 – 3.6 show how many digital devices were available for pupils to use, this time calculated as a proportion of the number of pupils in school[21.]

Laptops were most prevalent for more than nine-in-ten primaries (91%) and secondaries (93%). Primary schools were more likely to have tablets available (77% vs. 54% of secondaries) while secondaries more frequently reported having desktops available for pupils to use (95% vs. 43% of primaries). For all 3 devices, there were relatively few IT leads who said there were devices available for more than a quarter of pupils (generally the ratio of devices to the number of pupils was less than 1:4).

Table 3.2 presents the median ratio of digital devices for pupils by phase. IT leads in primary schools reported higher mean ratios of tablets available for their pupils compared with secondary IT leads, and instead lower mean ratios of desktop computers. For laptops there was no difference in the reported provision of any laptops (equally high across primary and secondary schools), but primary schools had a higher ratio of laptops to their pupils.

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[21] Data within GIAS on the 'Number Of Pupils' for each school was used to calculate the ratios where available.

The number of IT leads reporting that they did not have any tablets available for pupils to use has increased from 9% in 2020-21 to 19% in 2023, and has likewise increased from 38% for desktop computers in 2020-21 to 55% in 2023.

By school status, IT leads in primary LA maintained schools were more likely than those in primary academy schools to report that there were some desktops for pupils for use (54% vs. 26%), but otherwise the provision of digital devices was similar by school status.

Table 3.2 Digital devices available for pupils to use, as a proportion of pupils in school, by phase (IT leads)

	Primary phase	**Secondary phase**
Any laptops available for pupils	91%	93%
No laptops available for pupils	6%*	2%
Have laptops, but for less than 25% of pupils	44%	70%*
Ratio of laptops for pupils (median)	1:4	1:8
(2020-21: No laptops available for pupils)	*(12%)*	*(2%)*
Any tablets available for pupils	77%*	54%
No tablets available for pupils	19% (a)	41%*
Have tablets, but for less than 25% of pupils	50%	49%
Ratio of tablets for pupils (median)	1:7	1:33
(2020-21: No tablets available for pupils)	*(9%)*	*(36%)*
Any desktop computers available for pupils	43%	95%*
No desktop computers available for pupils	55%* (a)	1%
Have desktops, but for less than 25% of pupils	41%	47%
Ratio of desktops for pupils (median)	1:14	1:4
(2020-21: No desktop computers available)	*(38%)*	*(1%)*

D1_4-6. Primary IT leads (n=155), Secondary IT leads (n=168). 2020-21: Primary IT leads (n=619), Secondary IT leads (n=185). Ratio shown as the number of devices per pupil.

*Indicates significant difference by phase, significance testing shown for 2023 data only.

(a) indicates a significant difference between 2020-21 and 2023.

Source: Technology in Schools Survey 2022-23 (IT leads survey).

Figure 3.4 Laptops available to pupils (proportion of devices to the number of pupils in the school / minimum ratio equivalent of devices to pupils) (IT leads)
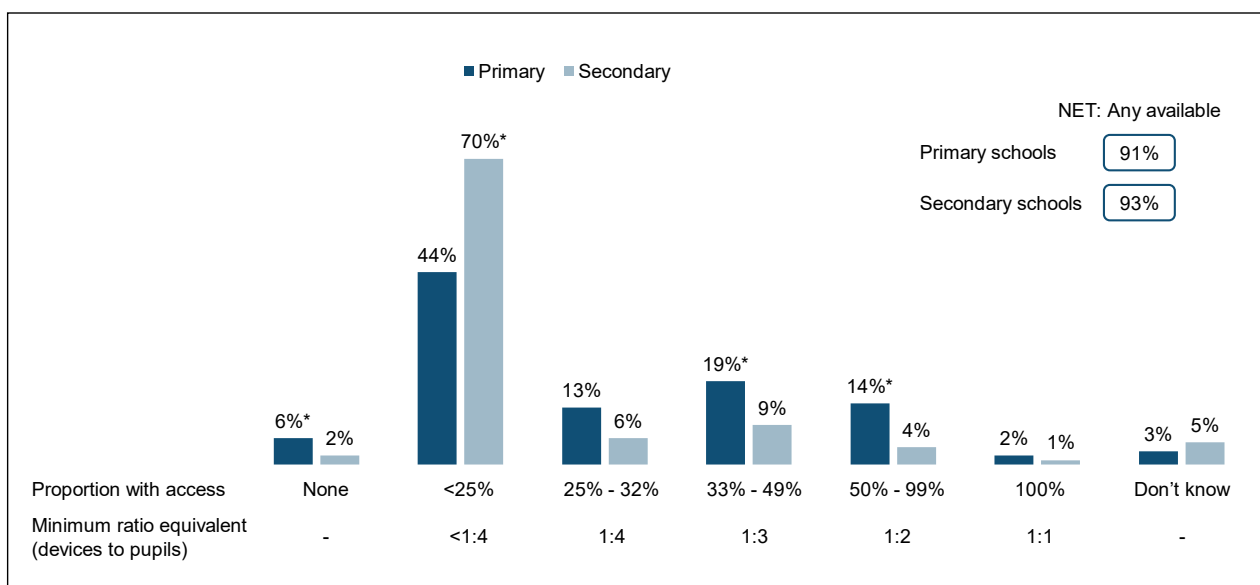
D1_6. Primary IT leads (n=155), Secondary IT leads (n=168).
*Indicates significant difference between primary and secondary.
Source: Technology in Schools Survey 2022-23 (IT leads survey).

Figure 3.5 Tablets available to pupils (proportion of devices to the number of pupils in the school / minimum ratio equivalent of devices to pupils) (IT leads)

D1_5. Primary IT leads (n=155), Secondary IT leads (n=168).
*Indicates significant difference between primary and secondary.
Source: Technology in Schools Survey 2022-23 (IT leads survey).

Figure 3.6 Desktop computers available to pupils (proportion of devices to the number of pupils in the school / minimum ratio equivalent of ratio of devices to pupils) (IT leads)

NET: Any available

Primary schools: 43%
Secondary schools: 95%*

Proportion with access	None	<25%	25% - 32%	33% - 49%	50% - 99%	100%	Don't know
Minimum ratio equivalent (devices to pupils)	-	<1:4	1:4	1:3	1:2	1:1	-

Primary: None 55%*, <25% 41%, 25%-32% 1%, 33%-49% 0%, 50%-99% 0%, 100% 1%, Don't know 2%
Secondary: None 1%, <25% 47%, 25%-32% 21%*, 33%-49% 18%*, 50%-99% 4%*, 100% 0%, Don't know 3%

D1_4. Primary IT leads (n=155), Secondary IT leads (n=168).
*Indicates significant difference between primary and secondary.
Source: Technology in Schools Survey 2022-23 (IT leads survey).

Use of digital devices as part of lessons

Most teachers (86%) used laptop / notebooks and interactive whiteboards to some extent within the lessons they personally taught, with a notably high proportion using interactive whiteboards 'a lot of the time' (72%) (Figure 3.7). Teachers also used desktop computers on a frequent basis, with three-quarters (74%) of teachers using desktop computers to some extent, and 59% using them 'a lot of the time'.

In contrast, teachers used tablet computers, screen casting and specialised assistive devices on a less frequent basis, with 15% of teachers saying tablets were not available and 18% reporting that screen casting was not available in their school. This was particularly the case for specialist assistive devices, as a third (32%) of teachers said they did not have these types of devices at their school.

Figure 3.7 Frequency of using hardware as part of lessons (Teachers)

Legend: A lot of the time | Sometimes | Rarely | Not at all | School does not have this hardware

NET: Used at all

Hardware	A lot of the time	Sometimes	Rarely	Not at all	School does not have this hardware	NET: Used at all
Interactive whiteboard	72%	10%	5%	8%	5%	86%
Laptop / notebook	46%	24%	16%	10%	4%	86%
Desktop computer	59%	8%	8%	15%	11%	74%
Tablet computer	18%	30%	17%	20%	15%	65%
Screen casting from a teacher / student device	13%	19%	20%	30%	18%	52%
Specialised assistive devices	3%	11%	22%	31%	32%	37%

A3. Teachers (n=1,186).
'Used at all' defined as 'a lot of the time', 'sometimes' or 'rarely'.
Source: Technology in Schools Survey 2022-23 (Teachers survey).

There were some differences in the usage of and access to the hardware by phase. Primary teachers were more likely to report that they ever used laptop / notebooks, interactive whiteboards and tablet computers, and in contrast, secondary teachers were more likely to report using desktop computers (Table 3.33.3). These usage rates reflected the availability of the hardware at schools with, for example, a quarter of secondary teachers (24%) reporting that they did not have tablet computers at their school.

The pattern of findings was slightly different for specialist assistive devices. For this hardware, there was no difference in terms of the proportion of primary and secondary teachers who said they ever used the hardware (34% and 40% respectively saying they used these devices to some extent), but primary teachers were more likely to report not having these devices at their school (38% vs. 25% of secondary teachers).

Table 3.3. Use of hardware as part of lessons, and availability of hardware by phase (Teachers)

Used at all	Primary phase	Secondary phase
Laptop / notebook	93%*	78%
Interactive whiteboard	96%*	76%
Desktop computer	68%	82%*
Tablet computer	86%*	43%
Screen casting from a teacher/ student device	52%	52%
Specialised assistive devices	34%	40%
School does not have this hardware	**Primary phase**	**Secondary phase**
Laptop / notebook	1%	6%*
Interactive whiteboard	2%	9%*
Desktop computer	15%*	6%
Tablet computer	6%	24%*
Screen casting from a teacher/ student device	19%	18%
Specialised assistive devices	38%*	25%

A3. Primary teachers (n=350), Secondary teachers (n=836).
'Used at all' defined as 'a lot of the time', 'sometimes' or 'rarely'.
*Indicates significant difference between primary and secondary.
Source: Technology in Schools Survey 2022-23 (Teachers survey).

Teachers in academy secondary schools were more likely to use specialist assistive devices than teachers in LA maintained secondary schools (42% vs. 32%).

More generally, teachers in schools with the highest proportion of FSM pupils reported greater usage of several types of hardware, being more likely to use desktop computers (81% vs. 70% least deprived FSM), interactive whiteboards (94% vs. 83% least deprived FSM), tablet computers (73% vs. 65% on average), and screen casting (62% vs. 50% least deprived FSM).

For all the types of hardware, there was also a clear link between teachers views on the hardware being fit for purpose and usage of the hardware as part of their lessons. For example, 84% of teachers who rated the desktop computers at their school as fit for purpose used them 'a lot of the time', compared to 51% of teachers who rated them 'not fit for purpose'.

Frequency of using end user devices in lessons

Teachers who ever used desktops, tablets or laptops in their lessons were asked to state the proportion of their lessons, in an average week, that involved pupils using end user devices. As confirmation to teachers a description of end user devices was provided in the survey ("by end user devices, we mean desktop computers, laptops, tablets, smartphones or other mobile devices"), and it was explained that these might be used independently, or in pairs or small groups.

Teachers reported varying degrees to which lessons involved pupils using end user devices, although three-quarters (74%) of teachers used them in less than a quarter of lessons or not at all.

There were a range of differences by phase, as shown in Figure 3.8. While secondary teachers were more likely to report no lessons using end under devices (18% vs. 4% of primary teachers) they still recorded a higher proportional usage than primary teachers, with just over a fifth (22%) using them in more than a half of lessons, compared with 9% of primary teachers.

Figure 3.8 Proportion of lessons that involve pupils using end user devices (Teachers)
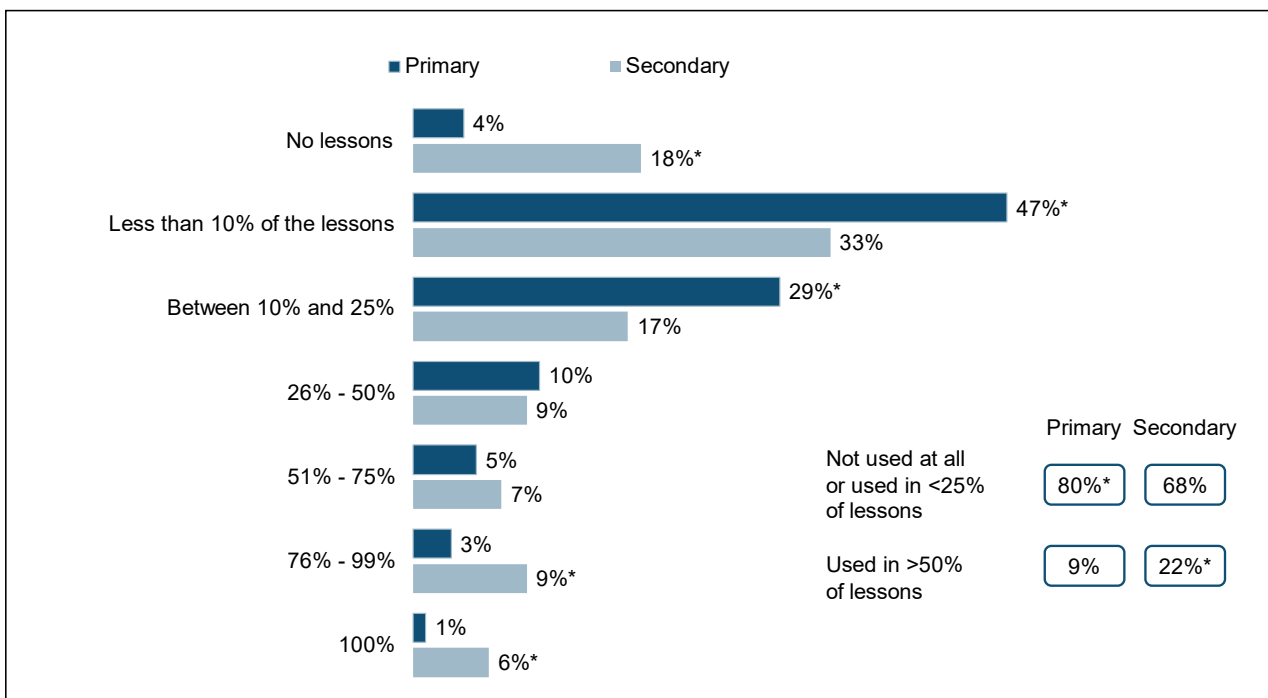
A4. Teachers who use desktops, tablets or laptops in lessons. Total (n=1,181), Primary (n=348), Secondary (n=833). *Indicates significant difference between primary and secondary. Source: Technology in Schools Survey 2022-23 (Teachers survey).

Policies around the use of digital devices

Ability to take portable digital devices home

The vast majority (94%) of IT leads confirmed that teachers were allowed to take portable digital devices home. Six per cent said that they were not allowed to do so, and less than 1% answered don't know.

As shown in Figure 3.9, the proportion of teachers who were allowed to take digital devices home was similarly high across all school types. That said, teachers in primary LA-maintained schools were more able to take digital devices home than teachers in primary academies.

Figure 3.9 Proportion of teachers are allowed to take portable digital devices home, by key sub-groups (IT leads)

D2. IT Leads – base varies by row; primary (n=154); secondary (n=164); primary academy (n=51); primary LA maintained (n=103); secondary academy (n=113); secondary LA maintained (n=51)
*Indicates a significant difference between primary academies and primary LA maintained schools.
Source: Technology in Schools Survey 2022-23 (IT leads survey).

Four-in-ten (39%) IT leads reported that pupils provided with portable digital devices by the school were allowed to take these home. This typically applied to some pupils only (35%) rather than most (2%) or all (3%) pupils. As shown in Figure 3.10, IT leads in secondary schools were far more likely than those in primary schools to report that pupils were allowed to take portable digital devices home (82% vs. 31% respectively).

Figure 3.10 Whether pupils provided with portable digital devices by school are allowed to take them home (IT leads)

Legend:
- Yes - all pupils can take the devices homes
- Yes - most pupils can take the devices home
- Yes - some pupils can take the devices home
- No - pupils cannot take the devices home
- Don't know

Primary Schools
- 2%
- 29%
- 62%*
- 8%*
- NET: Primary Schools - Yes: 31%

Secondary Schools
- 7%*
- 9%*
- 66%*
- 18%
- NET: Secondary Schools - Yes: 82%*
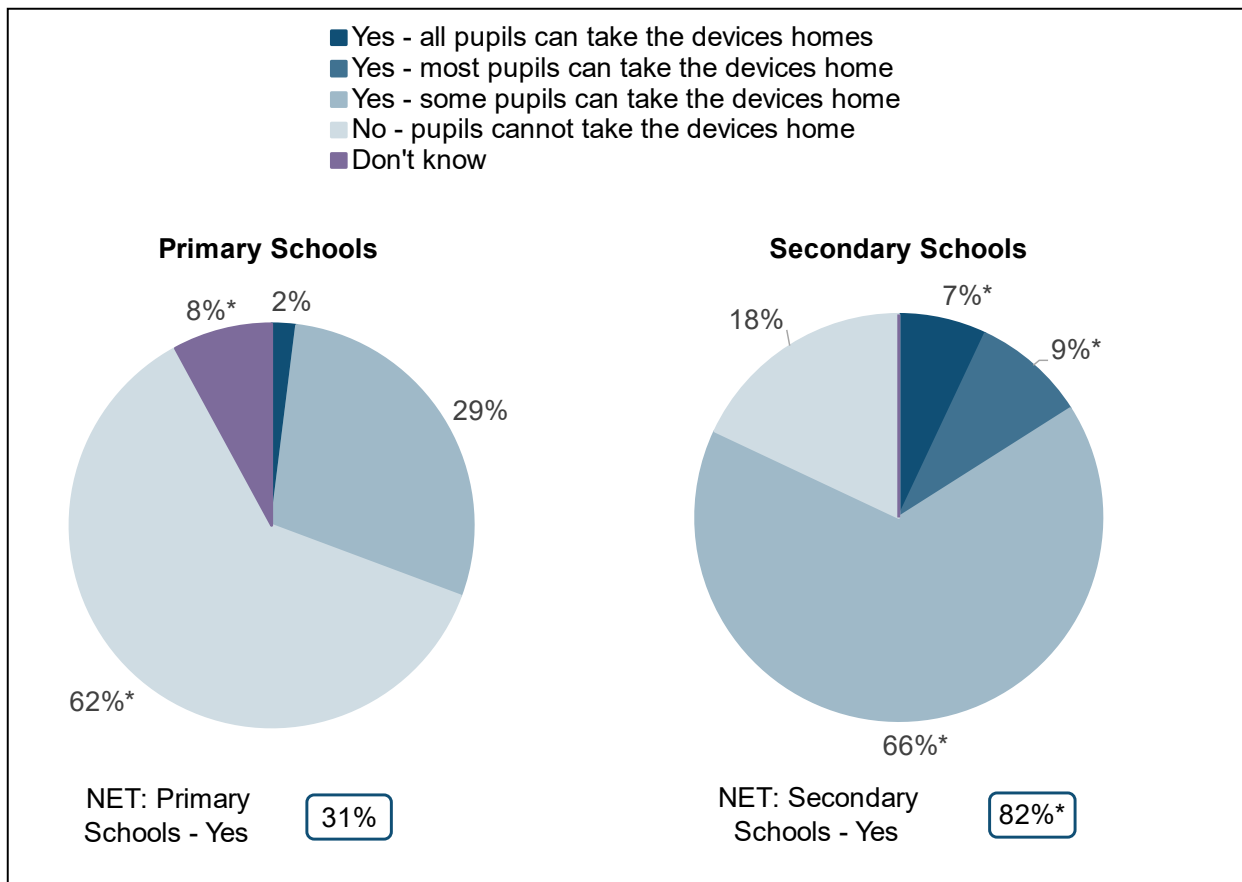
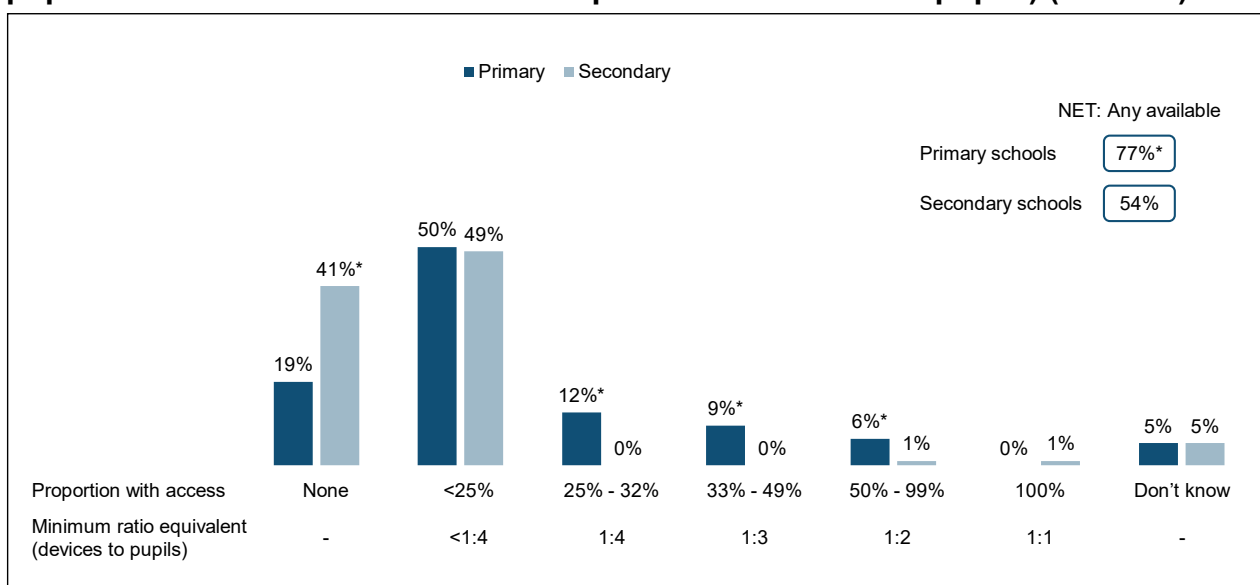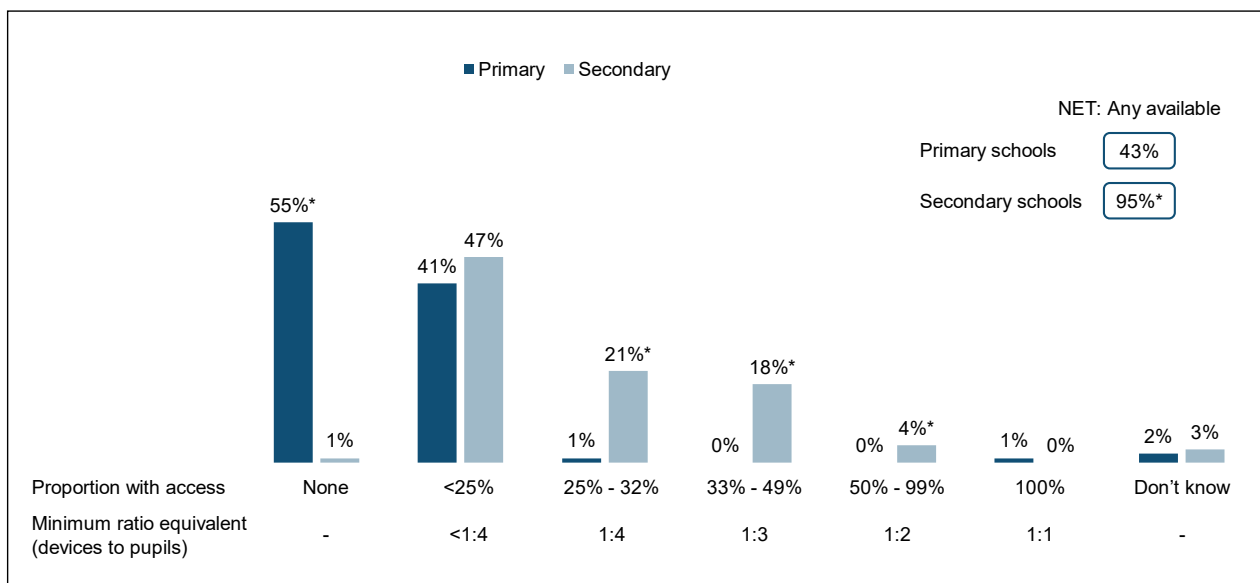D3. IT Leads (Primary IT leads n=154, secondary IT leads n=167).
*Indicates significant difference between primary and secondary.
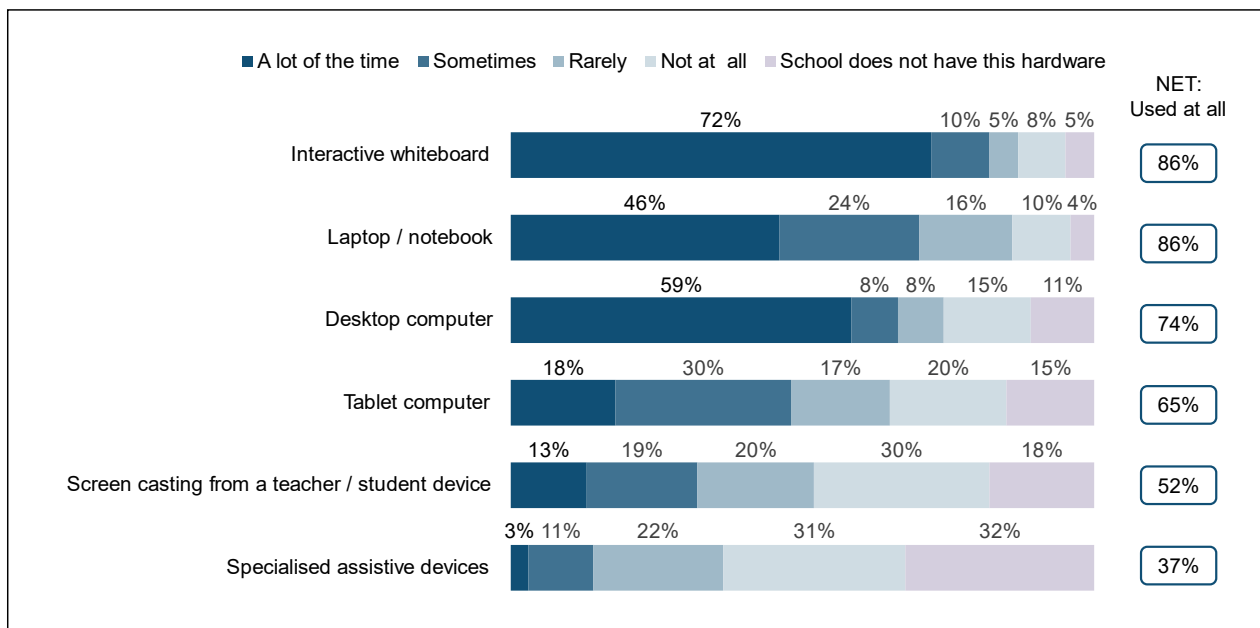Source: Technology in Schools Survey 2022-23 (IT leads survey).

Bring Your Own Device (BYOD)

IT leads in secondary schools were much more likely than those in primary schools to say their school had a BYOD policy (43% vs. 3% respectively). And within secondary schools, the likelihood of having a BYOD policy increased in line with the size for the school.

In terms of having a policy to enable pupils who could not bring their own device to school to be able to access one at school, IT leads in secondary schools were again much more likely than those in primary schools to say their school had this policy (53% vs. 29%). There was less variation for having this particular policy by the size of the secondary school. In contrast, however, there was a sizeable difference in likelihood by school location: 44% of IT leads in rural schools reported they had a policy to enable pupils to access a device at school compared with 29% of IT leads in urban schools.

Use of technology for specific school activities

Leaders and teachers were asked to rate the extent to which technology supported school management, classroom management and pastoral activities at their school. These questions provide an indication of the proportion of leaders and teachers who had used technology for each of the cited purposes[22], effectively a derived 'used' rating. These 'used' ratings are detailed in this chapter alongside the proportion of leaders and teachers who explicitly reported that they did not use software for the activity, or were unsure about their response.

School management activities

As shown by Table 3.4, leaders were using technology across the range of their school management activities. For example, practically all leaders (at least nine-in-ten) reported that they used technology for pupil / student data management, parental / carer engagement, communication with and delivery of governance and financial management.

Technology was used to a similar extent to support school management activities in secondary schools and primary schools. The exceptions were estate management, supporting flexible working practices, and timetabling, where secondary schools were more likely to report using education technology compared to primaries. In secondary schools, use of technology for financial management increased from 81% in 2020/21 to 93% in 2023. On the other hand, use of technology for supporting flexible working practices decreased from 85% to 73% for primary schools and 97% to 82% for

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[22] This measure is comprised of those who gave a rating of how well education technology supported the activity, using a scale from 'extremely well' to 'not at all well'. Those who said they had 'not used the technology or it was not applicable' and 'don't know' are excluded from the usage measure.

secondaries. This is likely as a result of the pandemic being a more salient issue when the survey was last conducted.

Table 3.4 Proportion using technology for school management activities by phase, based on a proxy usage rate (Leaders)

	Primary leaders	Secondary leaders
Pupil / student data management	99%	100%
Parental / carer engagement / communication	99%	100%
Communication with / delivery of governance	95%	95%
Financial management	92%	93%
HR processes	88%	92%
Payroll	86%	86%
Estate management	73%	82%*
Supporting flexible working practices	73%	82%*
Timetabling	65%	100%*

B1. Primary leaders (n=526), Secondary leaders (n=244)
Used (proxy) is comprised of those who gave a rating of how well education technology supported the activity and excludes those who said the technology was not used, NA or DK.
*Indicates significant difference between primary and secondary.
Source: Technology in Schools Survey 2022-23 (Leaders survey).

Use of technology to support teaching and learning techniques

Teachers were asked the extent to which they had used technology to support various teaching and learning techniques over the last 12 months. As shown in Figure 3.11, teachers were using technology for these teaching and learning techniques, but they were not necessarily using the technology frequently.

Most commonly technology was being used for homework and collaborative learning, with 90% and 80% respectively of teachers involved in these activities saying they used technology to some extent. Technology was least likely to be used for metacognition and one to one tuition, although it was still being used by around six-in-ten teachers involved in each of these learning techniques.

In terms of intensity of use, teachers were using technology more frequently for homeworking and phonics; a half (48%) of teachers who set homework said they used technology to support this activity a 'lot of the time', with the same true for a quarter (26%) of teachers who used phonics within their role.
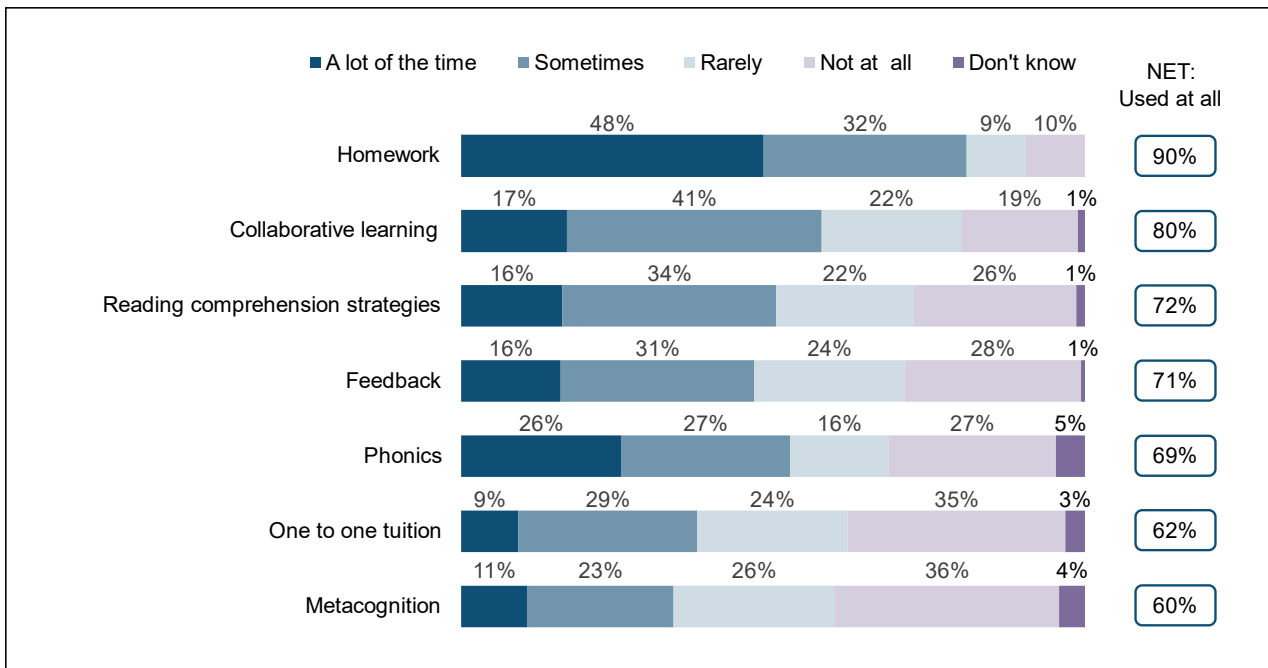
Figure 3.11 Extent to which have used technology to support teaching and learning techniques over last 12 months (Teachers)

A4b. Teachers who undertake the techniques (i.e. did not say the activity was not relevant to their role). Homework (n=1,157), Collaborative learning (n=1,171), Reading comprehension strategies (n=1,000), Feedback (n=1,167), Phonics (n=708), One to one tuition (n=854), Metacognition (n=1,112). Source: Technology in Schools Survey 2022-23 (Teachers survey).

As would be expected, there was some differences in the use of technology to support teaching and learning techniques by phase (Table 3.5). Teachers in primary schools reported greater usage of technology (defined as 'a lot of the time') for phonics and collaborative learning, whereas teachers in secondary reported greater usage of technology for homework, feedback and metacognition.

Table 3.5 Extent to which have used technology to support teaching and learning techniques over last 12 months, by phase (Teachers)

Used at all	Primary phase	Secondary phase
Homework	83%	98%*
Collaborative learning	80%	80%
Reading comprehension strategies	75%	69%
Feedback	58%	85%*
Phonics	84%*	40%
One to one tuition	61%	63%
Metacognition	52%	68%*
Used a lot of the time	**Primary phase**	**Secondary phase**
Homework	37%	60%*
Collaborative learning	21%*	13%
Reading comprehension strategies	20%*	11%
Feedback	6%	26%*
Phonics	37%*	6%
One to one tuition	11%	8%
Metacognition	8%	14%*

A4b. Teachers who undertake the techniques (i.e. did not say the activity was not relevant to their role). Homework (n=1,157), Collaborative learning (n=1,171), Reading comprehension strategies (n=1,000), Feedback (n=1,167), Phonics (n=708), One to one tuition (n=854), Metacognition (n=1,112). *Indicates significant difference between primary and secondary. Source: Technology in Schools Survey 2022-23 (Teachers survey).

With just the exception of phonics, teachers who were using each of the technologies 'a lot of the time' were more likely than average to say that technology had reduced their workload since the start of 2019/20.

Classroom activities

Both leaders and teachers used technology across a range of classroom activities (Table 3.6), although this was to a lesser extent for formative and summative assessments.

Use of the technology for classroom activities was high and broadly similar across primary and secondary, although there were some instances where reported usage was higher for secondary than for primary schools. The most marked difference was for formative assessments, with technology much more likely to be used for this activity by teachers in secondary schools (91%) than primary schools (73%). Using technology for formative and summative assessments has declined for both leaders and teachers across both phases.

Compared with 2020-21, changes were made to the way the questions about the extent to which software meets needs for teaching were asked, and this affects the direct comparability of the 'used proxy' measure. With these caveats, however, there are indications that there has been a decline in using technology to deliver teacher training to secondary teachers since 2020-21 (96% vs. 89% in 2023). For primary teachers, using technology for classroom activities to support pupils with SEND has also declined from 94% to 89% in 2023.

Table 3.6 Proportion using education technology for classroom activities by phase, based on a proxy usage rate (Leaders and teachers)

	Primary phase	Secondary phase
Leaders		
Delivering lessons	99%*	97%
Tracking pupil progress	98%	98%
Delivering teacher training / CPD	98%	97%
Collaborating /sharing resources with other teachers	97%	98%
Planning lessons / curriculum content	97%	95%
Supporting pupils with SEND	96%	98%
Offering independent / online learning (incl. in class)	93%	97%*
Conducting summative assessment	86%	91%
Conducting formative assessment	76%	92%*
Teachers		
Delivering lessons	97%	98%
Planning lessons / curriculum content	98%	97%
Tracking pupil progress	96%	97%
Collaborating / sharing resources with other teachers	95%	98%*
Receiving teacher training / CPD	94%	96%
Offering independent / online learning (incl. in class)	88%	96%*
Delivering teacher training / CPD	90%	89%
Supporting pupils with SEND	89%	89%
Conducting summative assessment	86%	88%
Conducting formative assessment	73%	91%*

B2 Primary Leaders (n=526), Secondary Leaders (n=244), A1 Primary Teachers (n=350), Secondary Teachers (n=836). Used (proxy) is comprised of those who gave a rating of how well education technology supported the activity.. *Indicates significant difference between primary and secondary. Source: Technology in Schools Survey 2022-23 (Leaders survey).

Pastoral support

In terms of pastoral support, a high proportion of teachers (94%) used education technology for communication and engagement with parents/carers and for safeguarding

(93%). However there was less usage of technology for the other pastoral support areas, namely tracking and pastoral support, offering guidance and support to pupils, and liaison with external support agencies. For these latter options, a number of teachers were unable to comment.

As shown in Table 3.7, primary and secondary teachers were equally likely to use technology for communicating and engaging with parents/carers and for safeguarding. However secondary teachers were more likely than those in primaries to use technology for tracking pastoral support and offering guidance and support to pupils, while primary teachers were much more likely than those in secondaries to use technology for liaison with external support agencies. Comparing these figures to 2020-21, 'liaison with external support agencies' and 'tracking pastoral support' are broadly on par, but the proportion of secondary teachers using technology for safeguarding has increased from 88% to 93% in 2023. The other codes were asked for the first time this year.

Table 3.7 Proportion using technology for pastoral support by phase, based on a proxy usage rate (Teachers)

	Primary teachers	Secondary teachers
Communicating and engaging with parents/ carers	94%	94%
Safeguarding	92%	93%
Tracking pastoral support	67%	77%*
Offering guidance and support to pupils	56%	82%*
Liaison with external support agencies	79%*	53%

A2 Primary teachers (n=350), Secondary Teachers (n=836).
Used (proxy) is comprised of those who gave a rating of how well education technology supported the activity.
*Indicates significant difference between primary and secondary.
Source: Technology in Schools Survey 2022-23 (Teachers survey).

Awareness and use of assistive technologies

The vast majority of leaders (90%) were aware that mainstream technologies had built in accessibility features. This left 7% unaware and 3% who were not sure.[23] There were no significant differences by school phase.

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[23] In terms of definitions, leaders were told that 'mainstream technology' meant non-specialist laptops, computers, internet browsing etc., and 'accessibility features' meant touch-screen functionality, text-to-speech or speech-to-text features etc.

Amongst leaders aware of built in accessibility features most (72%) reported that staff at their school provided support to pupils to use these features. When compared with all leaders, this equated to just under two-thirds (64%) of leaders saying they were aware of and provided support for pupils to use accessibility features built into mainstream devices and software. While the proportions confirming that they provided support were similar, primary leaders were more likely to actively report that their school did not (19% were aware of built in accessibility but did not provide support for pupils in this area vs. 11% of secondary leaders).

It is worth noting that only mainstream schools were surveyed as part of this study, as mentioned in the introduction to this report.

Although the questions in the 2023 and 2020-21 are not exactly matched, data suggests that the level of support for pupils to use accessibility features in mainstream devices has increased over the past few years. In 2020-21, 32% of primary head teachers and 51% of secondary head teachers indicated that their school provided support to pupils to use accessibility features. For 2023 the comparable figures were 63% and 70%.

4. Quality and impact of technology used

This chapter explores the extent to which teachers and leaders felt the devices and infrastructure used in their school were 'fit for purpose'. The chapter also covers how technology supports school management and classroom activities and the perceived impact technology has on pupil attainment and workload.

Devices that are fit for purpose

Teachers and IT leads were both asked to consider how fit for purpose various devices were at their schools. Findings in this section of the report are based on teachers and IT leads excluding those who said their school did not have this type of device.

Teachers' views on whether devices are fit for purpose

Teachers were asked about various devices found in their school and whether they were 'fit for purpose'. The word 'purpose' was not defined in the questionnaire and was left to the teacher's own perspective.

Interactive whiteboards were most commonly considered to be fit for purpose, by over nine-in-ten (93%) teachers, as shown in Figure 4.1. This was followed by desktop computers, laptops / notebooks and tablets (89%, 89% and 85% of teachers respectively considered these devices fit for purpose). Specialised assistive devices were considered fit for purpose by just under half of teachers (47%), however this reflects the lack of knowledge about them (47% of those with such devices said they did not know how fit for purpose these devices were).

Figure 4.1 Whether devices are fit for purpose (Teachers)
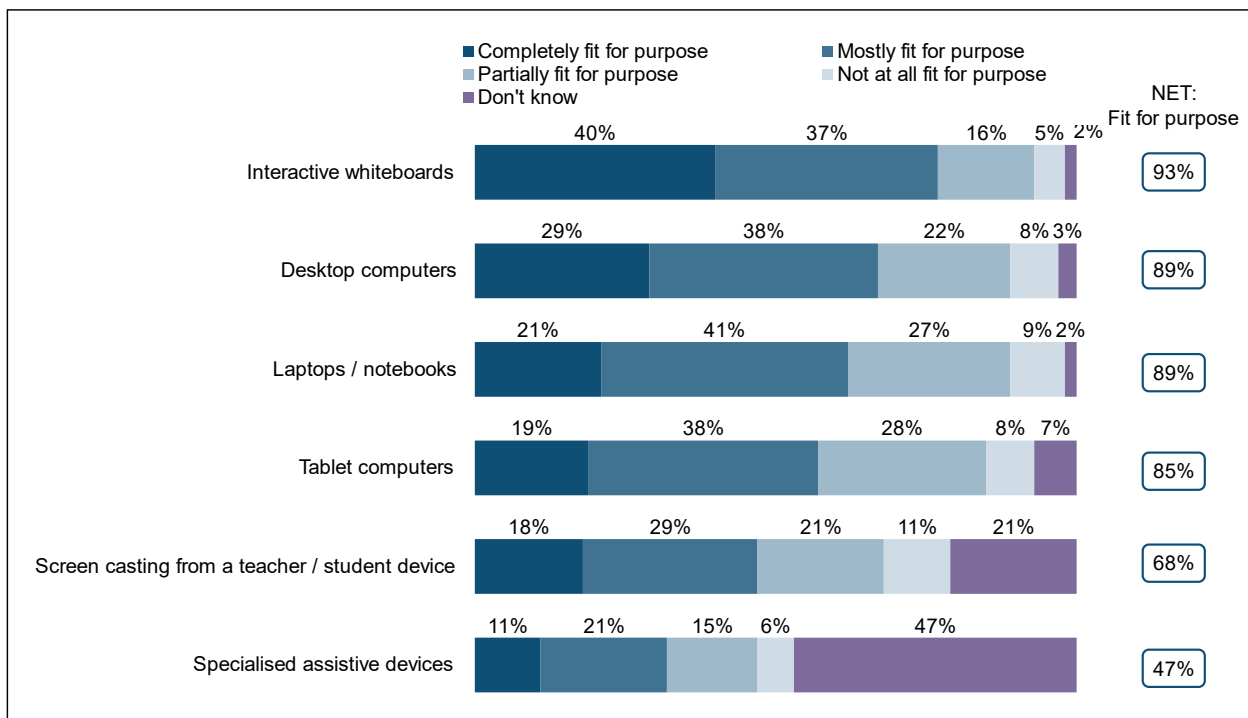
A5. Teachers – All teachers who answered for each item (excluding those who do not have these in school) – interactive whiteboards (n=1,082); desktops (n=994); laptops (n=1,085); tablets (n=762); screen casting (n=812); assistive devices (n=597). Percentages <3% not labelled on the chart.

Source: Technology in Schools Survey 2022-23 (Teachers survey).

Teachers in primary schools were more likely than their counterparts in secondary schools to say that interactive whiteboards, laptops, tablets or specialised assistance devices were fit for purpose[24]. Conversely, secondary teachers were more likely than those in primary schools to say that desktops were fit for purpose (Table 4.1). There were also some differences between teachers in academy and LA maintained schools among those answering these questions: secondary teachers in academies were more positive about the quality of their tablets than their LA maintained counterparts (77% of secondary academy teachers said their tablets were fit for purpose vs. 65% of LA maintained secondary teachers). Likewise, primary teachers in academies were more likely to report that their specialist assistive devices were fit for purpose (69% vs. 46% of LA maintained primary school teachers). (Table 4.2).

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[24] The variation or specialised assistive devices may be partly due to a higher proportion of teachers saying 'don't know' in secondary schools than in primary schools, although primary teachers were still more likely than those in secondaries to say their specialised assistive devices were 'completely' fit for purpose.

Table 4.1 Whether devices are fit for purpose, by phase (Teachers)

	Primary teachers	Secondary teachers
Interactive whiteboards	98%*	86%
Desktop computers	86%	91%*
Laptops/ notebooks	92%*	85%
Tablet computers	91%*	74%
Screen casting from a teacher/ student device	71%	66%
Specialised assistive devices	56%*	40%

A5. Teachers who answered about each item (excluding those who do not have these in school) – interactive whiteboards primary (n=340) secondary (n=742);desktops primary (n=255) secondary (n=739); laptops primary (n=339) secondary (n=746); tablets primary (n=314) secondary (n=448); screen casting primary (n=230) secondary (n=582); specialised assistive devices primary (n=127) secondary (n=470) *Indicates significant difference between primary and secondary. Source: Technology in Schools Survey 2022-23 (Teachers survey).

Table 4.2 Whether devices are at all fit for purpose, by academy status (Teachers)

	Primary academy teachers	Primary LA maintained teachers	Secondary academy teachers	Secondary LA maintained teachers
Interactive whiteboards	98%	98%	87%	85%
Desktop computers	81%	90%	91%	93%
Laptops/ notebooks	93%	91%	85%	87%
Tablet computers	87%	94%	77%*	65%
Screen casting from a teacher/ student device	68%	72%	67%	62%
Specialised assistive devices	69%*	46%	41*	37%

A5. Teachers who answered about each item (excluding those who do not have these in school) – interactive whiteboards: primary academy (n=121) primary LA maintained (219) secondary academy (n=544) secondary LA maintained (n=198);desktops primary academy (n=88) primary LA maintained (n=167) secondary academy (n=551) secondary LA maintained (n=188); laptops primary academy (n=123) primary LA maintained (n=216) secondary academy (n=556) secondary LA maintained (n=190); tablets primary academy (n=114) primary LA maintained (n=200) secondary academy (n=329) secondary LA maintained (n=119); screen casting primary academy (n=80) primary LA maintained (n=150) secondary academy (n=433) secondary LA maintained (n=149); specialised assistive devices primary academy (n=45) primary LA maintained (n=82) secondary academy (n=351) secondary LA maintained (n=119) *Indicates significant difference between primary academy and primary LA maintained, and secondary academy and secondary LA maintained. Source: Technology in Schools Survey 2022-23 (Teachers survey).

IT lead views on whether devices are fit for purpose

IT leads were also asked how fit for purpose different devices were at their schools (results from which are shown in Figure 4.2). Similarly to teachers, IT leads generally regarded most devices as fit for purpose to some extent, but also often opted for the option of 'mostly fit for purpose' rather than 'completely fit for purpose'.

Over nine-in-ten IT leads considered the following to be fit for purpose: laptops/notebooks (95%), tablets (93%) and desktop computers (92%). Slightly fewer thought their interactive whiteboards were fit for purpose (88%) but equally these were the device most likely to be considered 'completely' fit for purpose. Fewer thought that their specialised assistive devices or virtual and augmented reality headsets were fit for purpose, but a significant minority were unsure about these. IT leads and teachers may have interpreted 'fit for purpose' in different ways, for example whether the technology works, versus how well it works in a classroom setting.

Figure 4.2 Whether devices are fit for purpose (IT Leads)
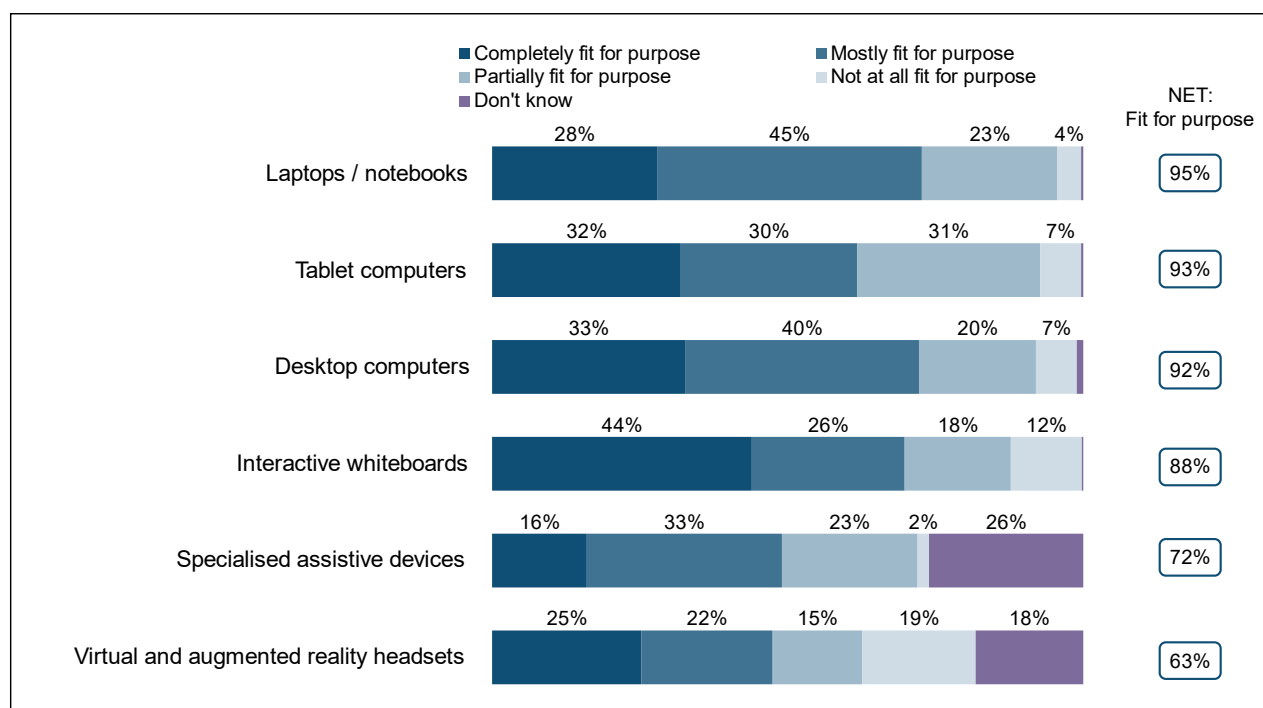
D5. IT leads – All IT leads who answered for each item (excluding those who do not have these in school), base varies by row: laptops (n=321); interactive whiteboards (n=315); tablets (n=262); desktops (n=311); assistive devices (n=99); VR headsets (n=28).[25]

Percentages <2% not labelled on the chart.

Source: Technology in Schools Survey 2022-23 (IT leads survey).

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[25] Please note that the base size for the number of IT leads with virtual reality headsets at their school was low (n=28) so those results should be treated with caution.

As was the case with teachers, IT leads in primary schools were more likely than their counterparts in secondary schools to say that their laptops, tablets, interactive whiteboards or specialised assistance devices were fit for purpose. (see Table 4.3).

Table 4.3 Whether devices are fit for purpose, by phase (IT leads)

	Primary IT leads	Secondary IT leads
Laptops/ notebooks	97%*	89%
Tablet computers	94%*	86%
Desktop computers	92%	90%
Specialised assistive devices	80%*	53%
Interactive whiteboards	90%*	77%

D5. IT leads – All IT leads who answered for each item (excluding those who do not have these in school) – laptops primary(n=154) secondary (n=167); tablets primary(n=143) secondary (n=119);desktops primary(n=143) secondary (n=168); interactive whiteboards primary(n=153) secondary (n=162);specialised assistive devices primary(n=31) secondary (n=68); VR headsets not shown as base sizes too small. *Indicates significant difference between primary and secondary. Source: Technology in Schools Survey 2022-23 (IT leads survey).

For devices that did not completely meet the needs of the school, IT leads were asked to state why. As Figure 4.3 shows, wear and tear was the most cited reason for why desktop computers (57%) and laptops / notebooks (56%) did not meet their schools' needs, followed by lack of warranty (44% for desktops and 35% for laptops / notebooks). Unsupported / outdated software / operating systems (OS) was the most frequently given reason for why tablet computers did not meet school needs (56%).

Figure 4.3 Main reasons IT leads believe devices do not meet school needs (IT Leads)

Legend: ■ Laptops / notebooks ■ Desktop computers ■ Tablet computers ■ Interactive whiteboards

Wear and tear
- Laptops / notebooks: 56%
- Desktop computers: 57%
- Tablet computers: 40%
- Interactive whiteboards: 51%

No warranty / out of warranty
- Laptops / notebooks: 35%
- Desktop computers: 44%
- Tablet computers: 30%
- Interactive whiteboards: 37%

Unsupported / outdated software / OS
- Laptops / notebooks: 32%
- Desktop computers: 31%
- Tablet computers: 56%
- Interactive whiteboards: 40%

Lack of availability
- Laptops / notebooks: 14%
- Desktop computers: 10%
- Tablet computers: 15%
- Interactive whiteboards: 6%

Physical damage
- Laptops / notebooks: 16%
- Desktop computers: 8%
- Tablet computers: 13%
- Interactive whiteboards: 10%

Age of devices
- Laptops / notebooks: 13%
- Desktop computers: 16%
- Tablet computers: 7%
- Interactive whiteboards: 12%

Screen size
- Laptops / notebooks: 5%
- Desktop computers: 2%
- Tablet computers: 4%
- Interactive whiteboards: 4%

Low quality devices
- Laptops / notebooks: <1%
- Tablet computers: <1%
- Interactive whiteboards: 0%

Other reason
- Laptops / notebooks: 2%
- Desktop computers: 2%
- Tablet computers: 4%
- Interactive whiteboards: 6%

D6/D7. IT leads – All where devices do not completely meet the needs of school, base varies by row: laptops (n=228); desktops (n=218); tablets (n=183); interactive whiteboards (n=198). Source: Technology in Schools Survey 2022-23 (IT leads survey).

The reason why devices did not meet school needs varied somewhat by phase:

- **Laptop/ Notebooks:** IT leads at secondary schools were more likely than their counterparts to say physical damage was a reason for laptop/ notebooks not meeting their schools' needs (28% of secondary IT leads vs. 14% primary). Meanwhile, IT leads in LA maintained primary schools were more likely to cite unsupported / outdated software / OS than those at academy primary schools (43% vs. 14%).

- **Desktop computers:** IT leads at secondary schools were considerably more likely than those at primary schools to cite the lack of warranty as a main reason for their devices not meeting school needs (61% vs. 39%). They were also more likely to cite physical damage as a reason (27% vs. 3% of primaries).

- **Tablet computers:** A greater proportion of IT leads at secondary schools reported that tablet computers were not meeting school needs due to a lack of availability (25%, compared with 14% at primary schools).

- **Interactive whiteboards:** Secondary school IT leads more likely than primary IT leads to say a lack of warranty was a main factor in interactive whiteboards not meeting school needs (56% vs. 32%, respectively).

IT leads were also asked about how fit for purpose they considered other elements of their IT infrastructure. Figure 4.4 (which again excludes IT leads who say the system is not applicable to their school) highlights that practically all IT leads (97%) reported that their email and productivity suites were fit for purpose, followed by 94% who considered digital storage a fit for purpose, and 90% who considered their servers as fit for purpose.

Figure 4.4 Whether IT infrastructure is fit for purpose (IT Leads)
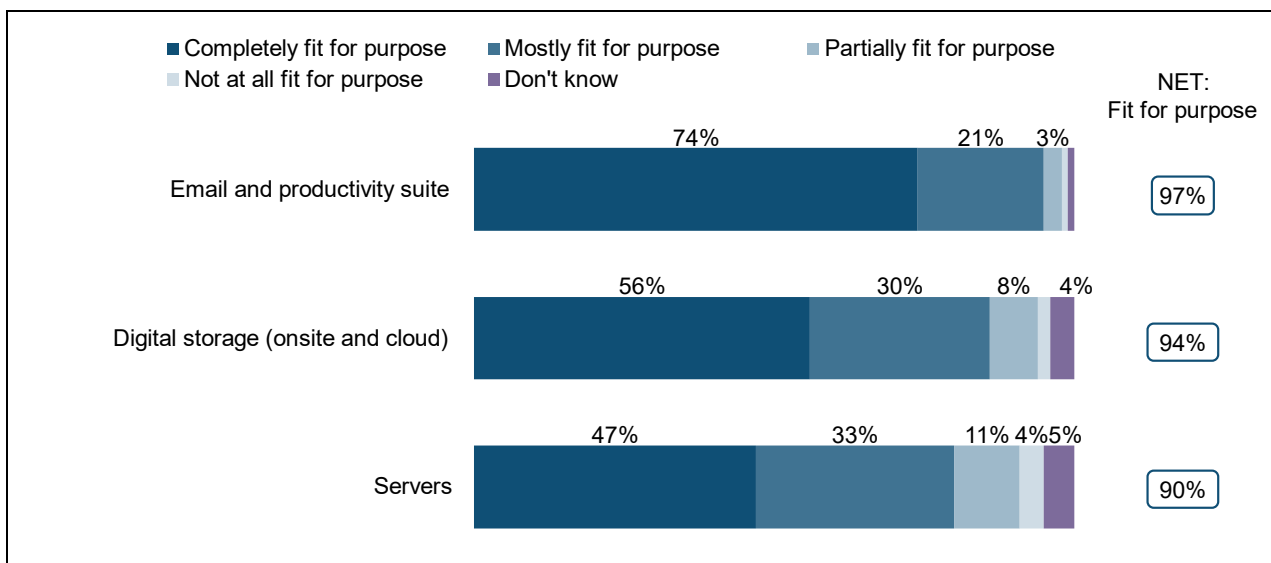
C1. IT leads – All IT leads who answered for each item (excluding those who do not have these in school) – email and productivity suite (n=322); digital storage (n=321); servers (n=316)
Percentages <3% not labelled on the chart.
Source: Technology in Schools Survey 2022-23 (IT leads survey).

IT leads in secondary schools were more likely than those in primary schools to consider their IT infrastructure fit for purpose: email and productivity suite (100% vs. 97%), digital storage (98% vs. 93%) and servers (96% vs. 89%). However, ratings were still high for IT leads in primary schools.

IT leads in primary academies were also more confident in their digital storage capabilities than their counterparts in LA maintained primaries (70% of primary academies vs. 47% LA maintained primaries said they are 'completely fit for purpose').

How technology supports different activities

Leaders and teachers were asked to rate the extent to which technology supported school management, classroom and pastoral support activities at their school.

School management activities

As shown by Figure 4.5, leaders generally felt that technology supported school management activities at their school. The top area of support was for pupil/ student data management, with nearly all leaders (96%) saying technology supported this activity well. This activity was very closely followed by others, such as parental/carer engagement, communication with and delivery of governance.

The activities which technology was most likely to support 'extremely' well were pupil/student data management (61% of leaders said so), financial management (51%) and payroll (46%) (Figure 4.5).

While there were minimal differences by phase (also shown in Figure 4.5) there were a handful of differences: secondary leaders were more likely than primary leaders to report that technology supported timetabling and estate management well (96% vs. 54% and 69% vs. 59% respectively). On the other hand, primary leaders were more likely to cite parental/carer engagement and communication as the main activity which technology supports well (94% vs. 89%).

Figure 4.5 Extent to which technology supports school management activities (Leaders)
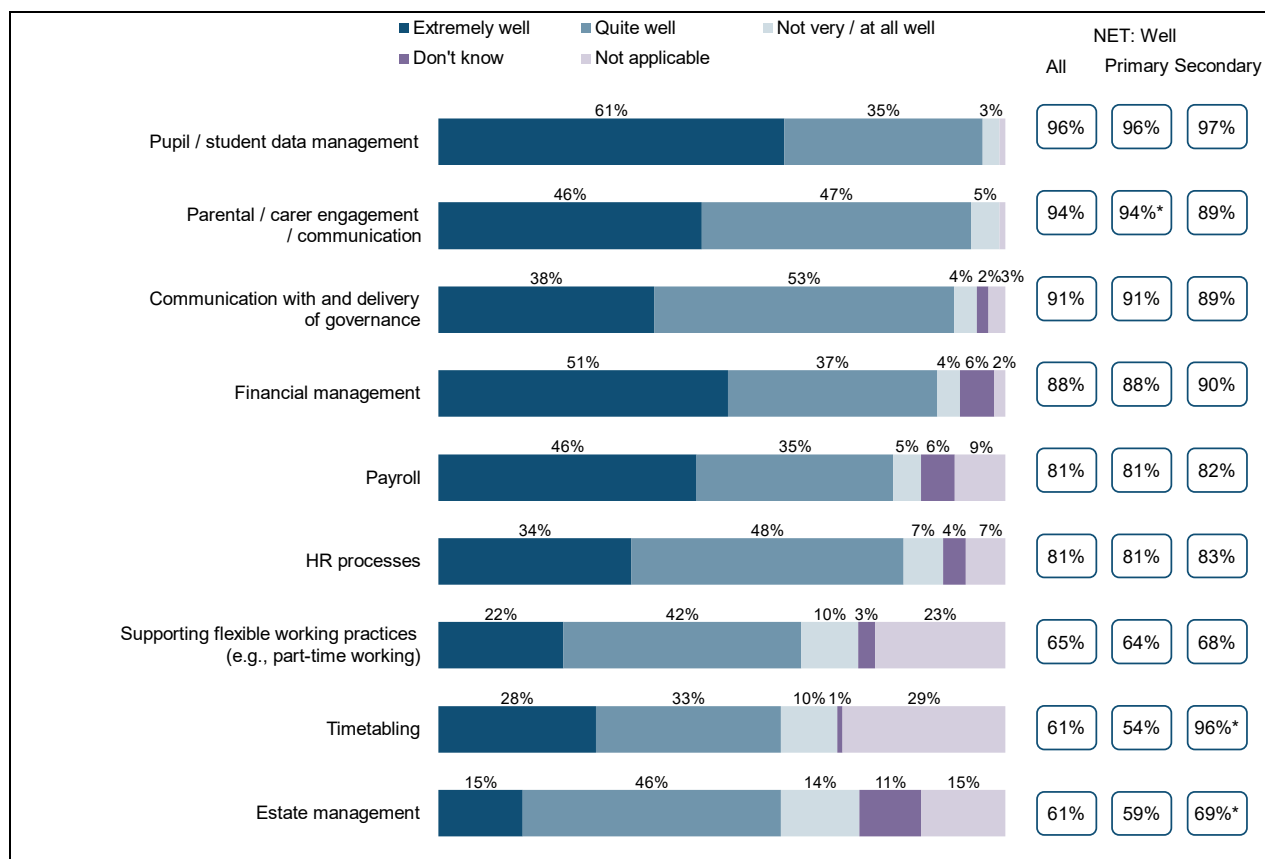
B1 Leaders (n=770) Primary Leaders (n=526) Secondary Leaders (n=244).
NA = reported that they do not use software for this purpose. Percentages <3% not labelled on the chart.
*indicates significant difference between Primary and Secondary Leaders.
Source: Technology in Schools Survey 2022-23 (Leaders survey).

Leaders who reported they had a digital strategy in place at their school were more likely to feel that technology supported a range of the school management activities well, with this difference evident for HR process, supporting flexible working practices, timetabling and estate management. For example, 84% of leaders with a digital strategy said technology supported HR processes well compared with 78% of leaders without a strategy or unsure if they had a strategy.

Classroom activities

For classroom activities, leaders and teachers were again mainly positive about the support that technology provided, though views were lower in some areas. The proportions saying technology supported each activity extremely or very well were significantly lower for teachers than leaders as shown in Figure 4.6.

Within classroom activities, technology was considered to be most supportive for delivering lessons, with this the top ranked area for both leaders and teachers. For

teachers, those that reported at least sometimes using desktops (90% vs. 85%), tablets (94% vs. 83%), laptops (90% vs. 84%), interactive whiteboards (90% vs. 79%), specialised assistive devices (95% vs. 87%), and screen casting (92% vs. 87%), were more likely to say technology was supportive for delivering lessons, compared to those that those that used these devices rarely, not at all or did not have this technology Leaders also saw technology as being particularly supportive for collaborating and sharing resources (48% of leaders saying it supported extremely well), planning lessons / curriculum content (50%), delivering lessons (47%) and tracking pupil progress (48%). And amongst teachers technology was most valued for the same 4 topics: collaborating sharing resources (42% of teachers saying supported extremely well), planning lessons / curriculum content (40%), delivering lessons (39%) and tracking pupil progress (32%).

Within the classroom, the area where technology was felt to be least supportive was for conducting formative assessments. One-in-six teachers (17%) reported that they did not use technology for conducting formative assessments, and amongst those who did use the technology for this area 69% of leaders and 56% of teachers felt that it delivered well.

Within the classroom, a significant proportion of teachers and leaders felt that technology was less helpful in conducting summative assessments (36% of teachers and 20% of leaders who provided a rating of how well he education technology supports this activity at their school. However, it should be noted that summative assessments are often paper-based, such as with exam papers. Technology was also less frequently used in terms of supporting pupils with SEND (cited by 83% leaders who could comment and 69% of teachers). These were two areas for which a number of teachers (11% and 8% respectively) said they did not use education technology. Similarly 8% of teachers reported not using technology for delivering teacher training / CPD and 6% reported not using technology for offering independent / online learning.

Figure 4.6 also shows that teachers who indicated that they had undertaken some training on the use of education technology since the start of the last academic year were more likely to report that technology supports classroom activities well.

Figure 4.6 Extent to which technology supports classroom activities (Leaders and Teachers)

Legend:
- Extremely well
- Quite well
- Not very / at all well
- Don't know
- Not applicable

NET: Well

Leaders

Activity	Extremely well	Quite well	Not very / at all well	All
Delivering lessons	47%	48%	4%	95%*
Collaborating and sharing resources with other teachers	48%	46%	4%	93%*
Tracking pupil progress	48%	45%	5%	93%*
Planning lessons / curriculum content	50%	43%	4%	93%*
Delivering teacher training / CPD	34%	57%	7%	91%*
Offering independent / online learning (including in class)	29%	52%	13% 5%	81%*
Supporting pupils with SEND	20%	61%	16%	80%*
Conducting summative assessment	21%	49%	18% 10% 3%	69%*
Conducting formative assessment	14%	40%	24% 19% 3%	54%*

Teachers

Activity	Extremely well	Quite well	Not very / at all well	All	Undertaken any training
Delivering lessons	39%	50%	9%	88%	90%
Planning lessons / curriculum content	40%	47%	10%	87%	90%
Tracking pupil progress	32%	55%	10% 3%	86%	89%
Collaborating and sharing resources with other teachers	42%	42%	12% 3%	84%	86%
Receiving teacher training / CPD	22%	56%	18% 3%	77%	82%
Delivering teacher training / CPD	19%	53%	17% 3% 8%	72%	77%
Offering independent / online learning (including in class)	21%	47%	24% 6%	68%	73%
Supporting pupils with SEND	12%	49%	28% 3% 8%	61%	67%
Conducting summative assessment	16%	41%	31% 11%	56%	60%
Conducting formative assessment	12%	34%	36% 17%	45%	51%

B2. Leaders (n=770), A1. Teachers (n=1186). Undertaken any training (n=821)
Percentages <3% not labelled on the chart.
*Indicates significant difference in the % 'net well' between leaders and teachers, on the same classroom activity. Source: Technology in Schools Survey 2022-23 (Leaders and Teachers surveys).

Teachers at primary schools were more likely than those at secondary schools to say that technology supported the planning of lessons / curriculum content well (90% vs. 84% respectively), and the delivery of lessons well (90% vs. 86%). In contrast, secondary school teachers were more likely than their primary school counterparts to say that conducting formative assessment was well supported by technology (55% vs. 37%), however this was largely due to a greater proportion of primary school teachers indicating that technology was not used for this activity (25%, compared with 8% of secondary school teachers).

Overall, teachers who indicated that they had undertaken some training on how to use education technology since the start of the last academic year were more likely to report that technology supported classroom activities well. This was echoed by leaders, with those who said their school or trust provided training in the use of technology giving higher ratings for how well the technologies supported different classroom activities.

As with the pattern for school management activities, higher ratings for the support provided by technology for classroom activities were provided by leaders in schools with a digital strategy in place. Higher ratings for how well technology supported classroom activities were also often given by:

- Leaders who felt that technology had reduced staff workload over the past three academic years, and those who felt it had contributed to cost savings and time savings at their school.

- Teachers who felt that technology had helped to save time on various tasks compared to 2019/20.

- Teachers who used desktops, tablets and laptops / notebooks 'a lot of the time' as part of their lessons.

- Teachers who felt that technology had contributed to improved pupil attainment and/or their workload.

Pastoral support.

Teachers were very positive about technology in respect of safeguarding. As shown in Figure 4.7, nearly nine-in-ten (88%) felt that that technology supported this area well, with around a half (48%) saying it did this 'extremely' well. Ratings were also high for communicating and engaging with parents / carers.

Technology, however, was less well regarded for offering guidance and support to pupils, for tracking pastoral support and for liaison with external support agencies. As shown in Figure 4.7, 20%, 16% and 14% of teachers respectively said they did not use education technology for these activities. And even amongst those who did, ratings of the support technology provided were not particularly strong.

Figure 4.7 Extent to which technology supports pastoral support (Teachers)
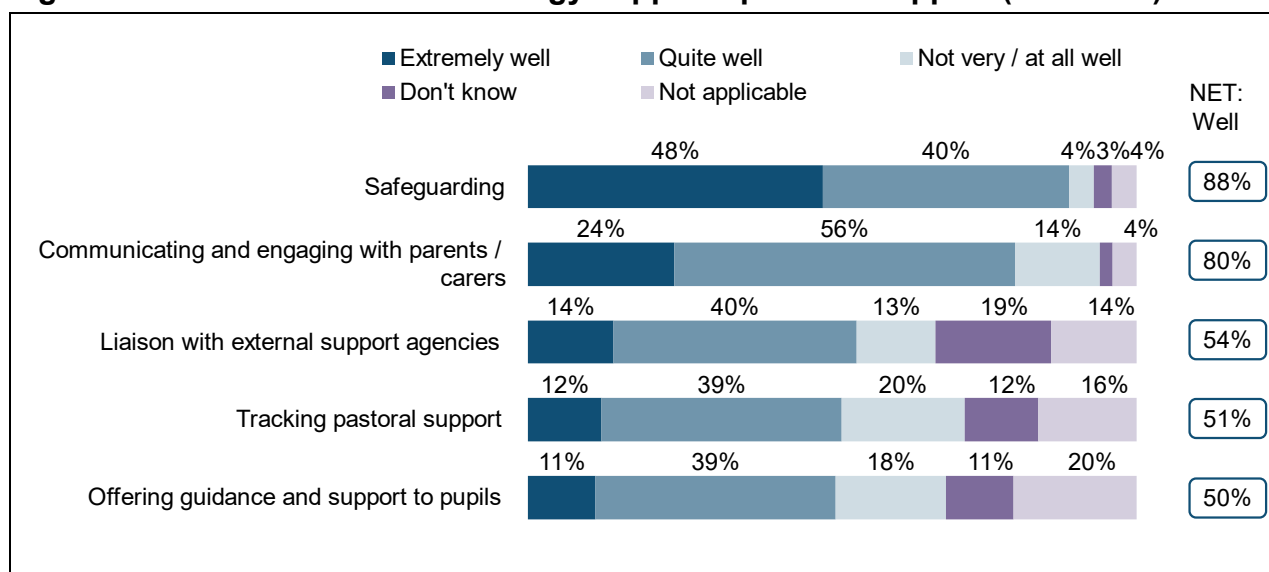
A2 Teachers (n=1,186).
Source: Technology in Schools Survey 2022-23 (Teachers survey).

Secondary school teachers were more likely than primary school teachers to say that technology supported offering guidance and support to pupils well (59% vs. 41% respectively). However, this was primarily due to a third (33%) of primary school teachers having outlined that technology was not used for this activity, compared with 7% of secondary school teachers.

How technology impacts the time needed for tasks

When asked about the impact technology had on the time taken to complete tasks compared with 2019/20, school leaders outlined that parental / carer engagement / communication was the task which had seen most time saved (78%, including 40% describing it as saving a 'lot of time'). Managing staff and delivering CPD (72%) and communication with, and delivery of, governance (70%) were other tasks where many leaders felt time had been saved (see Figure 4.8). The task where the smallest proportion of education leaders considered that technology had saved them time was timetabling (32%) – although a quarter (24%) felt that technology was not applicable for this.

Figure 4.8 Impact technology has on the time it takes to complete tasks at school leaders' schools (Leaders)
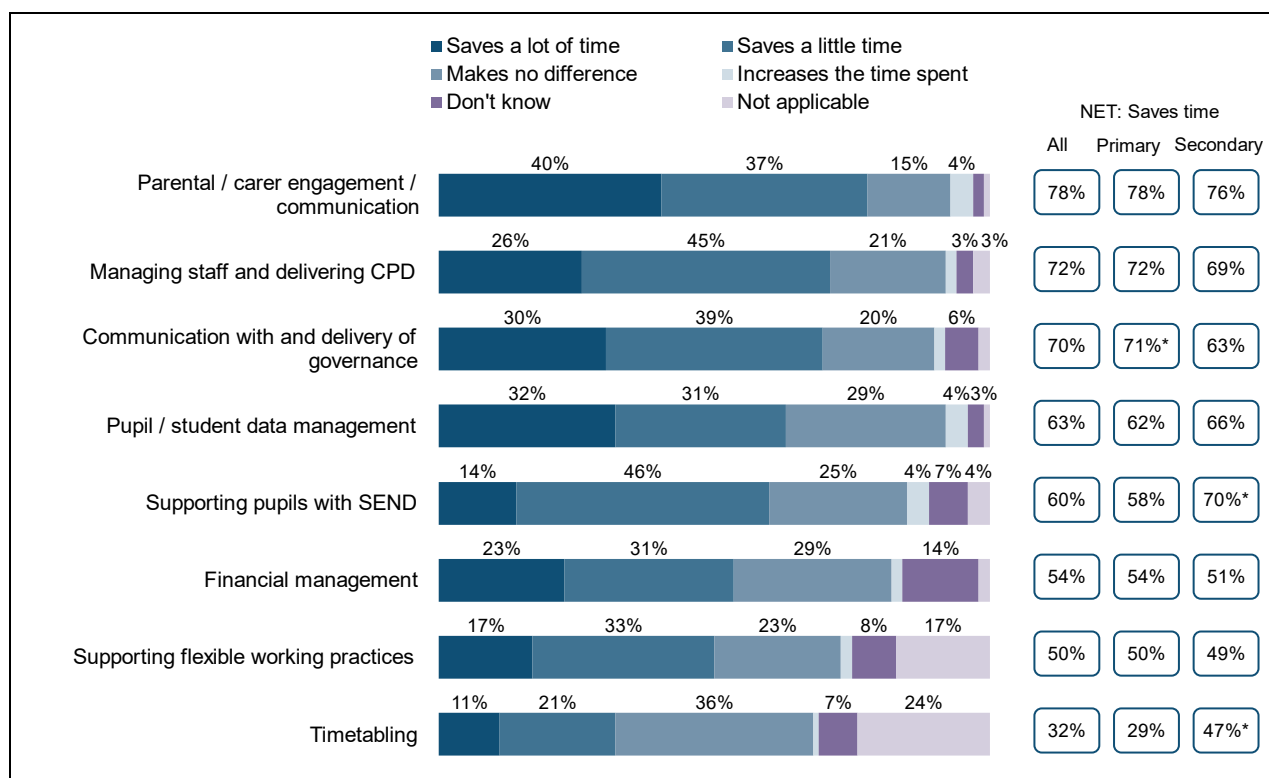
G6. Leaders (n=770) Primary Leaders (n=526) Secondary Leaders (n=244). NA = Technology not currently used for this. *indicates a significant difference between Primary and Secondary Leaders.
Source: Technology in Schools Survey 2022-23. (Leaders survey).

Primary school leaders were less likely to have reported that technology saved time of timetabling tasks, compared with secondary school teachers (29% vs. 47% respectively). However, this was largely as a result of primary school leaders being more likely to have said that technology is not used for this task (28%, compared with 1% of secondary school leaders). Once 'don't know' and 'technology not currently used' is removed from the analysis, there is no significant difference between primary and secondary schools (46% vs. 49% respectively).

Teachers were also asked which tasks had seen time saved due to the impact of technology (see Figure 4.9). Collaborating / sharing resources (63%) and supporting remote teaching and learning (59%) were the tasks where the greatest proportion of teachers believed time had been saved compared with 2019/20. On the other hand, conducting assessments, both summative and formative (34% respectively), were the tasks where the smallest proportion of teachers felt time had been saved.

Figure 4.9 Impact technology has on the time it takes to complete tasks at teachers' schools (Teachers)
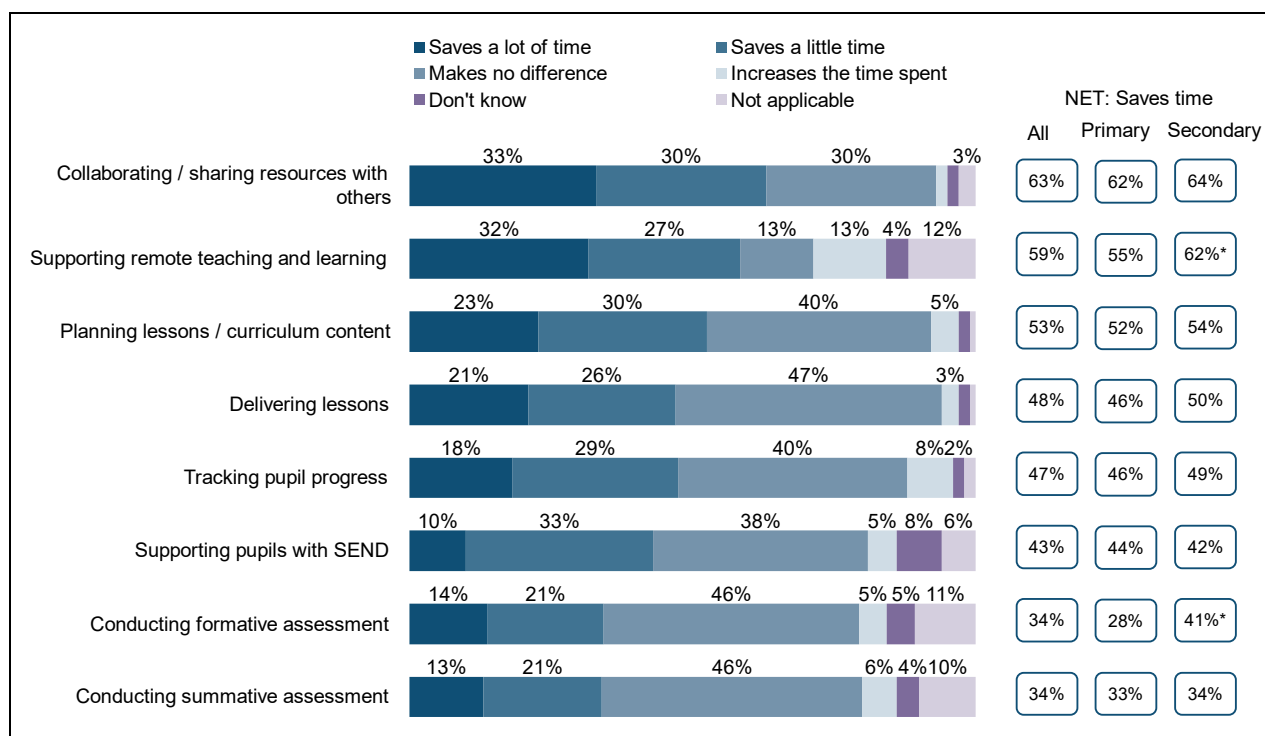
A6. Teachers (n=1,186) Primary Teachers (n=350) Secondary Teachers (n=836). *indicates a significant difference between Primary and Secondary Teachers.
Source: Technology in Schools Survey 2022-23. (Teachers survey).

Primary school teachers were more likely than secondary school teachers to report that technology was not used for supporting remote teaching and learning (16% vs. 7% respectively). In turn, secondary school teachers were more likely to report that technology saved time when it comes to supporting remote teaching (62%, compared with 55% for primary school teachers). This was similarly the case for conducting formative assessment, with more primary school teachers having reported that they do not use technology for this task (13% vs. 9% of secondary school teachers), to an extent explaining why more secondary school teachers think technology saved time in this area (41% vs. 28% primary school teachers).

LA maintained primary school teachers were more likely than primary academy school ones to report that technology was not used for supporting remote teaching and learning (20% vs. 10% respectively) – although unlike for primary and secondary school teachers this did not result in a significant difference in perceptions of time saved.

Technology and pupil attainment

Education leaders and teachers were asked to reflect on whether technology had contributed to improved pupil attainment, compared with 2019/20. As seen in Figure

4.10, education leaders were more likely than teachers to report that technology had contributed to improved pupil attainment in the last three years (67% vs. 45% respectively).

Figure 4.10 Views of school leaders and teachers on the relationship between technology and pupil attainment (Leaders and Teachers)
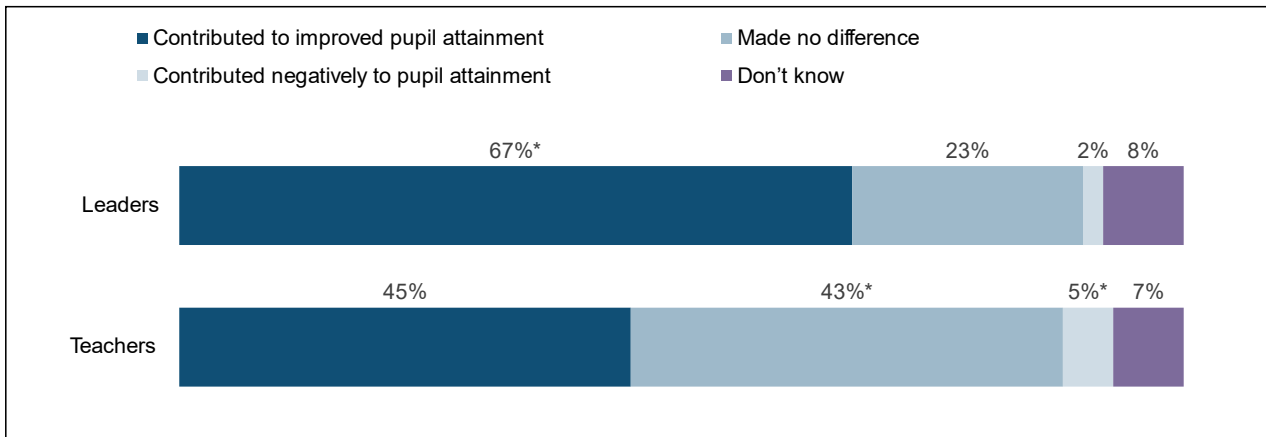
There were no significant differences in the views of leaders at primary and secondary schools, or academy schools and LA maintained schools. For teachers, however, primary school teachers were more likely than their secondary school counterparts to report that technology had made no difference to pupil attainment (46% vs. 40%).

As shown in Figure 4.11, education leaders were also more positive than teachers when it came to thinking about the impact of technology across the next 3 academic years. More than four-in-five (83%) leaders believed that technology will contribute to improved pupil attainment, compared with just under two-thirds (64%) of teachers.

Figure 4.11 Views of school leaders and teachers on the future relationship between technology and pupil attainment over the next three academic years (Leaders and Teachers)

As was the case for the impact of technology to date, there were no significant differences in the views of leaders at primary and secondary schools, or academy schools and LA maintained schools. There was also no significant difference in the views of teachers by school phase or academy status.

Technology and workload

Repeating the pattern seen with technology and pupil attainment, education leaders were once again more positive than teachers when it came to the perceived impact of technology on staff workload (Figure 4.12). Leaders were more likely than teachers to have felt that technology had reduced staff workload since 2019/20 (44% vs. 30%).

Figure 4.12 Views of school leaders and teachers on the impact of technology on workload, since the start of 2019/20 (Leaders and Teachers)

Leaders and teachers at secondary school were both more likely than their primary school counterparts to feel that technology had reduced staff workloads (54% and 36% respectively, vs. 42% and 25% at primary schools), as shown in Figure 4.13.

Figure 4.13 Views of primary and secondary leaders and teachers on the impact of technology on workload, since the start of 2019/20 (Leaders and Teachers)
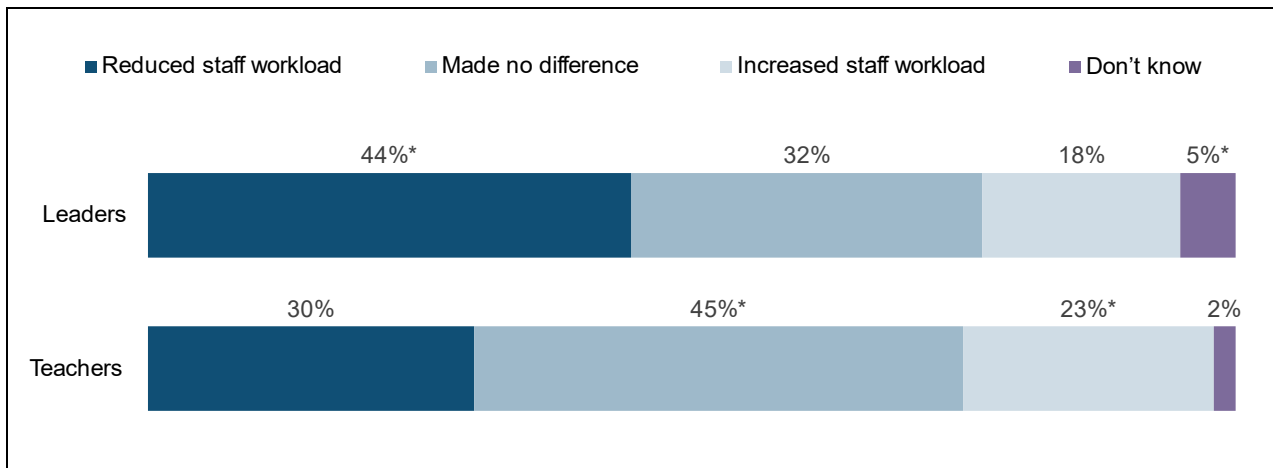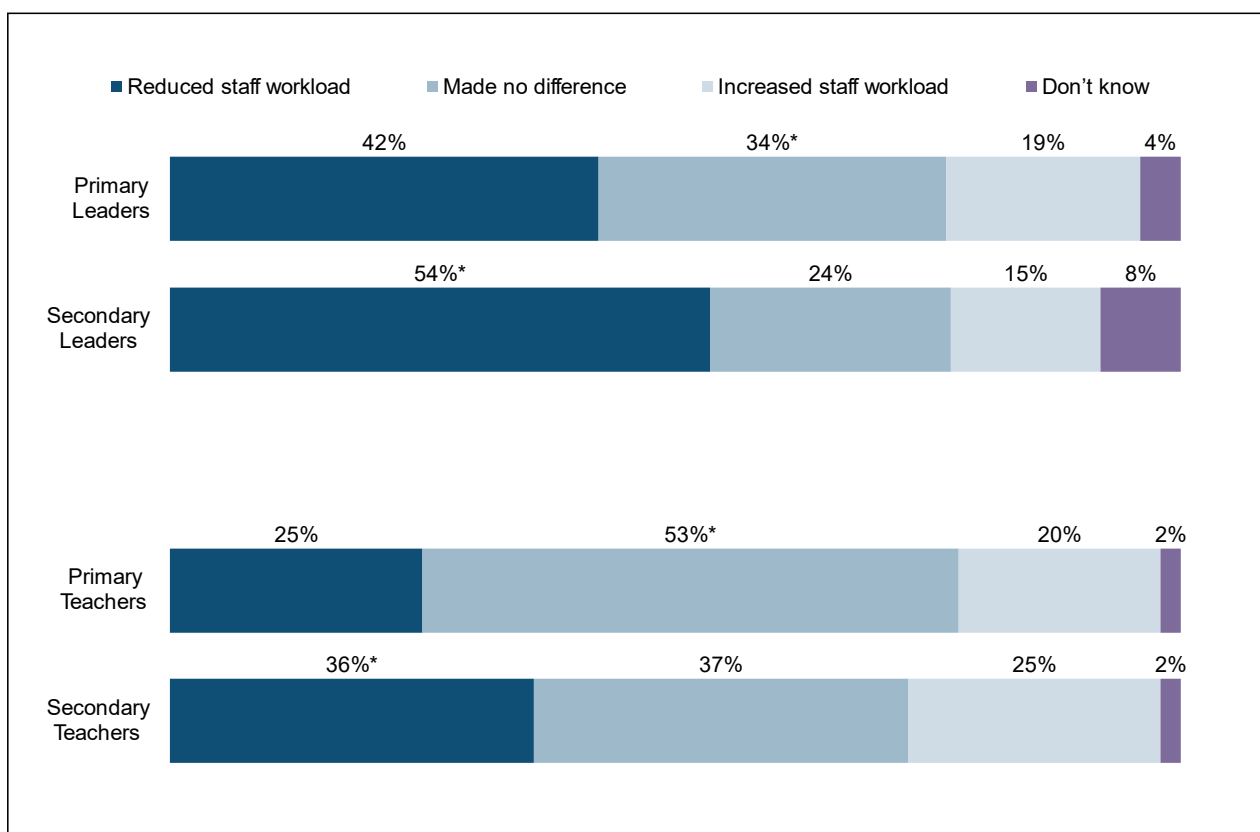
G3. Primary Leaders (n=526) Secondary Leaders (n=244); A9. Primary Teachers (n=350) Secondary Teachers (n=836). *Indicates significant difference between primary and secondary leaders and teachers. Source: Technology in Schools Survey 2022-23. (Leaders survey and Teachers survey).

Leaders with a digital technology strategy in place were more likely to indicate that technology had reduced staff workload than leaders who reported not having a digital technology strategy in place (49% vs. 40%).

Teachers who reported that devices at their school were not fit for purpose, were also more likely to indicate that their workload had increased compared to teachers who felt their school's devices were fit for purpose. This was the case for all devices as follows:

- Desktop computers (30% vs. 18%)

- Tablet computers (26% vs. 17%)

- Laptops / notebooks (29% vs. 19%)

- Interactive whiteboards (30% vs. 20%)

- Specialised assistive devices (27% vs. 17%)

- Screen casting from a teacher / student device (26% vs. 17%)

Older teachers were more likely to indicate that technology had increased their workload than their younger counterparts (35% vs. 15%). In addition, teachers in Key Stage 5 more commonly reported this than teachers in Key Stage 2 (27% vs. 18%).

Figure 4.14 shows that education leaders were more likely than teachers to think that technology will reduce staff workload over the next three academic years (55% vs. 37%). As with previous measures, teachers were more likely to think technology would have a negative impact – just under one-in-five (18%) felt it will increase workloads in the future, compared with one in ten education leaders (10%).

Figure 4.14 Views of school leaders and teachers on the future impact of technology on workload over the next three academic years (Leaders and Teachers)

Similar to their opinions when it came to the impact of technology on workload since 2019/20, Figure 4.15 shows that leaders at secondary schools were more likely to report that technology will reduce staff workload over the next three academic years and less likely to say it will make no difference (64% and 23% respectively), compared with those at primary schools (53% and 30% respectively). However, there were no significant differences for leaders by academy status.

Figure 4.15 Views of school leaders on the future impact of technology on workload over the next three academic years
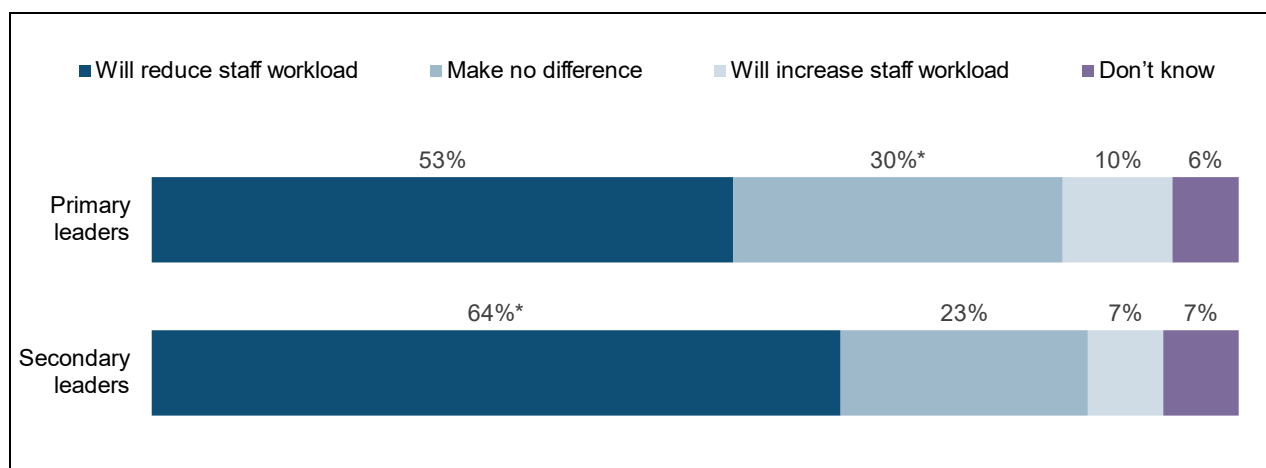
As shown in Figure 4.16, secondary school teachers were more likely than those at primary schools to believe technology will reduce workload over the next three years (42% vs. 33% respectively) – although this is partly driven by a greater proportion of primary school teachers citing 'don't know' (16%, compared with 9% of secondary school teachers).

Figure 4.16 Views of school teachers on the future impact of technology on workload over the next three academic years
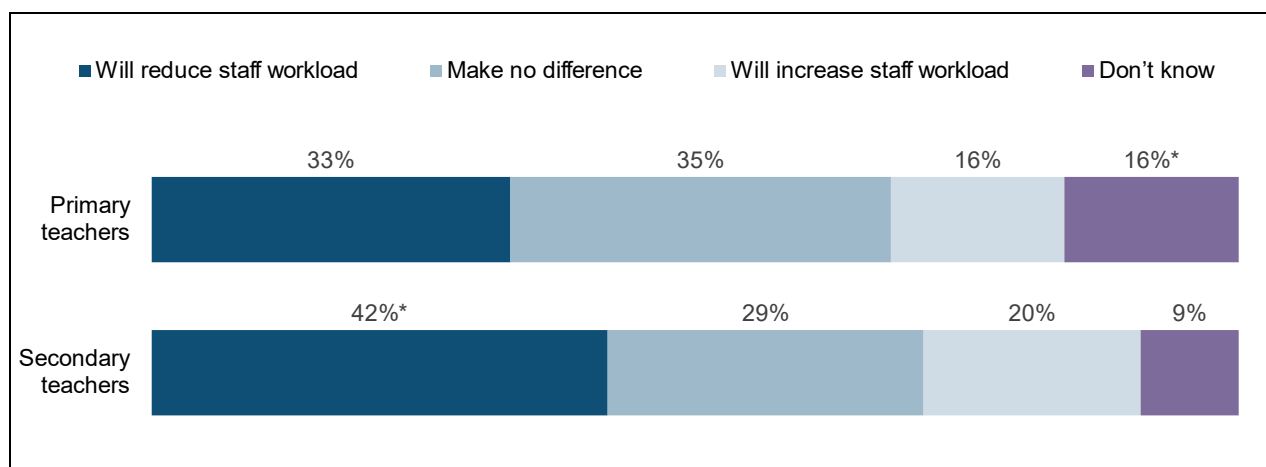
5. Barriers to increased use of technology and investment planning

This chapter explores the perceived barriers to increased use of technology from the perspective of leaders and teachers. It then moves on to consider investment decisions and future investment plans.

Barriers faced by leaders

Leaders cited a range of barriers that prevented the increased uptake of technology in their schools, with budgetary constraints and the high cost of technology the greatest barriers (Figure 5.1). Nearly all leaders said that these were barriers to some degree (96% and 93% respectively), and 75% reported that budgetary constraints were a barrier to a 'great' extent.

Other aspects that sizeable numbers of leaders mentioned as barriers to 'some' or a 'great' extent' included difficulties accessing CPD to learn how to use technology effectively (lack of time for CPD - 68%, cost of CPD - 63%), the current technology infrastructure (availability of technology in school - 65%, Wi-Fi connectivity - 53%, broadband connectivity - 46%), and staff skills and attitudes (staff skills and confidence with technology - 60%, staff willingness to use technology - 42%).

Fewer leaders felt that limited procurement guidance, safeguarding and data concerns and unclear benefits of technology were barriers to increased uptake of technology in their school although these were still reported as barriers to at least 'some extent' by a quarter or more of leaders (35%, 26% and 25% of leaders respectively).

Indicative comparison[26] with the 2020-21 EdTech school leaders survey shows that while many barriers have declined, financial barriers have remained consistently high. The proportion citing the high cost of technology as a barrier has declined (from 99% to 93%) but remains very high, while the proportion citing budgetary constraints as a barrier has remained stable (97% in 2020-21 compared with 96% in 2022-23). Connectivity-related barriers have reduced substantially. 'Wireless' connectivity was cited by 68% of leaders in 2020-21, compared with 53% citing 'Wi-Fi' connectivity in 2022-23. Similarly, broadband connectivity as a barrier declined from 60% in 2020-21 to 46% in 2022-23. Other barriers like the availability of technology in school, staff confidence and willingness to use technology, safeguarding and data concerns, and limited procurement guidance have also declined compared with 2020-21.

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[26] Note that the question wording changed for the 2022-23 survey which means that comparisons are indicative only. Instead of asking if each category was 'a big barrier', 'a small barrier' or 'not a barrier', the survey asked whether each category was a barrier to 'a great extent', 'to some extent', 'not really' or 'not at all'. The figures cited in the report for any 'barrier' are a combination of 'big' and 'small' barrier (when referring to 2020-21) and 'to a great extent' and 'to some extent' (when referring to 2022-23).

Figure 5.1 Barriers to increased uptake of technology by schools (Leaders)

Legend: To a great extent, To some extent, Not really / not at all, Don't know

NET: To a great or some extent

Barrier	To a great extent	To some extent	Not really / not at all	Don't know	NET
Budgetary constraints	75%	20%	4%		96%
The high cost of some technology	64%	29%	6%		93%
Lack of time for CPD to learn how to use technology effectively	19%	49%	32%		68%
Availability of technology in school	26%	39%	35%	1%	65%
The cost of CPD to learn how to use technology effectively is too high	23%	40%	35%	2%	63%
Staff skills and confidence with technology	8%	52%	39%	1%	60%
Wi-Fi connectivity in school	22%	31%	46%	1%	53%
Broadband connectivity in school	19%	27%	53%	1%	46%
Staff willingness to use technology	5%	38%	57%	1%	42%
Limited procurement guidance	4%	31%	57%	8%	35%
Safeguarding and data concerns	3%	23%	74%	1%	26%
The benefits of technology are unclear	2%	24%	73%	2%	25%

H1. Leaders (n=770).
Source: Technology in Schools Survey 2022-23 (Leaders survey).

As shown in Table 5.1, primary leaders cited more barriers to the uptake of technology in their school compared with secondary leaders. Specifically primary leaders gave higher mentions of the (lack of) availability of technology, the cost of CPD, Wi-Fi connectivity, broadband connectivity and limited procurement guidance. The greatest gap by phase was for broadband connectivity (49% of primary leaders reported this as a barrier to 'some extent' vs. 31% of secondary leaders) and for the cost of CPD to learn how to use technology effectively (65% vs. 50%).

Table 5.1. Proportion reporting aspect as a barrier to increased uptake of technology to a 'great extent' or to 'some extent' by phase (Leaders)

|	Primary phase	Secondary phase
Budgetary constraints (i.e. how much you have available to spend)	95%	97%
The high cost of some technology	94%	90%
Lack of time for CPD to learn how to use technology effectively	67%	72%
Availability of technology in school	66%*	58%
The cost of CPD to learn how to use technology effectively is too high	65%*	50%
Staff skills and confidence with technology	60%	60%
Wi-Fi connectivity in school	55%*	45%
Broadband connectivity in school	49%*	31%
Staff willingness to use technology	41%	48%
Limited procurement guidance	37%*	24%
Safeguarding and data concerns	25%	28%
The benefits of technology are unclear	26%	22%

H1. Primary leaders (n=526), Secondary leaders (n=244).
*Indicates significant difference between primary and secondary.
Source: Technology in Schools Survey 2022-23 (Leaders survey).

By academy status, leaders at primary academies were more likely to report barriers relating to 'technology infrastructure' compared to primary LA maintained, with higher mentions of the availability of technology at their school (72% vs. 62%) and Wi-Fi connectivity (60% vs. 51%). Leaders in secondary LA maintained schools were more likely to mention limited procurement guidance as a barrier to greater use of technology, compared to secondary academies (37% said this to 'some or a 'great' extent vs. 20%).

Broadband connectivity in school was more commonly reported as a barrier to 'some' or a 'great' extent in rural schools compared to urban schools (54% in rural schools vs. 43% in urban schools). The same pattern was observed for Wi-Fi connectivity (60% rural vs. 51% urban).

Barriers faced by teachers

Similar to leaders, teachers cited a range of barriers that prevented them using technology more in their work, and also gave the high cost of technology and budgetary constraints as the most significant barriers (Figure 5.2). Around nine-in-ten teachers said these were barriers to some degree, with 65% and 71% reporting that these were barriers to a 'great' extent. The proportion of teachers citing financial barriers was similar in 2020-21 (when 93% cited the cost of technology and 90% cited budgetary constraints)[27].

Other barriers mentioned by a sizeable number of teachers centred around the availability of technology (in pupil's homes - 82%, in school - 81% and internet connectivity at pupils' home - 75%) and difficulties accessing CPD to learn how to use technology effectively (lack of time for CPD - 75%, cost of CPD - 65%). Compared with 2020-21, teachers were less likely to cite pupil-related factors as barriers[28] - in particular, the proportion citing pupils' digital skills as a barrier declined from 81% to 59%.

Fewer teachers felt that skills and confidence with technology, safeguarding and data concerns, unclear benefits of technology and their appetite for using technology were barriers to using technology more in their work. That said, these were still reported as barriers to some extent by over a third of teachers each (Figure 5.2). Compared with 2020-21, the proportion of teachers who cited their skills and confidence using technology as a barrier to further uptake has fallen from 58% to 39%.

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[27] As before, this is indicative comparison as the question was not exactly the same.
[28] Ibid.

Figure 5.2 Barriers to increased uptake of technology by schools (Teachers)

Legend: ■ To a great extent ■ To some extent ▥ Not really / not at all ■ Don't know

NET: To a great or some extent

Barrier	To a great extent	To some extent	Not really / not at all	Don't know	NET
The high cost of some technology	65%	24%	7%	3%	90%
Budgetary constraints	71%	18%	7%	4%	89%
Availability of technology in pupil's homes	35%	46%	16%	3%	82%
Availability of technology in school	46%	36%	18%	1%	81%
Internet connectivity at pupils' homes	30%	45%	21%	4%	75%
Lack of time for CPD to learn how to use technology effectively	32%	43%	23%	1%	75%
The cost of CPD to learn how to use technology effectively is too high	33%	32%	22%	12%	65%
Wi-Fi connectivity in school	23%	39%	36%	1%	62%
Pupils' digital skills	15%	43%	40%	1%	59%
Broadband connectivity in school	19%	36%	42%	2%	55%
Your skills and confidence with technology	8%	32%	60%	1%	39%
Safeguarding and data concerns	6%	32%	60%	3%	38%
The benefits of technology are unclear	6%	31%	61%	2%	37%
Your appetite for using technology	6%	30%	63%	1%	36%

X4. Teachers (n=1,186).
Source: Technology in Schools Survey 2022-23 (Teachers survey).

As shown in Table 5.2, primary and secondary teachers reported broadly similar barriers that prevented the greater uptake of technology in their schools. Primary teachers were more likely to cite the barriers that centred around cost, namely the high cost of technology, budgetary constraints and the cost of CPD to learn how to use technology. In contrast, secondary teachers were more likely to cite the (lack of) internet connectivity at pupil's homes and the unclear benefits of using technology as barriers.

Table 5.2 Proportion reporting aspect as a barrier to increased uptake of technology to a 'great extent' or to 'some extent' by phase (Teachers)

	Primary phase	Secondary phase
The high cost of some technology	93%*	87%
Budgetary constraints	93%*	86%
Availability of technology in pupil's homes	80%	84%
Availability of technology in school	83%	79%
Internet connectivity at pupils' homes	70%	80%*
Lack of time for CPD to learn how to use technology effectively	75%	76%
The cost of CPD to learn how to use technology effectively is too high	71%*	59%
Wi-Fi connectivity in school	63%	62%
Pupils' digital skills	59%	58%
Broadband connectivity in school	57%	54%
Your skills and confidence with technology	41%	38%
Safeguarding and data concerns	35%	40%
The benefits of technology are unclear	32%	42%*
Your appetite for using technology	35%	38%

X4. Primary teachers (n=350), Secondary teachers (n=836).

*Indicates significant difference between primary and secondary.

Source: Technology in Schools Survey 2022-23 (Teachers survey).

Investment in school technology

Overall, investment decisions about the use of technology were mainly made at school level (59%), followed by a mixture of school and trust/local authority level (32%). The vast majority of LA-maintained primaries (85%) and secondaries (90%) reported that investment decisions were mainly made at school level, with a small minority citing decisions were made at a mixture of school and LA level (11% of LA-maintained primaries and 7% of LA-maintained secondaries).

Among academy schools there was a much higher proportion who reported that decisions were made at a mixture of school and trust level, especially among primaries (61%) compared with secondaries (45%). That said, around one-quarter of academy primaries (23%) and two-in-five academy secondaries (42%) reported that investment decisions were mainly made at school level. Similar proportions of academy primaries (15%) and secondaries (14%) reported that investment decisions were mainly made at trust level. Taken together, this indicates that the majority of academy schools has some input into decisions about investment in technology. When leaders were asked which factors they considered before making decisions about investment in technology, the school budget was by far the most frequently reported factor (95%), followed by evidence of best practice (79%). Findings from an audit / assessment of current technology and recommendations from external advisors were also both reported by around two-thirds (64%) of leaders.

There were a couple of differences by phase, with the proportion reporting that they referred to recommendations from external advisors rising to 67% of primary leaders (vs. 49% of secondary leaders). This again is in line with earlier findings that secondary schools are more likely to require / lean on in-house expertise. In the reverse, secondary leaders more frequently considered their school policy and culture before deciding how to invest (61% vs. 49% of primary leaders).

Figure 5.3 Factors considered before investment in technology (Leaders)

Factor	Percentage
The school budget generally / how much we have available to invest	95%
Evidence of best practice use of technology in schools	79%
Findings from audit / assessment of current technology	64%
Recommendations from external advisors	64%
Recommendations from internal staff	57%
School policy and culture	51%
Staff capability	49%
DfE digital and technology standards	45%
Pupil Capability	38%

F8. Base: All leaders (n=770). Don't know not charted as <3%.
Source: Technology in Schools survey 2023 (Leaders survey).

In terms of sources used when choosing what education technology to invest in, a sizeable proportion of leaders indicated that they used Network, IT or business managers (41%), other schools that use technology (38%), and research bodies (31%) as their top 3 sources to go to. There were a range of differences by phase, as outlined in figure 5.4: secondary leaders were more likely than primary leaders to cite Network, IT or business managers (49% vs. 40%), in-house evaluations (24% vs. 16%), and exhibitions/ conferences (15% vs. 8%), while primary leaders were more likely to cite the local authority (11% vs. 3% secondary).

Figure 5.4 Sources used when choosing what education technology to invest in (leaders)

Legend: ■ Primary ■ Secondary

Source	Primary	Secondary
Network, IT or Business Managers	40%	49%*
Other schools that use technology well / user reviews	39%	34%
Research bodies (e.g., Education Endowment Foundation) or academic journals	32%	26%
Leadership staff	25%	27%
Teaching staff - either internal or external to my school	23%	21%
Leading practitioners / researchers in the field of education technology	20%	18%
In-house evaluations	16%	24%*
Academy trust	17%	16%
Consultancy	11%	12%
Education sector publications / websites	11%	9%
Local authority	11%*	3%
Exhibitions/conferences	8%	15%*
Commercial suppliers or vendors	7%	11%
Governors/Trustees	6%	7%
Interest groups or individuals active on social media (Twitter, Facebook, Instagram)	7%	5%
Government	3%	3%
Don't know	2%	3%

F9. Base: Primary leaders (n=526); Secondary leaders (n=244).

*Indicates significant difference between primary and secondary. Responses <3% not charted.
Source: Technology in Schools survey 2023 (leaders).

Future investment plans

Leaders were asked if their school or trust had plans to invest in technologies for their school for any management and administration activities in the next 3 years. As shown in Figure 5.5, secondary leaders were more likely than primary leaders to have plans for each activity listed, with the exception of financial management. In contrast primary leaders more typically indicated that they did not plan to make any investment in management, administration and infrastructure in the next 3 years (22% vs. 7% of secondary leaders)

Figure 5.5 Management and administration-related activities schools or trusts have plans to invest in in the next 3 years (leaders)
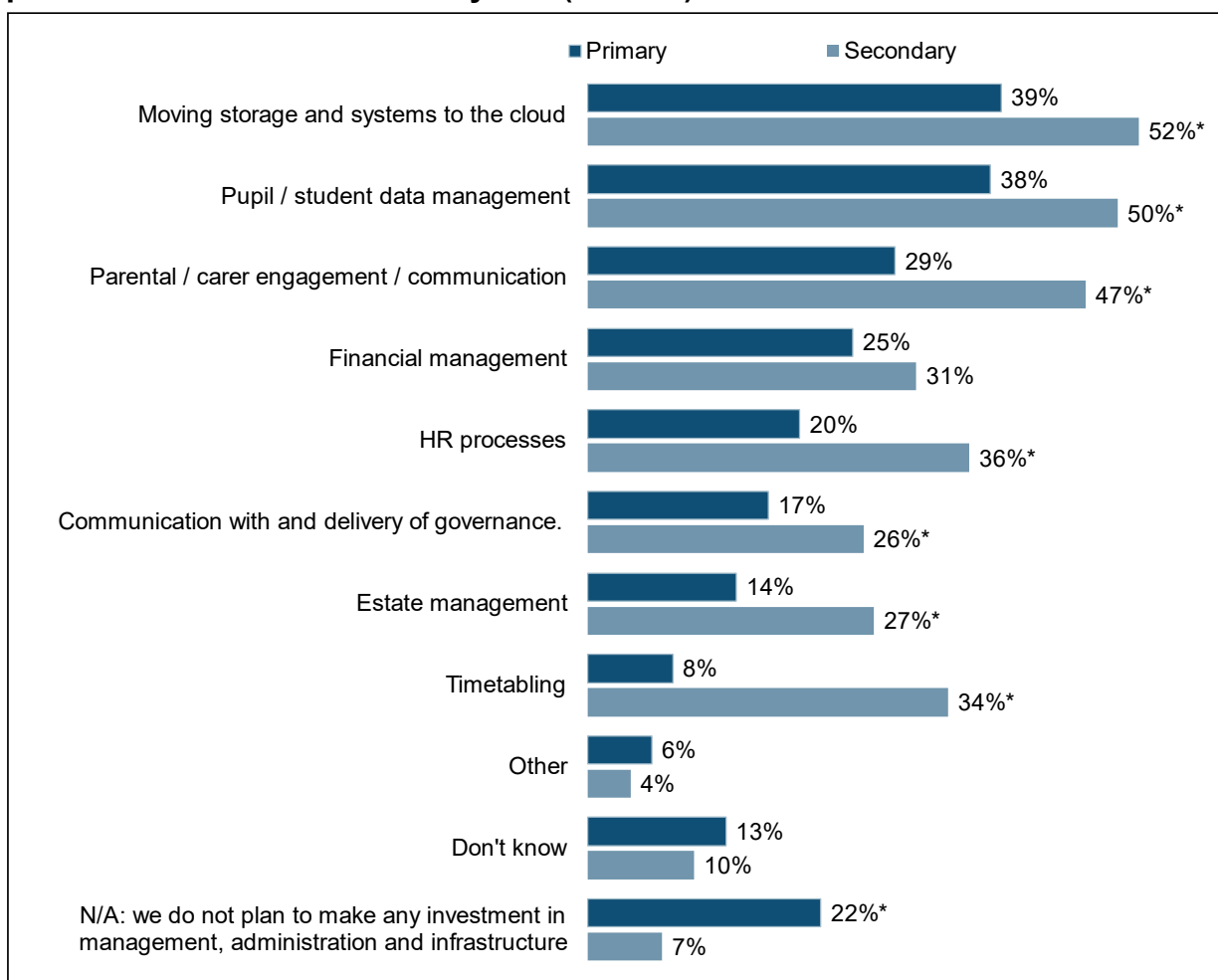
F7A. Base: Primary leaders (n=526); Secondary leaders (n=244).
*Indicates significant difference between primary and secondary.
Source: Technology in Schools survey 2023 (leaders).

There were differences seen by academy status, with primary academy leaders more likely to invest in the following activities across the next 3 years than primary LA-maintained leaders:

- HR processes (28% vs. 15% of LA-maintained schools)

- Payroll (21% vs. 14% of LA-maintained schools)
- Estate management (19% vs. 10% of LA-maintained schools)

Primary academies were also more likely to report that they did not know how they planned to invest in management and administration-related activities over the next 3 years (17% vs. 10% of LA-maintained leaders at primary schools). There were no significant differences between secondary academies and secondary LA-maintained schools.

School leaders who were more positive about technology contributing to improved pupil attainment over the next three years and those who felt technology would reduce staff workload were more likely to cite an intention to invest in some (but not all) of the technology areas.

Investment plans for teaching-related activities specifically

In terms of technology investment plans for teaching-related activities, leaders most frequently cited devices for pupils (62%), supporting pupils with SEND (55%), and delivering lessons (45%) as the main aspects they were planning to invest in across the next 3 years. There were a range of differences by phase, as show in Figure 5.6: Primary leaders were more likely than secondary leaders to have plans to invest in devices for pupils (63% vs. 55%), while secondary leaders were more likely than primary leaders to have plans to invest in:

- Delivering teacher training/CPD (48% vs. 40%)
- Collaborating and sharing resources with other teachers (40% vs. 31%)
- Offering independent / online learning (including in class) (41% vs 30%).

Leaders who reported plans to invest in various types of technology to support teaching-related activities were consistently more positive about its future impact on improved pupil attainment.

Figure 5.6 Teaching-related activities schools or trusts have plans to invest in in the next 3 years (leaders)

Legend: ■ Primary ■ Secondary

Activity	Primary	Secondary
Devices for pupils	63%*	55%
Supporting pupils with SEND (e.g., assistive technology that supports pupils to learn / improve	54%	61%
Delivering lessons	44%	48%
Delivering teacher training / CPD	40%	48%*
Tracking pupil progress	39%	45%
Planning lessons / curriculum content	34%	36%
Collaborating and sharing resources with other teachers	31%	40%*
Offering independent / online learning (including in class)	30%	41%*
Conducting summative assessment	29%	31%
Conducting formative assessment (e.g. giving feedback or marking)	24%	30%
Don't know	6%	8%
N/A: we do not plan to make any investment in teaching-related activities within the next three	7%	5%

F7B. Base: Primary leaders (n=526); Secondary leaders (n=244). *Indicates significant difference between primary and secondary. Other not charted as <5%.
Source: Technology in Schools Survey 2023-23 (leaders).

In terms of the types of technologies or resources schools planned to invest in over the next 12 months, IT leads most frequently cited end user devices for staff (39%), end user devices for pupils (38%), audio-visual equipment (23%), servers and storage, inc. cloud (23%), and Wi-Fi (22%). By phase, secondary IT leads were more likely to indicate that they planned to invest in end user devices for staff and for pupils than primary IT leads (63% vs. 35% for staff and 66% vs. 33% for pupils).

Confidence school has expertise to buy the right technology

Around nine-in-ten leaders (88%) were confident that their school had the expertise needed to buy the right technology. As shown in Figure 5.7, secondary leaders more frequently reported this compared with primary leaders (93% vs. 87%), with around half

feeling very confident (48% vs. 26% of primary leaders). There were no significant differences by school type.

Figure 5.7 Confidence levels in the expertise schools have to buy the right technology (leaders)
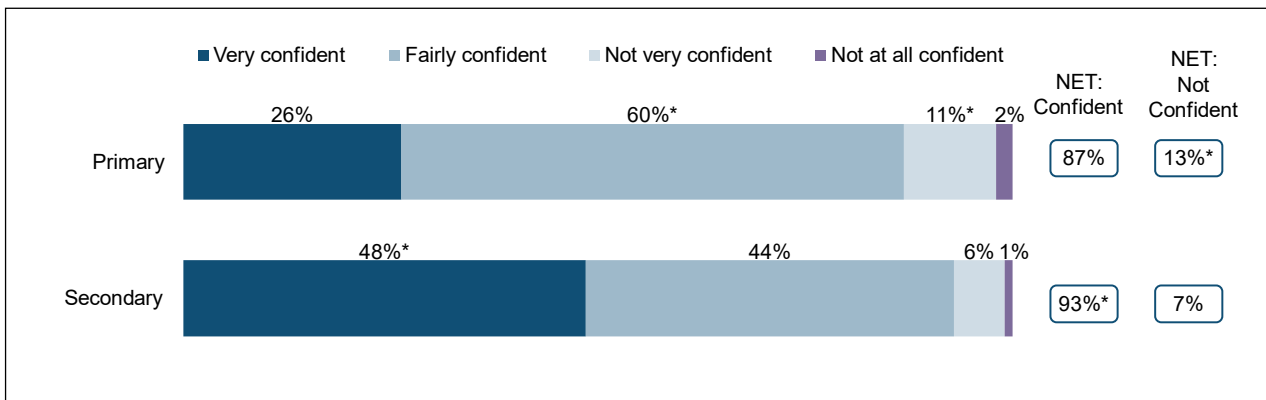
Confidence levels among IT leaders were similar; the majority felt confident (86%), rising to 95% of secondary IT leads (vs. 84% of primary IT leads). This most likely links to earlier reported findings around the fact that IT leads working in secondary schools were more likely to be specific IT professionals (90%) compared with those in primary schools (60%).

Leader confidence in their school having the expertise to buy the right technology was higher for those schools with a digital strategy in place (94% of leaders in schools with a digital strategy reported being confident compared to 79% of those in schools without, or unsure if they had, a digital strategy).

When it came to buying technology, the majority of IT leads felt confident (86%), and 42% felt very confident. Secondary IT leads were significantly more likely to report feeling confident than primary IT leads (95% vs. 84%). Whereas primary IT leads were more likely to report that they did not feel confident compared with secondary IT leads (14% vs. 5%). IT leads in the most deprived schools were significantly more likely than average to report that they did not feel confident (20% vs. 12% overall).

6. Infrastructure

This section explores the technology available in schools in more depth, with a focus on the education technology infrastructure as described by IT leads. This covers connectivity, wiring and the use of different operating systems and servers. The section then explores the incidence of different storage systems (both on-premise and cloud-based) and the use of backup copies and concludes with an overview of technical support options available.

It is worth noting upfront that awareness regarding education technology infrastructure was often much lower among primary IT leads than their secondary counterparts. This is perhaps unsurprising, with secondary schools often requiring more dedicated / specialist IT support. Indeed:

- Those working in primary schools were more likely to report that their IT responsibilities sat alongside subject teaching, with their official job title being "subject leader for computing / IT" (27% vs. 3% secondary IT leads). By contrast, around half (49%) of those working at secondary schools reported that IT leadership / management / coordination was the full extent of their role vs. 23% of those working in primary settings. A further 35% similarly described themselves as a "Network manager" vs. 8% of those working in primary settings.

- Those working on behalf of primary schools were also more likely to report that they offered outsourced IT support to the school on whose behalf they were answering the survey (18% vs. 2% in secondary schools).

As such, the approach needed in schools regarding education technology is likely to be different depending on school phase.

Connectivity and wiring

IT leads were asked what connectivity and wiring set-ups were in place at their school. They were prompted by the options outlined in Figure 6.1, which are presented in the order they appear in the digital standards guidance for schools and colleges.[29]

Differences in awareness levels by phase were evident here. Taking the first option as an example, around one-in-five (21%) in primary schools were not able to confirm whether there was a full fibre connection for broadband speed in place, compared with 1% in secondary schools.

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[29] Meeting digital and technology standards in schools and colleges - Cyber security standards for schools and colleges - Guidance - GOV.UK (www.gov.uk)

As shown in Figure 6.1, secondary IT leads were typically more likely to report having each measure in place. That said, the use of the latest wireless network approved by the Wi-Fi alliance, Wi-Fi 6, was particularly low across both phases (24% among primary IT leads and 21% among secondary IT leads), as was the use of a back-up broadband connection in primary settings (reported by 9% of primary IT leads vs. 40% of secondary IT leads).

Figure 6.1 The proportion of schools that report meeting the listed technology standards (IT leads)
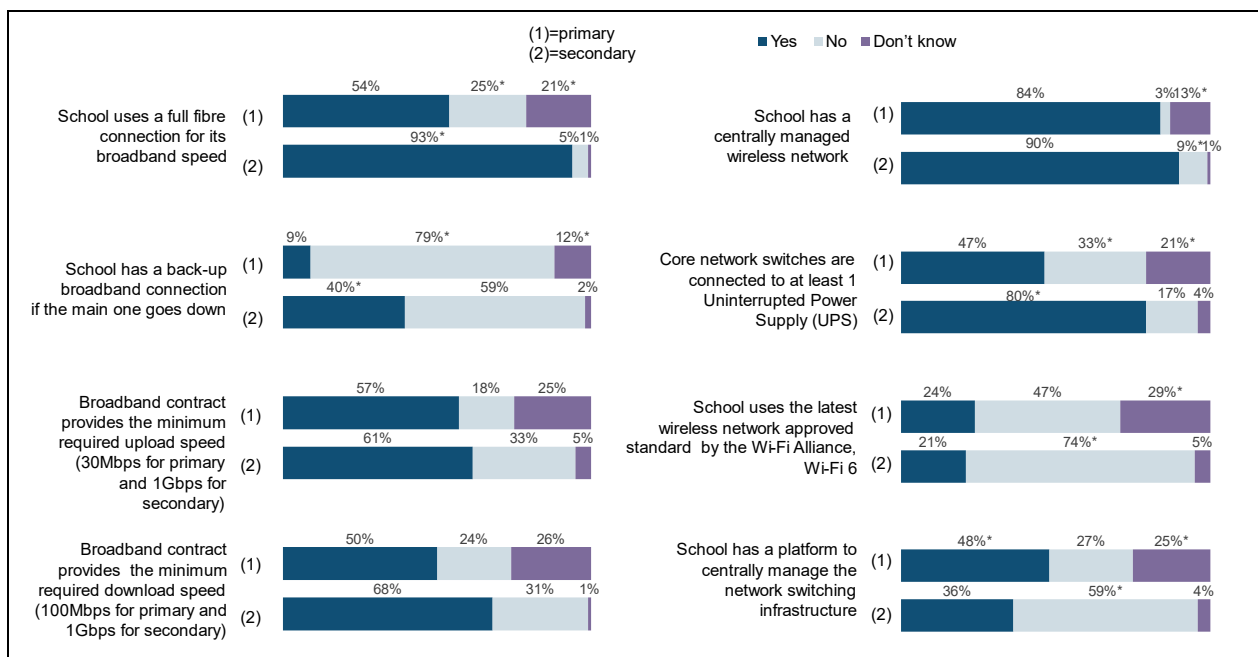
Rural schools appeared a step behind urban schools on a number of measures. IT leads for rural settings were less likely to report the use of a full fibre connection, for example (45% vs. 66% in urban settings). They were also less likely to report the availability of a back-up broadband connection if the main one goes down (5% at rural settings vs. 18% in urban settings). Additionally, a greater proportion were unsure whether their school used Wi-Fi 6[30] (34% vs. 22% of those at urban schools).[31]

As shown in Table 6.1, those who reported that they already adhered to the standards were often more likely to have plans to invest in different technologies. Almost half (49%) of those at schools with full fibre broadband connection had plans to invest in end-user devices for staff, for example, compared to 30% of those at schools that did not currently

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[30] i.e., the latest wireless network approved standard by the Wi-Fi Alliance.
[31] Please note, base sizes do not allow for a comparison between urban and rural status measures related to download and upload speed measures, as these were further subdivided by phase in the questionnaire.

have a full fibre broadband connection. The exceptions here were those reporting that their school did not currently have a platform to centrally manage the network switching infrastructure and those reporting that their school did not currently use Wi-Fi 6, with these groups often more likely to report plans to invest in various technologies. Those reporting that their school did not currently use a full fibre connection for its broadband speed were also more likely to report plans to invest in broadband (33% vs. 18% overall).

Table 6.1 Investment plans by whether standards are in place (IT leads)

	All	Full fibre connection Yes	Full fibre connection No	Back-up broadband Yes	Back-up broadband: No
End user devices: staff	39%	49%*	30%	64%*	37%
End user devices: pupils	38%	48%*	24%*	51%*	37%
Audio visual equipment	23%	30%*	17%	32%	21%
Servers / storage, inc. cloud	23%	29%*	19%	33%*	23%
Wi-Fi	22%	25%	25%	45%*	18%*
Training for teachers on tech	20%	22%	21%	22%	21%
Digital curriculum resources	19%	22%	9%	30%*	16%*
Broadband	18%	17%	33%*	27%*	17%
Cyber security, firewalls	13%	16%	15%	24%*	12%
Back-office systems/software	11%	16%*	5%	23%*	9%
Filtering and monitoring	8%	11%	8%	19%*	7%
Network Management Tool	7%	11%*	1%	14%*	7%
Other	4%	2%	0%	5%	4%
None / no plans	10%	7%*	16%	6%	11%
	All	Centrally managed switching Yes	Centrally managed switching No	At least 1 UPS Yes	At least 1 UPS No
End user devices: staff	39%	43%	51%*	44%	46%
End user devices: pupils	38%	41%	43%	47%*	35%
Audio visual equipment	23%	20%	34%*	28%*	24%
Servers / storage, inc. cloud	23%	23%	32%*	24%	29%
Wi-Fi	22%	21%	27%	29%*	18%

	All	Centrally managed switching Yes	Centrally managed switching No	At least 1 UPS Yes	At least 1 UPS No
Training for teachers on tech	20%	24%	13%*	24%	16%
Digital curriculum resources	19%	23%	13%*	23%	16%
Broadband	18%	15%	24%*	20%	22%
Cyber security, firewalls	13%	14%	19%*	15%	17%
Back-office systems/software	11%	13%	14%	15%*	9%
Filtering and monitoring	8%	7%	15%*	10%	9%
Network Management Tool	7%	8%	11%	10%	7%
Other	4%	5%	1%	4%	1%
None / no plans	10%	*6%	14%	8%	11%
	All	Wi-Fi 6 Yes	Wi-Fi 6 No		
End user devices: staff	39%	39%	50%*		
End user devices: pupils	38%	37%	46%*		
Audio visual equipment	23%	28%	25%		
Servers / storage, inc. cloud	23%	33%*	26%		
Wi-Fi	22%	12%*	34%*		
Training for teachers on tech	20%	22%	16%*		
Digital curriculum resources	19%	27%*	14%*		
Broadband	18%	12%	27%*		
Cyber security, firewalls	13%	9%	20%*		
Back-office systems/software	11%	10%	15%*		
Filtering and monitoring	8%	9%	11%		
Network Management Tool	7%	10%	9%		
Other	4%	0%	1%*		
None / no plans	10%	11%	11%		

F3 and A1_1, A1_6-10. IT leads (n=323)

*Indicates significant difference from the average.

Source: Technology in Schools Survey 20222023 (It leads survey).

In terms of wiring, Figure 6.2 shows that copper cabling Category 5E or lower was by far the most commonly reported set-up across both phases (cited by 40% of primary IT leads and 53% of secondary leads). It should be noted that awareness levels were again very different by phase, with 42% of primary IT leads unable to confirm what cabling they had in place at their school compared to just 3% in secondary settings.

Figure 6.2 Main cabling in place at schools (IT leads)
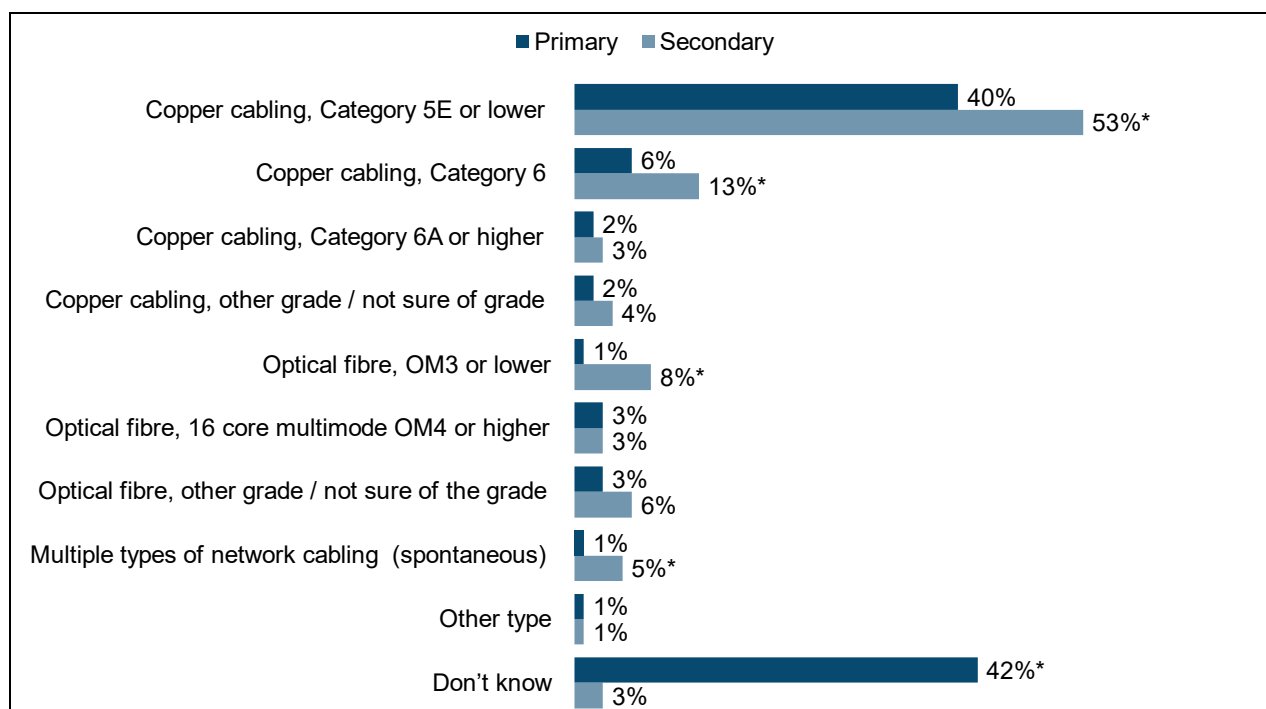
Efficacy of broadband and Wi-Fi connections

IT leads were asked about the efficacy of the broadband and Wi-Fi connections in place at their school. Unlike elsewhere, the majority were able to comment irrespective of phase. As shown in Figure 6.3, most responded positively, particularly in terms of Wi-Fi networks being effective in preventing access to unauthorised users whilst providing regular access to guest users (80% of IT leads agreed they were effective), broadband reliability (77% agreed it was reliable) and network switches in the school providing a fast, reliable and secure connection to all users (76% agreed they did so).

Figure 6.3 **Efficacy of broadband and Wi-Fi connections (IT leads)**
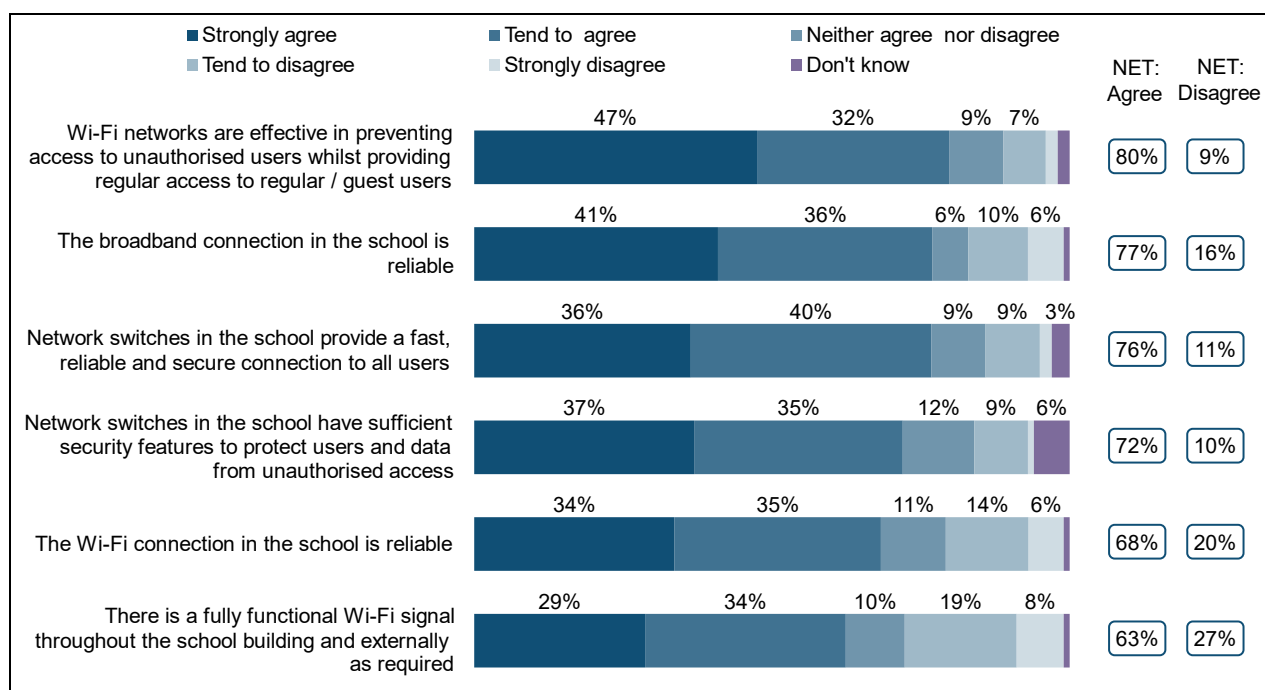
A4. IT leads (n=323).
Source: Technology in Schools Survey 2022-23 (IT leads survey).

Views here were similar across phase, with the exception of views around the reliability of the schools' broadband connection. IT leads responsible for primary schools were more likely to disagree that their school's broadband connection was reliable (18% compared with 7% of IT leads in secondary schools), as were those responsible for schools in rural settings (25% compared with 13% of IT leads in urban settings).

Agreement with these statements was often higher among those who indicated that their school adhered to associated broadband and Wi-Fi standards. The 77% who agreed that the broadband connection in the school was reliable rose to 85% among those who reported that their school uses a full fibre connection for its broadband speed, for example, and 92% among those who reported that their school had a back-up broadband connection if the main one goes down. Likewise, the 68% who agreed that the Wi-Fi connection in the school was reliable rose to 76% among those who reported that their school had a centrally managed wireless network and 88% among those who confirmed that the school uses Wi-Fi 6 (the latest wireless network approved standard by the Wi-Fi Alliance).

However, the picture was less clear when considering network switches. There were no significant differences in levels of agreement with the statement "Network switches in the school provide a fast, reliable and secure connection to all users" between those who reported that their school had a platform to centrally manage the network switching infrastructure and those who did not, for example. There were differences in levels of agreement that "Network switches in the school have sufficient security features to protect users and data from unauthorised access", however: 86% of those who reported that their school had a platform to centrally manage the network switching infrastructure agreed compared to 63% who reported that their school did not. Likewise, 81% of those who reported that core network switches at their school were connected to at least 1 Uninterrupted Power Supply (UPS) agreed with the security features statement compared to 62% who reported that their school did not.

Operating systems

The survey also covered both school operating systems for user / desktop infrastructure and those for server infrastructure. With regards to the former, almost all IT leads reported using Windows (Table 6.2). Windows 10 was particularly common (85% in primary schools rising to 93% in secondary schools). The use of Mac operating systems was far less common, but generally more likely to be in use at secondary schools (11% reported using Mac OS Ventura vs. 2% of primary IT leads, for example). Again, the awareness levels were relatively high (just 3% of primary IT leads and 1% of secondary IT leads reported that they did not know).

Table 6.2 Main operating systems used for user / desktop infrastructure (IT leads)

	Primary phase	Secondary phase
NET: Any windows	95%	98%
Windows 11 (Home, Pro, or EDU)	23%	21%
Windows 10S / 11S	4%	2%
Windows 10 (Home, Pro, or EDU)	85%	93%*
Windows 8	2%	-
Windows 7	2%	1%
Google Chrome OS	34%	26%
NET: Mac	6%	28%*
Mac OS Monterey	3%	8%
Mac OS Ventura	2%	11%
Mac OS High Sierra	2%	8%
Mac OS Sierra	-	3%
Mac OS Big Sur	2%	5%
Mac OS Mojave	-	3%
Mac OS El Capitan	-	2%
Mac OS Catalina	-	3%
Linux (Ubuntu, Lubuntu, etc)	1%	2%
Other	<1%	1%
Don't know	3%	1%

E1. Primary IT leads (n=155). Secondary IT leads (n=168).
*Indicates significant difference between primary and secondary.
Source: Technology in Schools Survey 2022-23 (IT leads survey).

Table 6.3 compares these results with those seen in 2020. As shown, the proportions using either Windows or Mac at the overall level were very similar (ranging from 97-99%). There was some movement between specific versions within this. With operating systems continually evolving, this is perhaps unsurprising. Windows 11 was not an option during the 2020 survey, for example. The fact that it now exists explains why fewer primary school are now using Windows 10 as a result (85% vs. 91% in 2020). The data does also show that although newer infrastructure exist, large proportions have not migrated over to these.

Table 6.3 Main operating systems used for user / desktop infrastructure (IT leads)

	Primary (2023)	Primary (2020)	Secondary (2023)	Secondary (2020)
NET: Any windows	95%	97%	98%	99%
Windows 11 (Home, Pro, or EDU)	23%	**	21%	**
Windows 10S / 11S	4%	**	2%	**
Windows 10 (Home, Pro, or EDU)	85%	91%*	93%	97%
Windows 8	2%	3%	-	6%
Windows 7	2%	9%*	1%	7%
Windows XP	**	4%	**	<1%
Google Chrome OS	34%*	23%	26%	15%
NET: Mac	6%	8%	28%	33%
Mac OS Monterey	3%	**	8%	**
Mac OS Ventura	2%	**	11%	**
Mac OS High Sierra	2%	**	8%	**
Mac OS Sierra	3%	3%	-	13%
Mac OS Big Sur	2%	**	5%	**
Mac OS Mojave	-	2%	3%	10%
Mac OS El Capitan	-	2%	2%	14%
Mac OS Catalina	-	**	3%	**
Mac Other	**	2%	**	5%
Linux (Ubuntu, Lubuntu, etc)	1%	<1%	2%	2%
Other	<1%	2%	1%	1%
Don't know	3%	2%	1%	1%

E1. IT leads primary 2022-2023 (155), primary 2020-2021 (619), secondary 2022-2023 (168), secondary 2020-2021 (185).

*Indicates significant difference between survey years, within phase.

**=not included in survey

Source: Technology in Schools Survey 2022-23 (IT leads survey).

As shown in Table 6.4, awareness was more limited with regards to operating systems used for server infrastructure in schools, particularly in primary schools (39% of IT leads in primary schools reported that they did not know what system their school used vs. 5% of those overseeing secondary schools). Despite this, Windows operating systems were again frequently cited across both phases, particularly in secondary settings: 30% of primary IT leads reported using Windows Server 2019, for example, rising to 70% of secondary IT leads.

Table 6.4 Operating system used for server infrastructure (IT leads)

Operating System	Primary phase	Secondary phase
Windows Server 2019 (Hyper-V, Essentials, Standard, Datacentre)	30%	*70%
Windows Server 2016 (Hyper-V, Essentials, Standard, Datacentre)	18%	*49%
Windows Server 2012 R2 (Foundation, Essentials, Standard, Datacentre)	10%	*43%
Windows Server 2022 (Hyper-V, Essentials, Standard, Datacentre)	8%	*46%
Linux (Ubuntu, Red Hat, SUSE, CentOS, Debian, Oracle, Clear OS, Other)	3%	*28%
Windows Server 2008 R2 (Foundation, Essentials, Standard, Enterprise, Datacentre)	3%	6%
Windows Server 2012 (Foundation, Essentials, Standard, Datacentre)	1%	*8%
Windows Server 2008 (Foundation, Essentials, Standard, Enterprise, Datacentre)	<1%	1%
Mac Server OS	1%	2%
Other	4%	1%
Don't know	39%	*5%

E2. Primary IT leads (n=155). Secondary IT leads (n=168).
*Indicates significant difference between primary and secondary.
Source: Technology in Schools Survey 2022-23 (IT leads survey).

Table 6.5 provides a comparison with the 2020-21 survey. As shown, results were again similar at the overall level, with some movement between specific systems within this.

Table 6.5 Operating system used for server infrastructure (IT leads)

Operating System	Primary (2023)	Primary (2020)	Secondary (2023)	Secondary (2020)
NET: Any windows	55%	55%	95%	94%
Windows Server 2019 (Hyper-V, Essentials, Standard, Datacentre)	30%*	14%	70%*	58%
Windows Server 2016 (Hyper-V, Essentials, Standard, Datacentre)	18%	21%	49%	66%*
Windows Server 2012 R2 (Foundation, Essentials, Standard, Datacentre)	10%	21%*	43%	55%
Windows Server 2012 (Foundation, Essentials, Standard, Datacentre)	1%		8%	
Windows Server 2022 (Hyper-V, Essentials, Standard, Datacentre)	8%	**	46%	**
Windows Server 2008 R2 (Foundation, Essentials, Standard, Enterprise, Datacentre)	3%	6%	6%	15%*
Windows Server 2008 (Foundation, Essentials, Standard, Enterprise, Datacentre)	<1%		1%	
Mac Server OS	1%	1%	2%	11%*
Linux (Ubuntu, Red Hat, SUSE, CentOS, Debian, Oracle, Clear OS, Other)	3%	1%	28%*	13%
Other	4%	2%	1%	4%
Don't know	39%	43%	5%	6%

E2. IT leads primary 2022-2023 (155), primary 2020-2021 (619), secondary 2022-2023 (168), secondary 2020-2021 (185). *Indicates significant difference between survey years, within phase.
**=not included in survey
Source: Technology in Schools Survey 2022-23 (IT leads survey).

Servers and storage systems

Across both phases it was most common for IT leads to report that the server infrastructure was hosted exclusively on school premises, particularly in secondary settings (52% of primary IT leads and 71% of secondary IT leads). As shown in Table 6.6, awareness levels were again higher among those working in secondary settings, albeit with the difference less marked than seen elsewhere (16% of IT leads in primary settings reported that they did not know where their servers were hosted vs. 1% of secondary IT leads).

Table 6.6 Operating system used for server infrastructure (IT leads)

Server infrastructure	Primary phase	Secondary phase
On-premise only	52%	*71%
Cloud only	*6%	-
Mixture	26%	28%
SUM: Any on premise	78%	*99%
SUM: Any cloud based	32%	28%
Don't know	*16%	1%

E3. Primary IT leads (n=155). Secondary IT leads (n=168).
*Indicates significant difference between primary and secondary.
Source: Technology in Schools Survey 2022-23 (IT leads survey).

There was limited difference according to academy status, with the exception of the use of on-premise only infrastructure, which was more common in LA maintained secondary schools than in secondary academies (85% vs. 67%).

On-premises and cloud-based storage

IT leads were presented with different activities that would typically require some form of on-premises or cloud based storage, with the full list outlined in Figure 6.4. They were then asked to indicate which type of storage system was in place for each one, if any. Reports that neither was in place were very rare, with the exception of library management systems, which were far less common in primary settings (38% of primary IT leads reported that their school did not have these vs. 8% of secondary IT leads). It is also worth noting that the vast majority of schools (99%) reported at least one form of cloud-based storage, either as a standalone set up or combined with on-premises storage.

Figure 6.4 is ordered according to the order each set-up appeared in the questionnaire, to aid comparison across phase. As shown, there was a great deal of variation in storage

approach taken depending on the activity. There were also many differences by phase. By way of an example, it was much more common for schools to use cloud-based only systems for email and productivity suites (reported by 69% of primary IT leads and rising to 81% of secondary IT leads), but least common for this to be the approach used for admin storage (reported by 15% of primary IT leads and 19% of secondary IT leads, with this difference not significant).

Awareness levels were again generally lower in primary settings: 22% of primary IT leads reported that they did not know what type of storage their school used for finance management systems vs. 3% of secondary IT leads, for example.

Figure 6.4 Storage set-ups by phase (IT leads)
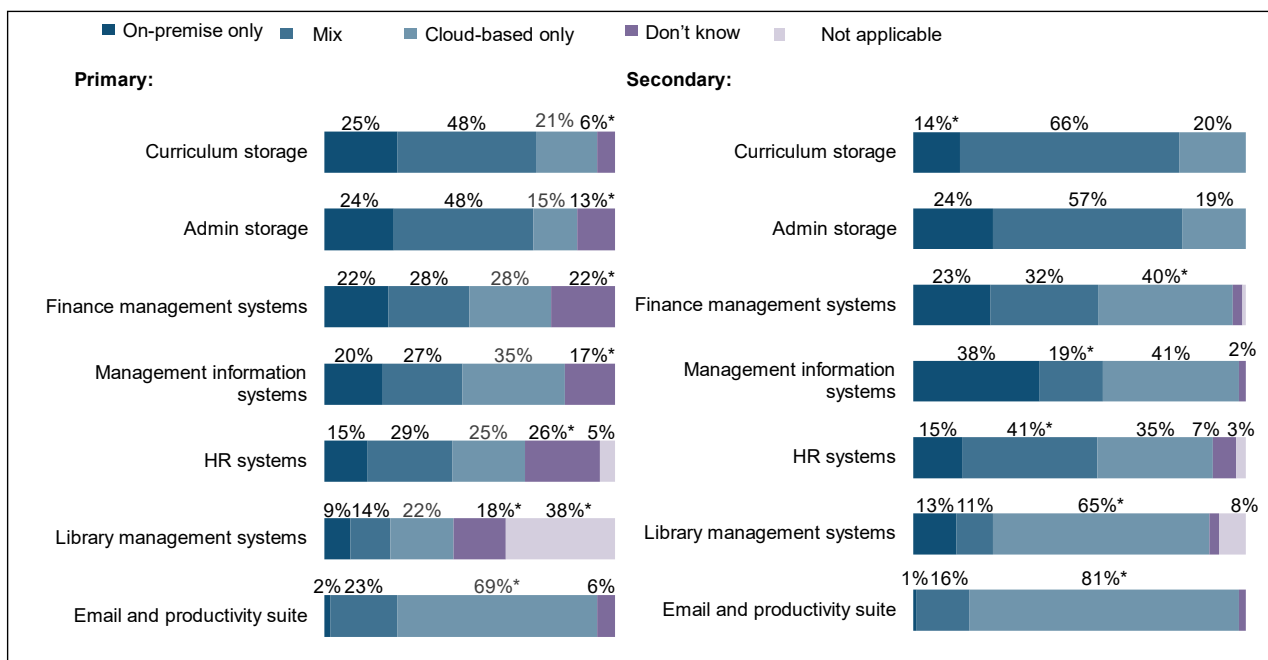
C2. Primary IT leads (n=155). Secondary IT leads (n=168).
*Indicates significant difference between primary and secondary.
Source: Technology in Schools Survey 2022-23 (IT leads survey).

There were also a range of differences by academy status within phase, as demonstrated by Figures 6.5 and 6.6. As shown, academies were more likely to report the use of cloud-based storage for the majority of set ups. Taking curriculum storage as an example, 32% of primary academies reported cloud-based only storage vs. 14% of LA maintained primaries. Likewise, 23% of secondary academies reported cloud-based only storage for areas related to the curriculum vs. 9% of LA maintained secondaries.

Each set-up is again listed according to the order they appeared in the questionnaire.

Figure 6.5 Storage set-ups by academy status within the primary phase (IT leads)
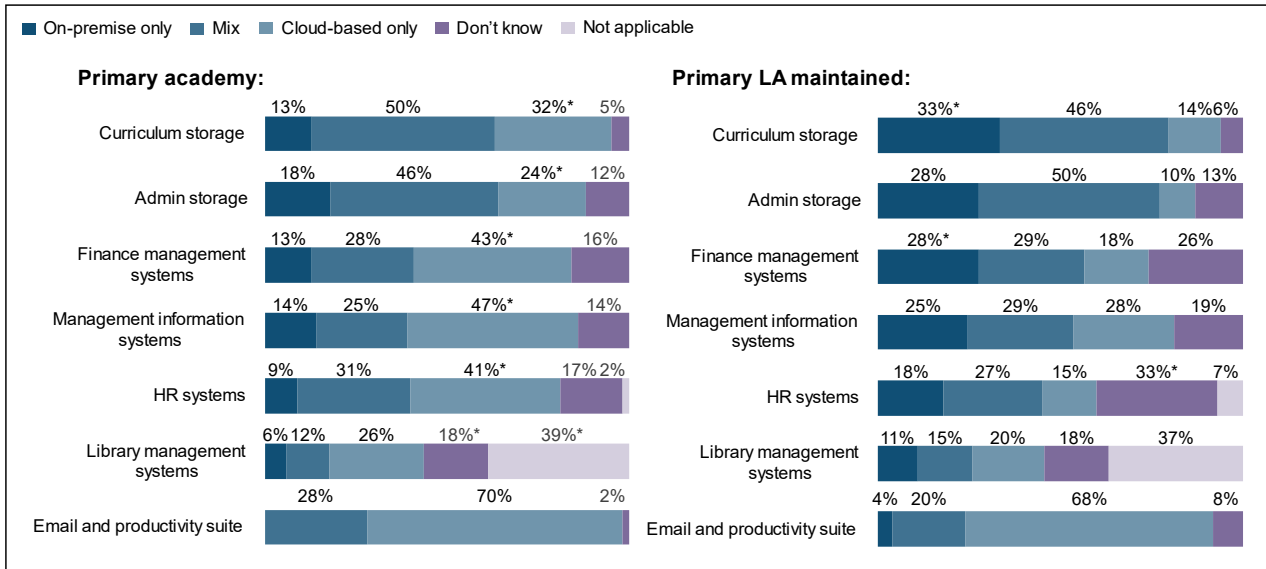
C2. IT leads (primary academy=51, primary LA maintained=104).

*Indicates significant difference between primary academy and primary LA maintained.

Source: Technology in Schools Survey 2022-23 (IT leads survey).

Figure 6.6 Storage set-ups by academy status within the secondary phase (IT leads)
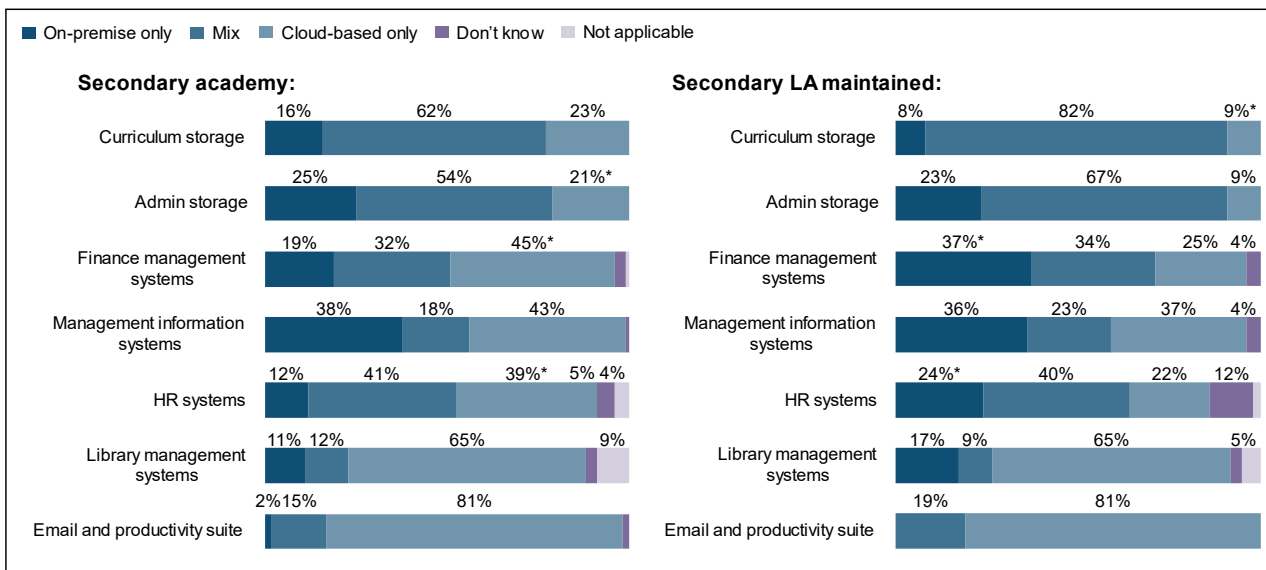
C2. IT leads (secondary academy=116, secondary LA maintained=52).

*Indicates significant difference between secondary academy and secondary LA maintained.

Source: Technology in Schools Survey 2022-23 (IT leads survey).

Plans to switch to cloud-based storage

The survey also asked IT leads to comment on any plans to switch to cloud-based storage for each system. Where plans did exist, they were asked to indicate whether they were likely to be executed within the next 12 months or across a longer time period.

As shown in Table 6.7, the majority of IT leads either indicated that there were no plans in place, or they were unsure. This was most stark with regards to HR systems (27% reported no plans and 41% reported that they were unsure). Base sizes do not support significance testing by subgroups.

Table 6.7 Plans to switch to cloud-based storage (IT leads)

	Yes: next 12 months	Yes: more than 12 months	No plans	Don't know
Curriculum storage	11%	20%	38%	30%
Admin storage	18%	25%	26%	32%
Finance systems	13%	21%	36%	30%
Management information systems	21%	26%	23%	29%
HR systems	13%	20%	27%	41%

C3. IT leads who use on-premise only storage (n from top to bottom=56, 76, 82, 102, 54).

Source: Technology in Schools Survey 2022-23 (IT leads survey).

Perceived benefits of cloud-based storage and systems

Those who had used cloud based storage or systems at their school were asked what benefits, if any, they had seen. As shown in Figure 6.7, just under two-thirds reported an improvement in remote teaching and learning (69%), followed by improved collaboration and communication between staff (65%) and improved cross site working (62%).

Figure 6.7 Perceived benefits of cloud-based storage (IT leads)

Improved remote teaching and learning (e.g. off-site lessons, homework) 69%
Improved collaboration and communication between staff 65%
Improved cross site working 62%
Improved in-school learning (e.g. access learning content on devices in class) 45%
Improved interoperability between systems 40%
Time savings 40%
Cost savings 24%
Other benefit 1%
No benefits experienced 3%
Don't know / too early to say 7%
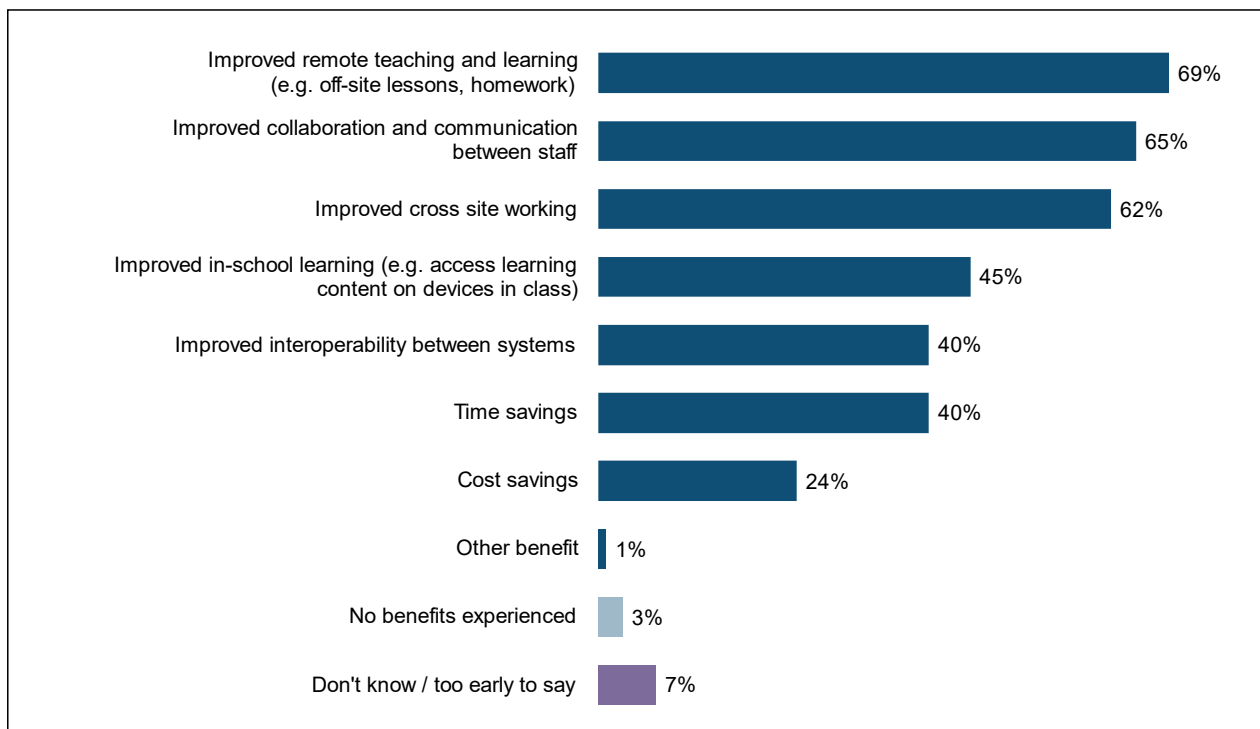
C5. IT leads who have used cloud-based storage (312).
Source: Technology in Schools Survey 2022-23 (IT leads survey).

There were a handful of differences according to phase and academy status, across three of these reported benefits. Across these, IT leads at academies were more likely to cite each benefit:

- Improved remote teaching and learning (e.g. off-site lessons, homework): this was cited by 84% of secondary IT leads vs. 66% primary IT leads. In terms of academy status, it was mentioned by 76% of primary academies vs. 58% of those working at LA maintained primaries.

- Improved cross site working: cited by 78% of IT leads at secondary academies vs. 46% of IT leads at LA maintained secondary schools.

- Improved interoperability between systems: cited by 49% of IT leads at primary academies vs. 30% at LA maintained primary schools.

Barriers to the further implementation of cloud-based storage and systems

IT leads who reported using on-premise only storage or a mixture of on-premise and cloud based storage were asked what barriers (if any) prevented them from introducing (more) cloud-based storage and systems at their school.

As shown in Figure 6.8, cost and affordability of migrating and maintaining this set-up were the most common areas of concern. These aspects were mentioned by 47% and 44% of IT leads respectively.

Figure 6.8 Perceived barriers to further implementation of cloud-based storage (IT leads)
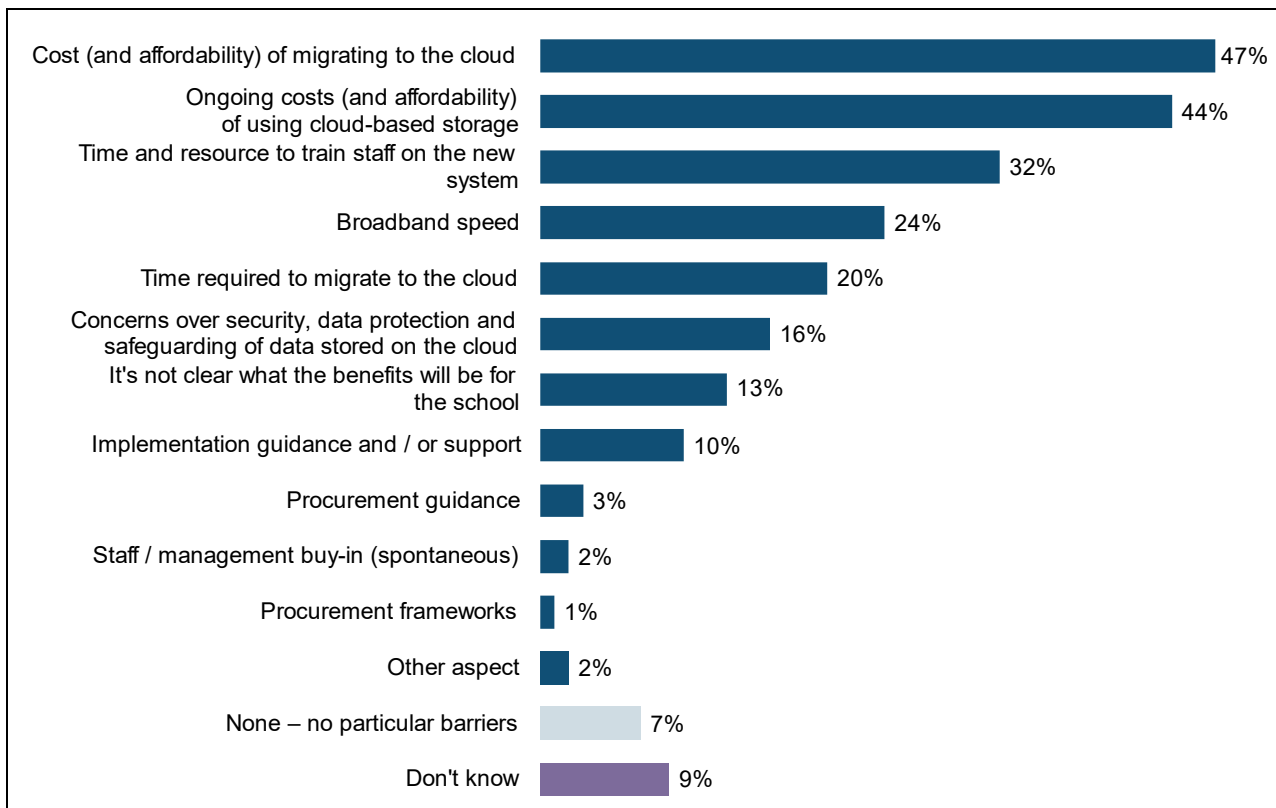
C4. IT leads who reported that they used on-premise only storage or a mixture of on-premise and cloud based storage (n=294).
Source: Technology in Schools Survey 2022-23 (IT leads survey).

There was limited difference by phase, with the exception of concerns around time required to migrate to the cloud, which was cited by 34% of secondary IT leads compared with 17% of primary IT leads. There was also limited difference according to academy status within phase, with the exception of the proportion reporting no particular barriers in primary settings (reported by 13% of IT leads in primary academies compared with 3% in LA maintained primary schools).

Backup copies of all important data

The standards require schools to have two or more backup copies of all important data, with at least one backup copy being offsite. As shown in Table 6.8, this was the case in 43% of primary schools compared with 65% of secondary schools, with this being a significant difference. As also shown, awareness levels were again lower in primary settings; 24% of primary IT leads were unable to confirm the number of backup copies they had in place compared with 4% of secondary IT leads.

Table 6.8 Whether school has backup copies of all important data across at least two different devices (IT leads)

	Primary phase	Secondary phase
NET: Have two or more backup copies	53%	80%*
- Have two or more backup copies, with at least one backup copy being offsite	43%	65%*
- Have two or more backup copies, but all the backup copies are all onsite	9%	15%
- Have two or more backup copies, but not across at least two different devices	1%	-
Have one backup copy	22%	15%
Have no backup copies	1%	1%
DK how many backup copies have	24%*	4%

B3/4. Primary IT leads (n=155). Secondary IT leads (n=168).
*Indicates significant difference between primary and secondary.
Source: Technology in Schools Survey 2022-23 (IT leads survey).

For the 2020 survey, the equivalent question was slightly different, with IT leads asked whether they "retain offline backups of critical data." Results were similar here insofar as primary IT leads were more likely to report that they did not know (13% vs. 1% of secondary IT leads) and less likely to confirm that they did (80% vs. 87% of secondary IT leads).

7. Technical support, safety and cyber security

This section starts with an overview of the technical support available in schools, as reported by IT leads. This includes all elements of IT, along with cyber security. The section then looks at measures in place to support safety and cyber security specifically, before looking at incidence of fraudulent activities and different means of mitigating cyber security threats.

Technical Support

IT leads were asked how their school received technical support, including for cyber security. As shown in Figure 7.1, in-house support was the most common across both phases. This was particularly the case for secondary settings; at least one form of in-house support was cited by 86% of secondary IT leads vs. 62% of primary IT leads. In the reverse, support from a managed service provider was relatively common in primary settings (50% vs. 31% in secondary settings).

Figure 7.1 Technical support options in schools (IT leads)
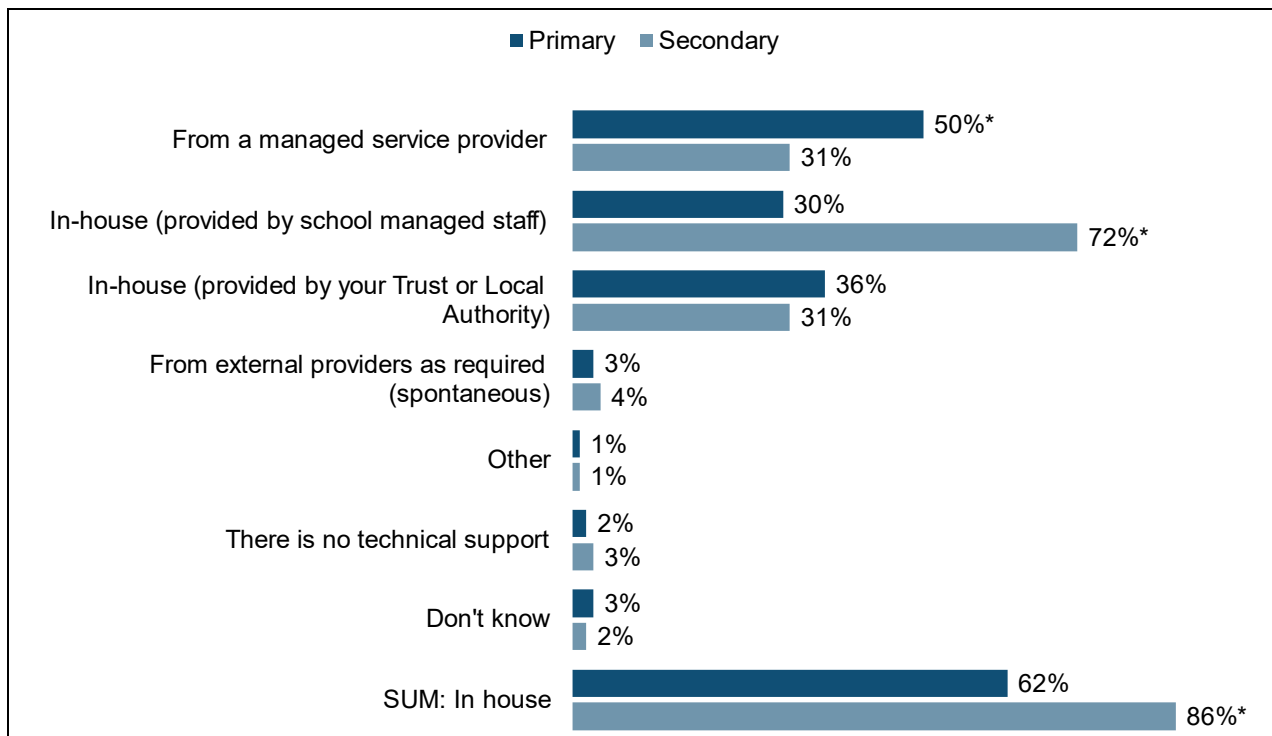
F7. Primary IT leads (n=155). Secondary IT leads (n=168).
*Indicates significant difference between primary and secondary.
Source: Technology in Schools Survey 2022-23 (IT leads survey).

There were also a few differences by academy status within phase:

- In-house support provided by school managed staff: this was more common in LA maintained secondary schools when compared with secondary academies (87% and 68%, respectively).

- In-house support provided by the school's Trust or Local Authority: this was more common in academies within both phases (cited by 57% of primary academies vs. 21% of LA maintained primary schools and 36% of secondary academies vs. 17% of LA maintained secondary schools).

IT leads who said they received support from a managed service provider were asked how much support that provider was contracted to deliver, with the option to answer either on a per month or per week basis. For comparability, Table 7.1 provides a derived monthly amount, and converts those choosing to give a weekly figure into a monthly figure. IT leads most commonly reported that there were no minimum or maximum contractual thresholds in place. This was particularly the case in secondary schools (69% of secondary IT leads reported this vs. 39% of primary IT leads). Beyond this:

- Sizeable minorities were unsure of the contractual stipulations (11%).

- Of the remainder, primary IT leads were relatively evenly split across the time bands, with 6-10 hours the most common (17%). By contrast, 21+ hours was most common for secondary settings.

Table 7.1 Amount of support contracted by managed service providers (IT leads)

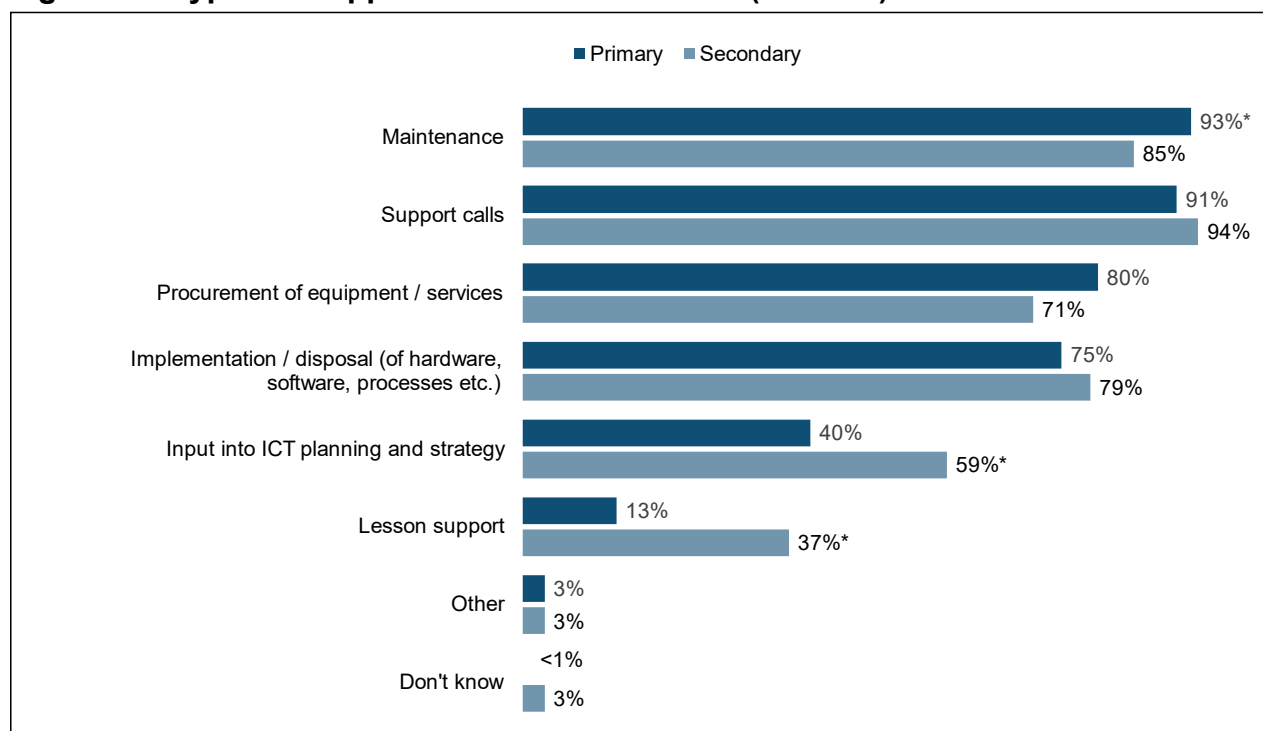| Time per month:	Primary phase	Secondary phase
No minimum/maximum	39%	69%*
5 hours or less	4%	-
6-10	17%*	2%
11-15	11%	2%
16-20	6%	2%
21+	11%	15%
Don't know	12%	10%

F8. IT leads who receive support from a managed service provider – total (n=130), primary (n=78), secondary (n=52).
*Indicates significant difference between primary and secondary.
Source: Technology in Schools Survey 2022-23 (IT leads survey).

For schools where technical support was available, IT leads cited a wide range of different options (Figure 7.2), with general maintenance and support calls being the most common types (each cited by 92% of IT leads who received technical support at their school).

Figure 7.2 Types of support available in schools (IT leads)

As shown, there was limited difference according to key subgroups, with the exception of a handful seen by phase:

- Maintenance: cited by 93% of primary IT leads vs. 85% of secondary IT leads

- Lesson support: cited by 13% of primary IT leads vs. 37% of secondary IT leads

- Input into ICT planning and strategy: cited by 40% of primary IT leads vs. 59% of secondary IT leads. This most likely reflects the fact that secondary school leaders were more likely to report that their school had a digital technology strategy in place (30% reporting a standalone strategy vs. 17% of primary leaders). This and related results are explored fully in chapter 7.

There were also a couple of differences by academy status:

- Procurement of equipment / services: cited by 72% of IT leads working at primary academies vs. 86% at LA maintained primary schools.

- Implementation / disposal (of hardware, software, processes etc.): cited by 66% of IT leads working at primary academies vs. 82% at LA maintained primary schools.

In terms of satisfaction with the support received, the vast majority of IT leads were positive (Figure 7.3), with 81% satisfied, and just 9% dissatisfied. There were no differences of note by key subgroups.

Figure 7.3 Satisfaction with technical support available at their school (IT leads)

Very satisfied 49%	Fairly satisfied 32%	Neither / Nor 9%	Dissatisfied 9%

Safety and Cyber Security

There was limited awareness of different safety and cyber security arrangements at the school (Table 7.2), particularly in primary schools and especially around business and disaster recovery plans in the event of a cyber attack (37% of primary IT leads were unsure whether their school had one of these vs. 13% of secondary IT leads, for example). The proportions explaining that they did not know what arrangements were in place are outlined in Table 7.2.

As noted in the previous chapter, this difference in awareness levels by phase is perhaps unsurprising, with secondary schools often having more dedicated / specialist IT support than primary schools.

Table 7.2 Proportions of IT leads unsure what safety and cyber security arrangements were in place at their school (IT leads)

	Primary phase	Secondary phase
The school has a business and disaster recovery plan in the event of a cyber attack	37%*	13%
Serious cyber attacks are always reported to Action Fraud, DfE and / or ICO	23%*	15%
The school uses multi-factor authentication to access personal or sensitive operational data and functions	15%*	3%
Personal data is encrypted or sufficiently protected from unauthorised access	9%	9%
Network devices (e.g. routers, switches and servers) are known and recorded	9%*	3%
Anti-malware and anti-virus software is used to protect all end-user devices in the network, including cloud based networks	6%*	1%
All devices in the school network have a configured boundary or software firewall	5%*	1%
All online devices and software are licensed for use	2%	1%
All staff and pupil user accounts are password protected or use a technical authentication technique	<1%	1%

B1_1-9. IT leads (n=323).
**Indicates significant difference between primary and secondary.
Source: Technology in Schools Survey 2022-23 (IT leads survey).

Although there were differences by phase in terms of the proportion of IT leads aware of the safety and cyber security arrangements in place, the proportions reporting that each measure was in fact in place was relatively consistent (Table 7.3). There was one exception, with secondary leads more likely to report having a business and disaster recovery plan in the event of a cyber attack (73% vs. 50% of primary IT leads). It is worth noting that this difference is not evident once those who did not know are excluded from the analysis: among those able to confirm, 81% of primary IT leads reported that they had a business and disaster recovery plan in the event of a cyber attack at their school. A similar proportion (84%) reported this to be the case in secondary settings.

Table 7.3 Proportions of IT leads confirming which safety and cyber security arrangements were in place at their school (IT leads)

Cyber security arrangements	Primary phase	Secondary phase
The school has a business and disaster recovery plan in the event of a cyber attack	50%	73%*
Serious cyber attacks are always reported to Action Fraud, DfE and / or ICO	76%	83%
The school uses multi-factor authentication to access personal or sensitive operational data and functions	64%	58%
Personal data is encrypted or sufficiently protected from unauthorised access	85%	84%
Network devices (e.g. routers, switches and servers) are known and recorded	89%	95%
Anti-malware and anti-virus software is used to protect all end-user devices in the network, including cloud based networks	93%	95%
All devices in the school network have a configured boundary or software firewall	93%	94%
All online devices and software are licensed for use	97%	97%
All staff and pupil user accounts are password protected or use a technical authentication technique	95%	95%

B1_1-9. IT leads (n=323).
*Indicates significant difference between primary and secondary.
Source: Technology in Schools Survey 2022-23 (IT leads survey).

There were a handful of differences by academy status. The incidence of having a business and disaster recovery plan for a cyber attack was higher for primary academies, for example (64% vs. 41% LA maintained). In the reverse, secondary LA maintained schools were more likely to explain that they would always report a serious cyber attack to Action Fraud, DfE and/or ICO (92% vs. 80% of secondary academy schools) and that their network devices are known and recorded (100% vs. 93% of secondary academy schools).

There was little difference in terms of having these safety and cyber security arrangements in place by whether the school had had an incident of fraudulent activity in the past 12 months or not. The only differences were that schools who had been subject to a fraudulent activity were more likely to have network devices known and recorded (96% vs.80% of those who had not had any fraudulent activity) and to have a business and disaster recovery plan (61% vs. 48%).

Incidence of fraudulent activities

IT leads were asked how often, if at all, various safety and cyber security incidents had happened to the school in the previous 12 months. As shown in Figure 7.4, staff receiving fraudulent emails was by far the most commonly reported issue with 62% of IT leads reporting this had happened at least once in the 12-months prior and 11% explaining that it happened on a daily basis. This rose to 19% among secondary IT leads specifically (compared with 9% among primary IT leads).

The next most commonly reported issue was schools being impersonated in emails or online (23%) and computers becoming infected with viruses, spyware or malware (19%). However these issues tended to happen less frequently with, for example, only 1% of IT leads reporting that school impersonations occurred on a daily basis, and no IT leads reporting spyware or malware infections on a daily basis.

Figure 7.4 Incidence of fraudulent activities experiences in schools (IT leads)
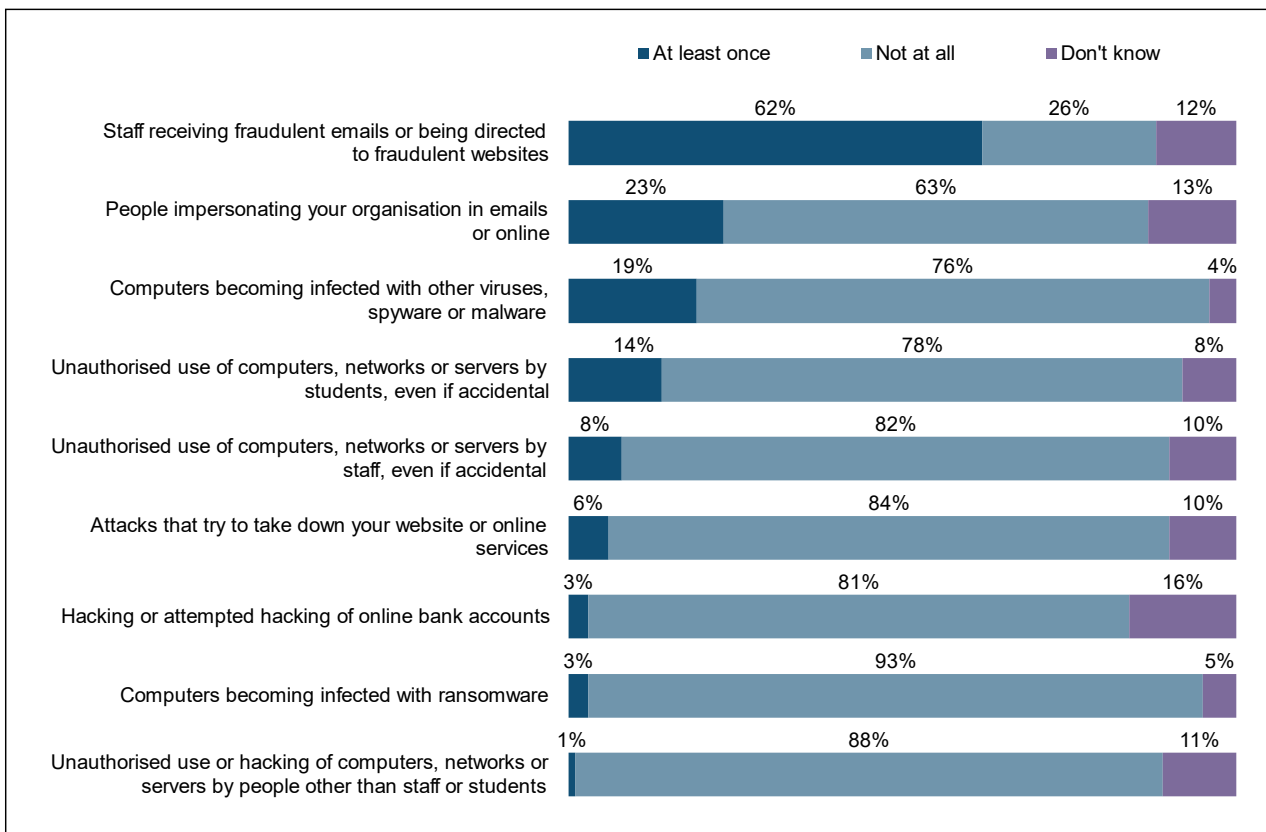
There was evidence that a lack of a cyber attack plan, or less frequent testing of the plans, resulted in a higher likelihood of fraudulent activity experiences in schools. Schools without cyber attack plans were more likely than average to say their computers had become infected with ransomware at least once in the last 12 months (12% vs. 3%

on average). And schools with cyber attack plans who never tested their plans were more likely than average to say they had had at least once incidence of:

- people impersonating their organisation in emails or online in the last 12 months (45% vs. 23% average).

- unauthorised use of computers, networks or servers by students (even if accidental) in the last 12 months (30% vs. 14%).

- unauthorised use of computers, networks or serves by staff (even if accidental) in the last 12 months (23% vs. 8%).

- hacking or attempted hacking of online bank accounts in the last 12 months (9% vs. 3% on average).

Filtering and monitoring systems

IT leads were asked how often, if at all, their school / a contractor working on their behalf reviewed the effectiveness of their filtering and monitoring system. As shown in Figure 7.5 a large proportion were unsure (26%). As seen elsewhere, this was predominantly driven by primary schools (which are less likely to have a specialised IT professional in place), although a significant minority of secondary IT leads were also unsure (29% of primary IT leads and 14% of secondary IT leads, with this difference significant). Figure 7.5 also shows that testing at least once a year was relatively commonplace, cited by 55% of IT leads.

Results were relatively consistent by phase, with the only exception that IT leads in secondary schools were more likely to say that reviews took place about once a year (15% vs. 4% of IT leads in primary schools).

Figure 7.5 Frequency with which the effectiveness of the schools filtering and monitoring system is reviewed (IT leads)
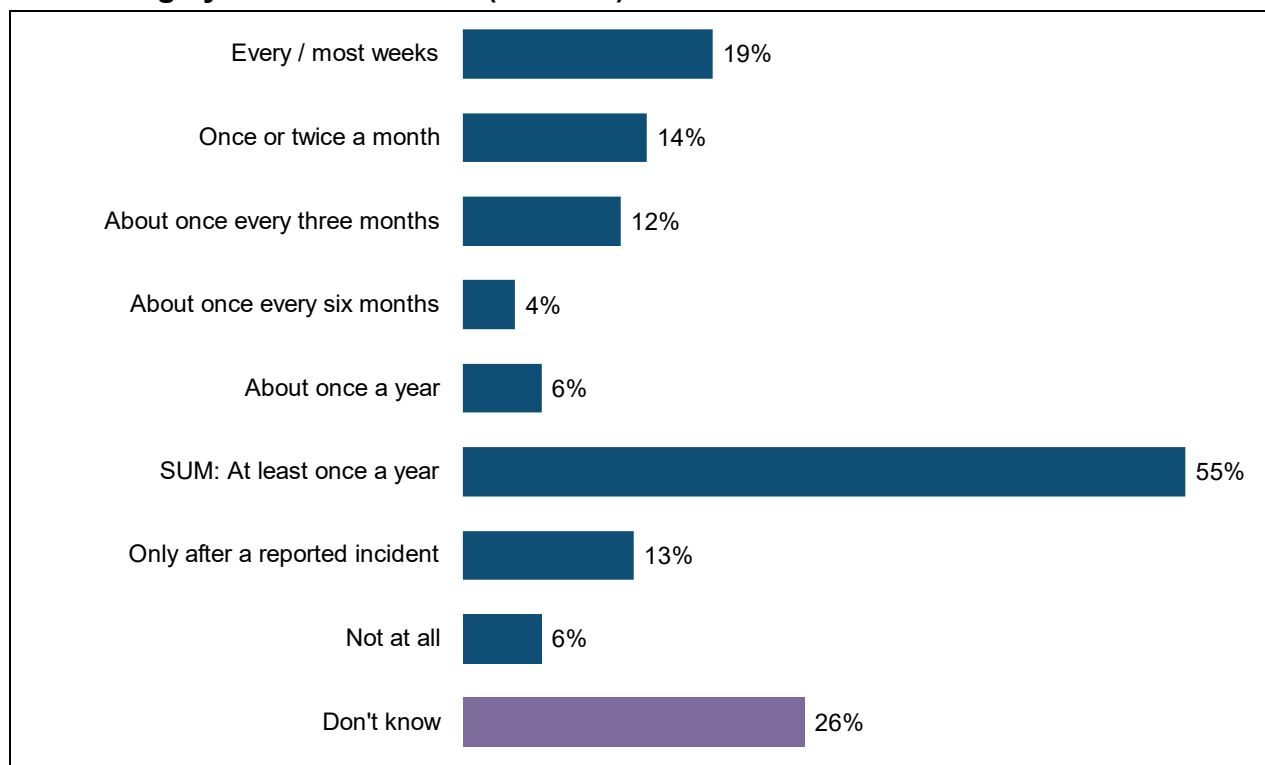
Category	Value
Every / most weeks	19%
Once or twice a month	14%
About once every three months	12%
About once every six months	4%
About once a year	6%
SUM: At least once a year	55%
Only after a reported incident	13%
Not at all	6%
Don't know	26%

Governance / risk management arrangements

Figure 7.6 outlines the different governance / risk management arrangements in place at schools. The proportion reporting that they did not know was again higher in primary schools (27% of primary IT leads vs. 13% of secondary IT leads). As shown, each arrangement was reported by the majority of secondary IT leads and a significant minority of primary IT leads, with a business or IT Continuity plan the most common in both phases (34% in primary schools rising to 68% in secondary schools). The only arrangement reported by a higher proportion of primary IT leads was the use of an outsourced provider to manage the school's cyber security (cited by 42% of primary IT leads vs. 15% of secondary IT leads). This fits with the finding reported earlier in this chapter that primary schools were more likely than secondary schools to use a managed service provider for technical support, and secondary schools were more likely have in-house technical support.

Figure 7.6 Governance / risk management arrangements in schools (IT leads)

Legend: ■ Primary ■ Secondary

- A Business or IT Continuity Plan: Primary 34%, Secondary 68%*
- Staff members whose job role includes information security or governance: Primary 32%, Secondary 63%*
- An outsourced provider that manages your cyber security: Primary 42%*, Secondary 15%
- A formal policy or policies in place covering cyber security risks: Primary 28%, Secondary 55%*
- A governor or senior manager with responsibility for cyber security: Primary 14%, Secondary 31%*
- None of these: Primary 4%, Secondary 5%

B9. IT leads (n=323).
*Indicates significant difference between primary and secondary.
Source: Technology in Schools Survey 2022-23 (IT leads survey).

Looking at the results by academy status within phase:

- IT leads at LA maintained secondary schools where more likely to report that they did not have any of the listed arrangements in place (12% vs. 3% of secondary academies)

- Primary academies were more likely to report a Business or IT Continuity Plan (46% vs. 26% of LA maintained primary schools) and a formal policy or policies in place covering cyber security risks (39% vs. 20% of LA maintained primary schools). This ties in with the fact that leaders at primary academies were more likely to report that their school had a digital technology strategy in place (60% vs. 51% of LA maintained schools).

Testing cyber attack plans

As shown in Figure 7.7, most IT leads at primary settings did not know how often their cyber attack plans were tested / whether they had any at all (44% vs. 13% in secondary settings). Beyond this, significant minorities reported that their school either:

- Did not have plans at all (mentioned by 15%)

- Had plans but did not test them (mentioned by 10% of primary IT leads rising to 24% of secondary IT leads)

- Tested plans whenever there was a suspected breach (mentioned by 6% of IT leads)

It is worth noting that the first two listed differences above are not evident once those reporting that they did not know are removed from the base.

Across the remaining categories, it was most common for plans to be tested on an annual basis (cited by 12%) or less than annual basis (cited by 7% primary IT leads and rising to 14% of secondary IT leads).

Figure 7.7 Frequency of testing cyber attack plans (IT leads)
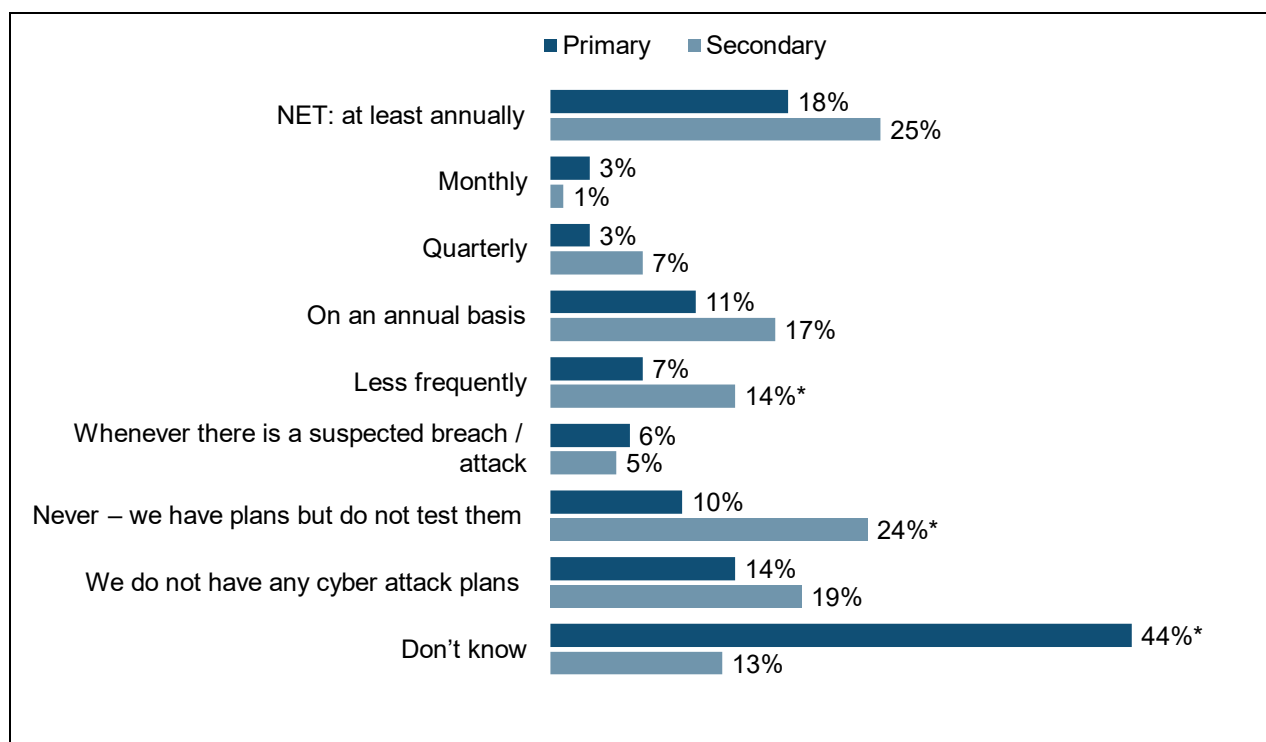
B8. IT leads (n=323), primary IT leads (155), secondary IT leads (168).
*Indicates significant difference between primary and secondary.
Source: Technology in Schools Survey 2022-23 (IT leads survey).

Among primaries, there were some differences by academy status:

- 7% of IT leads at primary academies reported that they did not have any cyber attack plans in place vs. 19% of IT leads at LA maintained primary schools.

- 26% of IT leads at primary academies reported that they tested plans at least once a year vs. 12% of IT leads at LA maintained primary schools.
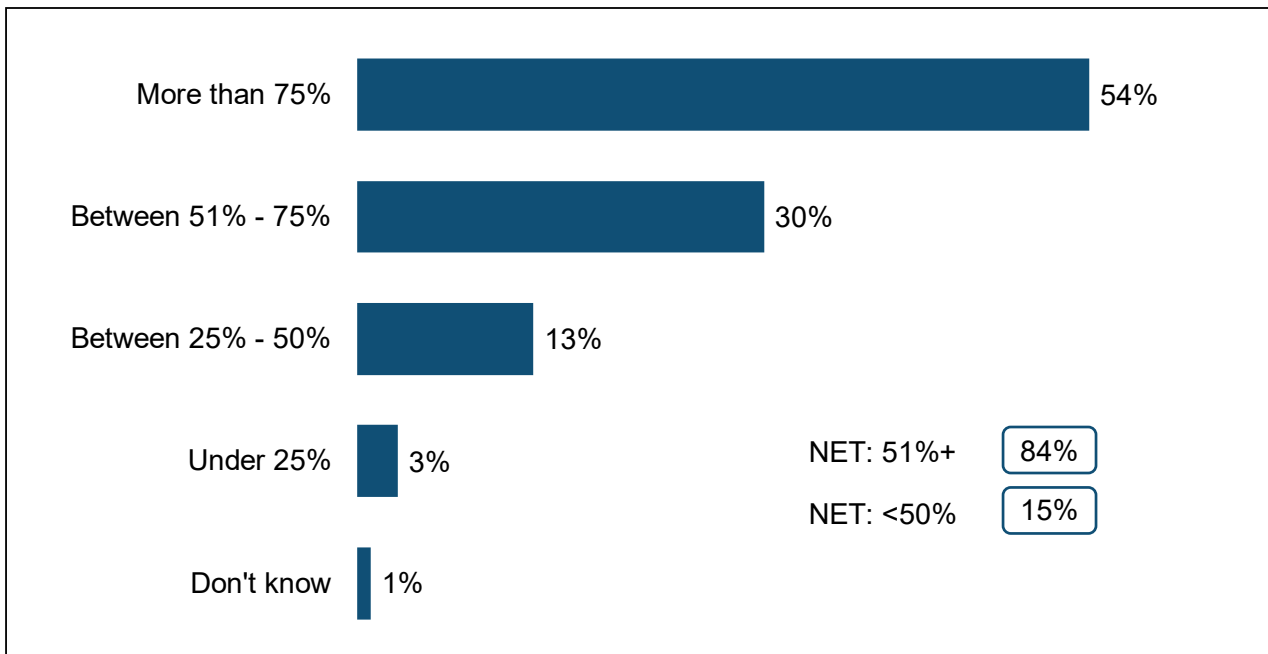
8. Staff capability

This chapter explores current levels of confidence in using education technology, types of training undertaken and applied, and the implementation of cyber security training.

Confidence about using education technology

Many leaders felt their teaching staff were confident using education technology, with four-in-five (84%) reporting that over half of their teaching staff were confident, and 54% saying this applied to more than three-quarters of their teaching staff. That said, one-in-seven (15%) leaders thought that fewer than half their teaching staff were confident about using education technology in the classroom (Figure 8.1).

Figure 8.1 Proportion of teaching staff in their school who are confident about using education technology in the classroom (Leaders)

More than 75%	54%
Between 51% - 75%	30%
Between 25% - 50%	13%
Under 25%	3%
Don't know	1%

NET: 51%+ 84%
NET: <50% 15%

E1. Leaders (n=770).
Source: Technology in Schools Survey 2022-23 (Leaders survey).

There were no significant variations in leaders' views about staff confidence in using education technology by phase, academy status or school size.

Provision and uptake of training in use of education technology

Either through their school or trust, leaders were most likely to provide staff training in the use of technology for the purposes of tracking student progress, tracking student wellbeing and for delivering lessons (94%, 81% and 75% respectively). In contrast, less than a half of leaders reported that their school or trust provides staff training in respect of assistive technologies or workload management (Figure 8.2).

Figure 8.2 Whether their school or trust provides staff training in the use of technology for any of the following activities (Leaders)
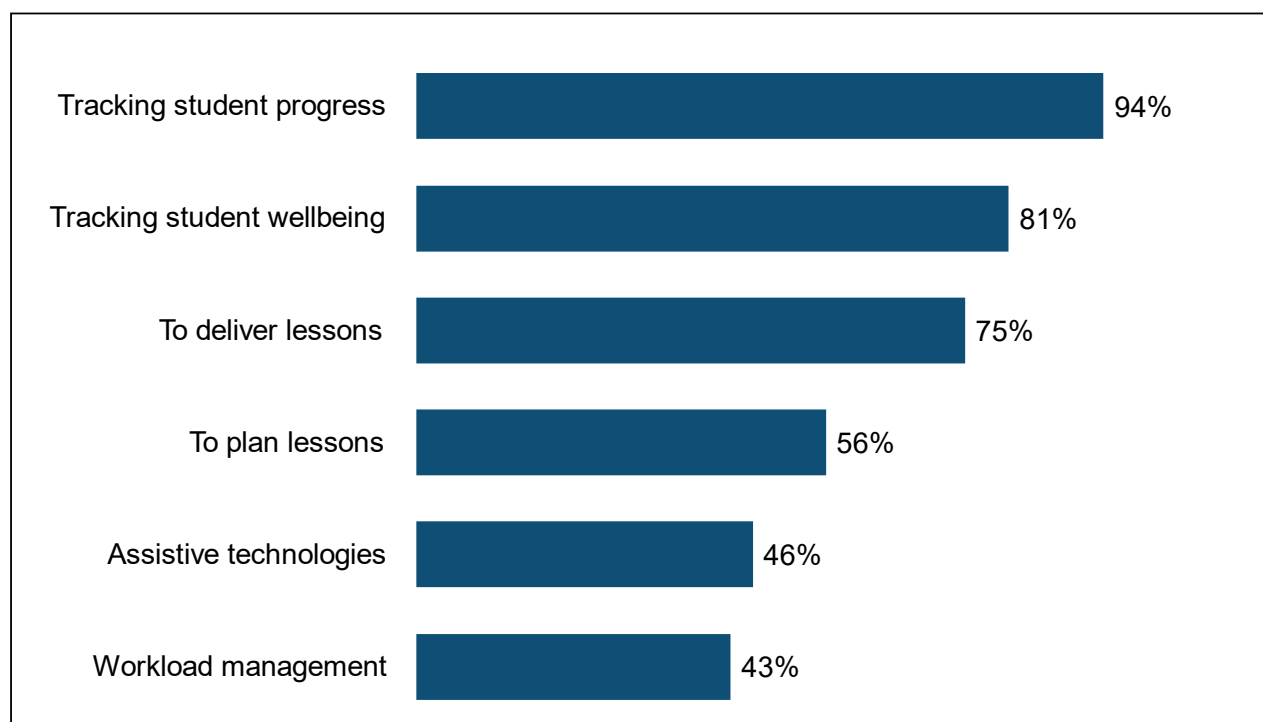
The provision of technology training for staff was broadly similar between primary and secondary schools, with the exception that leaders in secondary schools were more likely than those in primary schools to provide training in tracking student wellbeing (88% vs. 79%, respectively) and on delivering lessons (82% vs. 74%).

Seven-in-ten (70%) of teachers had undertaken any training on how to use education technology since the start of the last academic year (September 2021). The most common topics for training, each undertaken by two-in-five teachers, were how to ensure pupils' safety when using technology (43%) or how to use a new software platform or product (41%). Fewer than one-in-five had received training around enhancing

pedagogy/learning outcomes, using new hardware, or using accessibility features (Figure 8.3).

Figure 8.3 Types of training undertaken on how to use education technology since the start of the last academic year (September 2021) (Teachers)
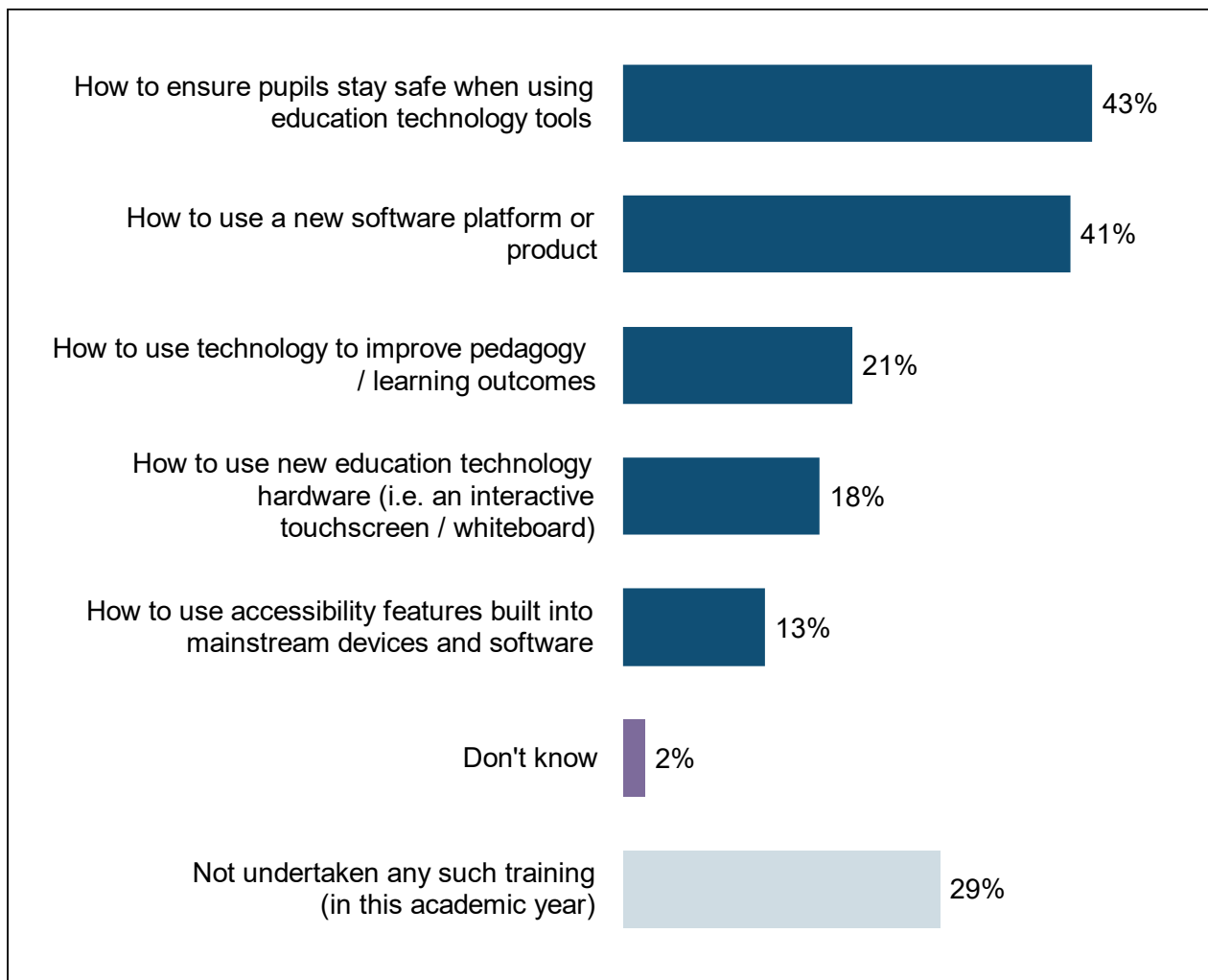
Again, training activity was broadly similar between primary and secondary schools. There was just one exception in that primary school teachers were more likely than secondary school teachers to report having undertaken training to ensure pupil safety when using education technology tools (48% vs. 37%).

There were a few differences by academy status among those teaching in primary schools. These differences are highlighted in Table 8.1, with primary school teachers in academy schools more likely to have undertaken training on each topic than their counterparts in LA maintained primary schools. There were no observable differences by academy status among secondary school teachers.

Table 8.1 Types of training undertaken on how to use education technology since the start of the last academic year (September 2021), by primary academy status (Teachers)

	Primary: Academy	Primary: LA maintained
How to ensure pupils stay safe when using education technology tools	57%*	43%
How to use a new software platform or product	46%*	35%
How to use technology to improve pedagogy/ learning outcomes	26%*	16%
How to use new education technology hardware (i.e. an interactive touchscreen/ whiteboard)	24%*	14%
How to use accessibility features built into mainstream devices and software	20%*	8%

B2. Primary teachers in Academy schools (n=126), Primary teachers in LA maintained schools (n=224).
*Indicates significant difference by primary school academy status.
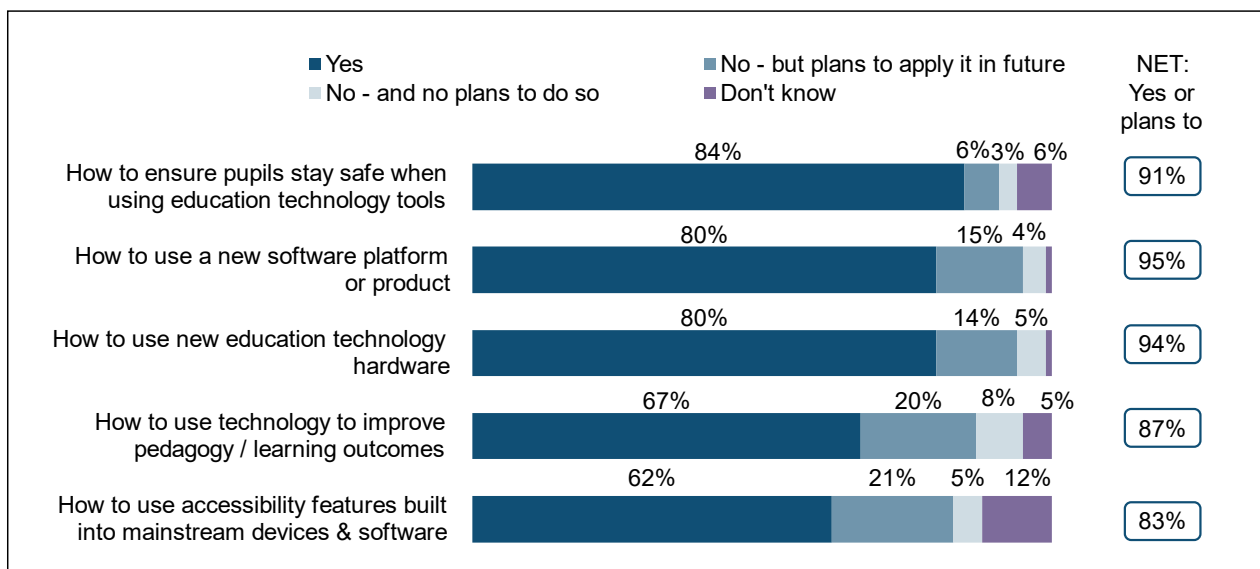Source: Technology in Schools Survey 2022-23 (Teachers survey).

Teachers in schools with both the highest and the lowest proportion of pupils eligible for FSM were more likely than others to have received training on pupil safety (55% of teachers in schools with the highest proportion of FSM, and 51% in schools with the lowest, compared with 43% on average). Teachers in schools with the highest proportion of pupils eligible for FSMs were also more likely than average to have received training on new hardware such as interactive touchscreen or whiteboard (26% vs. 18% on average).

By subject (in secondary schools only), IT teachers reported higher than average training activity for the last academic year and were more likely than average to have been trained on using technology to improve pedagogy / learning outcomes (32%), new hardware (35%) or using accessibility features (27%). IT teachers were also more likely than a number of the other subject teachers to have undertaken training on how to ensure pupils stay safe when using technology tools (55%).

Teachers who had received training on each topic since September 2021 were asked whether they had applied what they learnt in their work. The majority of teachers had already applied the training they had received, as shown in Figure 8.4. Over four-in-five had already applied the learning around pupil safety, new software or new hardware; while over three-in-five had already applied the learning around improving pedagogy/ learning outcomes or accessibility features. A further minority of teachers had not yet applied the learning but had plans to do so in future, such that, over four-in-five had already or intended to apply the learning on each topic.

Figure 8.4 Whether teachers who received training had applied or had plans to apply what they had learnt in their work (Teachers)

B3. Teachers – all those receiving training on each topic: ensure pupils stay safe (n=499); use new software (n=485), use new hardware (n=204), improve pedagogy (n=231), use accessibility features. (n=142). Source: Technology in Schools Survey 2022-23 (Teachers survey).

By phase, there was just one difference in terms of application, with a greater proportion of teachers in primary schools compared with secondary schools reporting that they had already applied the learning on how to ensure pupils stay safe when using education technology tools (89% vs. 77%). And within the primary phase, more teachers had already done so in LA maintained primary schools than in academy primary schools (95% vs. 83%).

Training needs

When prompted with a list of aspects that could potentially improve their knowledge of how to use technology effectively, the vast majority of teachers (nine-in-ten) thought at least one aspect would be of benefit. The most popular topics, each mentioned by around half of teachers, were the opportunities to trial new technology, subject specific support, and the ability to talk to other schools that are using technology effectively (see Figure 8.5).

Figure 8.5 Aspects that would help improve knowledge of how to use technology effectively (Teachers)

Opportunities to trial new technology — 54%
Subject / programme-specific support about using technology effectively — 52%
Ability to talk to other schools that are using technology effectively in teaching and learning — 49%
Product specific training for new users — 41%
Product specific training for advanced users — 28%
Access to evidence summaries about education technology use and impacts — 21%
Essential digital skills support — 19%
Don't know — 3%
Nothing, happy with current knowledge level — 7%

B4. Teachers (n=1,186). Mentions of 3%+ shown.
Source: Technology in Schools Survey 2022-23 (Teachers survey).

Views on the aspects that would help improve knowledge of how to use technology effectively were similar between secondary school teachers and primary teachers, with just the exceptions that secondary school teachers were more likely than primary school teachers to indicate an interest in subject or programme-specific support (61% vs. 45%) and access to evidence summaries about education technology (24% vs. 18%).

Teachers in schools with the highest proportion of pupils eligible for FSM had above average interest in opportunities to talk to other schools that are using technology effectively in teaching and learning (58% vs. 49% average).

Within secondary schools, the areas that teachers would like to improve their knowledge were not universal and varied by subject area. This suggests that training and support needs to be tailored. Some key differences included:

- English, Maths and Geography teachers showed heightened interest in subject/ programme-specific support about using technology effectively (69%, 63% and 68% respectively vs. 52% on average).

- IT/Computer Science teachers had heightened interest in the ability to talk to other schools that are using technology effectively in teaching and learning (67% vs. 49% on average).
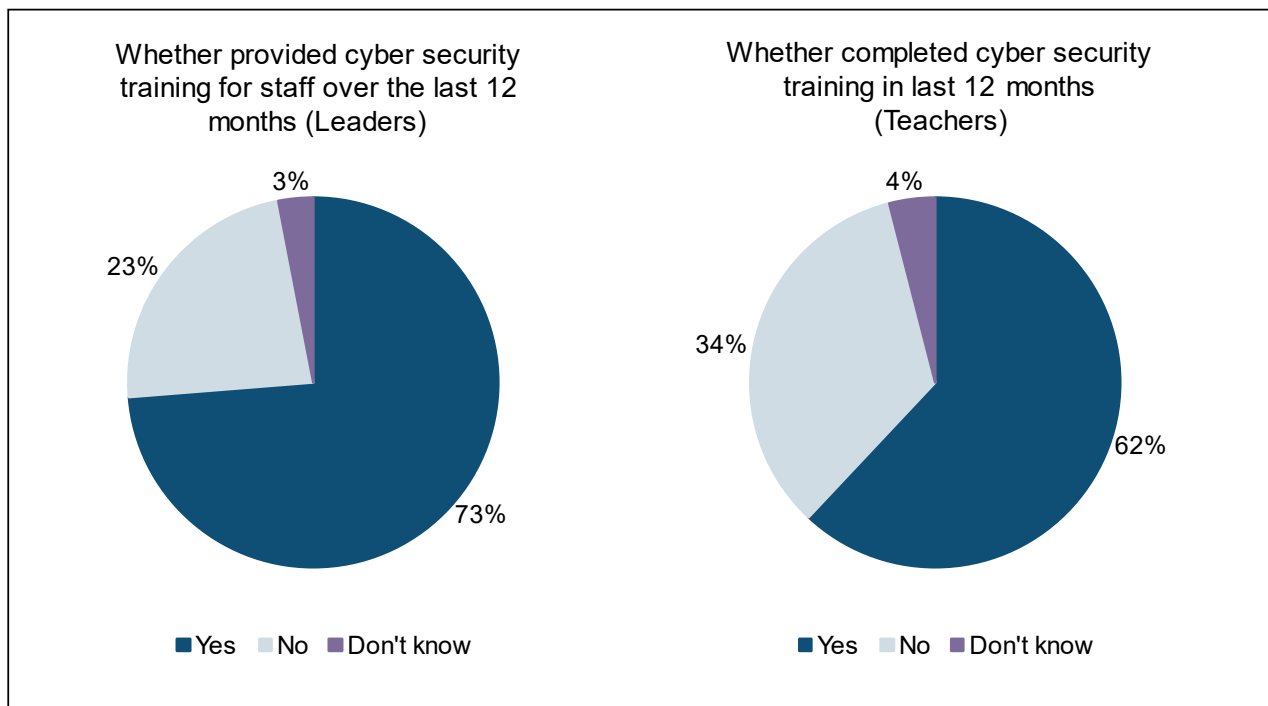
- Art/Drama and Design/Technology teachers both expressed above average interest in product specific training for new users (57% and 61% respectively vs. 41% on average).

- Design/Technology teachers and Science teachers had heightened interest in product specific training for advanced users (46% and 35% respectively vs. 28% on average).

- IT/Computer Science, Science, English and Religious Studies teachers all showed heightened interest in access to evidence summaries about education technology use and its impacts (34%, 28%, 34% and 34% respectively vs. 21% on average).

- History teachers displayed heightened appetite for essential digital skills support (33% vs. 19% on average).

Cyber security training

Nearly three-quarters (73%) of leaders said they had provided cyber security training for staff over the last 12 months. This was significantly higher than the three-in-five (62%) of teachers who said they had completed cyber security training in the same period (see Figure 8.6).

Figure 8.6 Provision and completion of cyber security training (Leaders and Teachers)

Whether provided cyber security training for staff over the last 12 months (Leaders)

3%

23%

73%

■ Yes ■ No ■ Don't know

Whether completed cyber security training in last 12 months (Teachers)

4%

34%

62%

■ Yes ■ No ■ Don't know

E3. Leaders (n=770); B1. Teachers (n=1,186).
Source: Technology in Schools Survey 2022-23 (Leaders survey and Teachers survey).

Leaders were more likely to have provided cyber security training in the last 12 months if they were in secondary schools, academies or urban locations, as Figure 8.7 shows. Cyber security training was also more likely to have been provided in schools with a higher OFSTED rating: significantly more so in Outstanding schools (85%), compared with Good schools (71%) or Requires Improvement (63%).

Figure 8.7 Provision of cyber security training for staff in the last 12 months, by key-subgroups (Leaders)
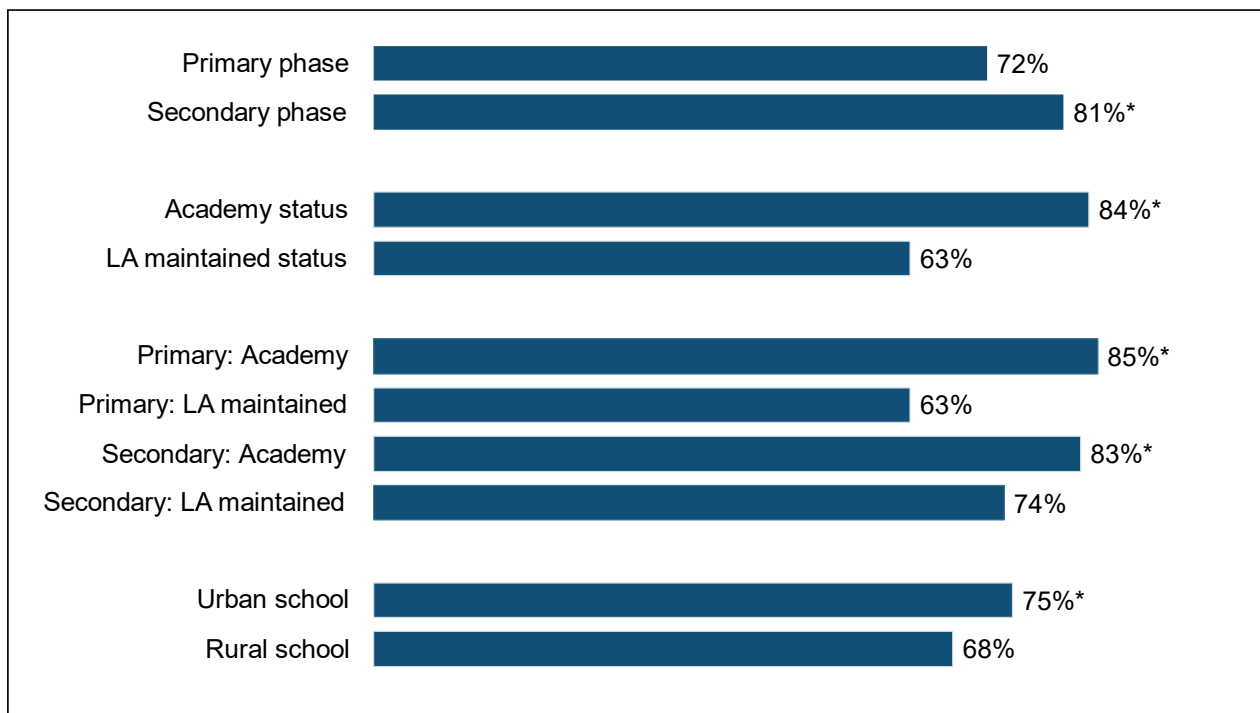
It is not possible to directly compare the provision of cyber security training for staff against the previous EdTech 2020-21 survey, although there are signals that there has been an uplift in staff training for this area.

- In 2020-21 59% of primary schools who responded to the technical survey said cyber security training was offered to their staff either on a compulsory or optional basis, whereas 72% of primary leaders in this latest survey said some cyber security training had been provided to staff in the last 12 months.

- And in 2020-21, 51% of secondary schools said that cyber security training was offered to their staff (compulsory or optional), whereas 81% of secondary leaders in this latest survey said some cyber security training had been offered to staff in the last 12 months.

Teachers were more likely to have undertaken any cyber security training in the last 12 months if they were in secondary schools or academies, as Figure 8.8 shows, but with no difference between urban and rural locations. By OFSTED rating, 65% of teachers in

schools rated Outstanding had undertaken training, similar to the levels reported by teachers in schools with Good and Requires Improvement ratings (59% and 60% respectively).

Figure 8.8 Completing any cyber security training in the last 12 months, by key-subgroups (Teachers)
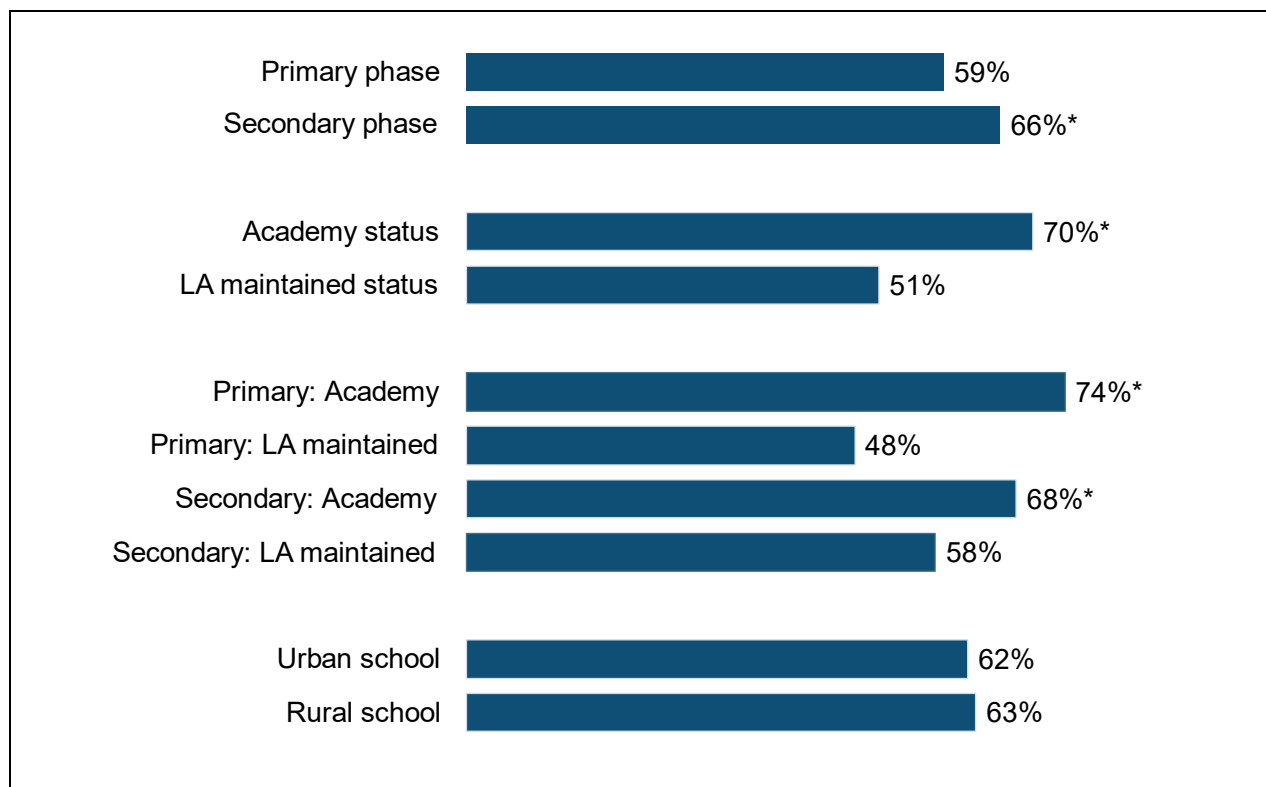
IT leads were asked whether staff undergo cyber security awareness training every 12 months; over half (55%) said at least some staff did so. This comprised 41% who said it was compulsory for all staff, 9% who said it was compulsory for certain staff, and 6% who said it was optional for staff (Figure 8.9). However 18% said they did not know; when these respondents are excluded from the base, then two-thirds (68%) of those with an opinion said yes, at least some staff undertook cyber security training each year.

Figure 8.9 Whether school staff undergo cyber security awareness training every 12 months (IT leads)
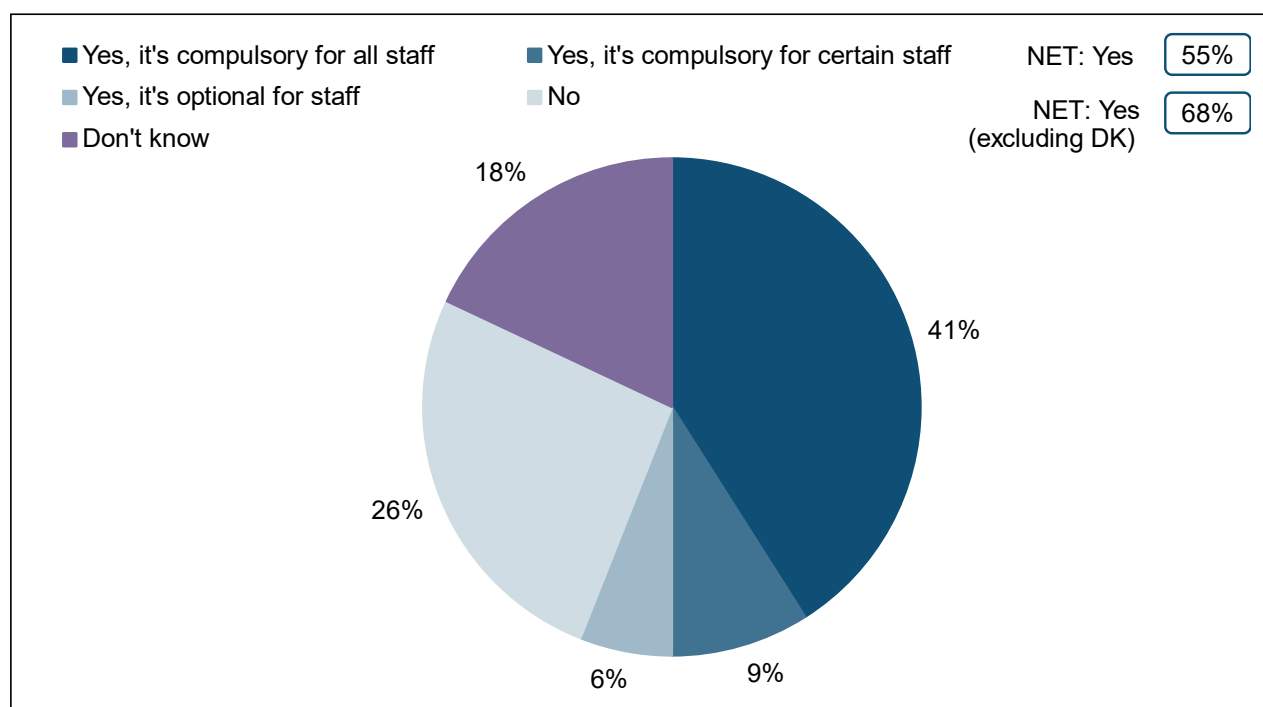
Legend:
- Yes, it's compulsory for all staff
- Yes, it's compulsory for certain staff
- Yes, it's optional for staff
- No
- Don't know

NET: Yes | 55%
NET: Yes (excluding DK) | 68%

Pie chart segments:
- 41%
- 9%
- 6%
- 26%
- 18%

The minority of IT leads (9%) who said the cyber security awareness training was only compulsory for certain staff were asked for whom it was compulsory. These results should be treated with caution due to the small sample base of only 28 respondents. Their top answers were members of the Senior Leadership Team (cited by 25 respondents), IT leaders (24), headteachers (23), and classroom teachers (19). Fewer mentioned those in other job roles, such as school administration leads/managers/co-ordinators (cited by 18 respondents), teachers with specific responsibilities such as SENCo roles or subject teachers (15), or governors/trustees (6).

IT leads were more likely to say that at least some staff undergo cyber security training every 12 months if they were in secondary schools and / or academies, as Figure 8.10 shows.

Figure 8.10 Cyber security awareness training arrangements overall and split by phase and academy status (IT leads)
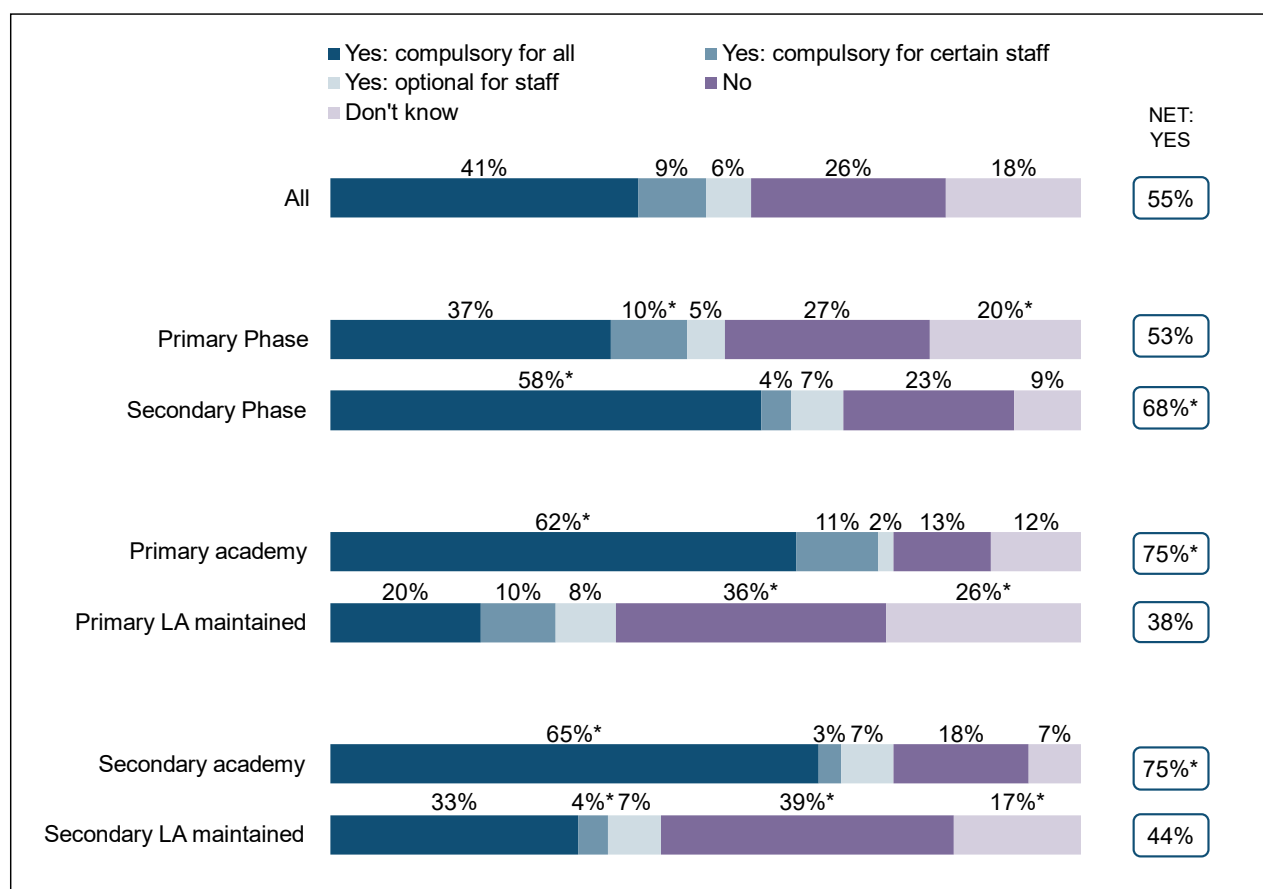
Legend:
- Yes: compulsory for all
- Yes: compulsory for certain staff
- Yes: optional for staff
- No
- Don't know

NET: YES

	Yes: compulsory for all	Yes: compulsory for certain staff	Yes: optional for staff	No	Don't know	NET: YES
All	41%	9%	6%	26%	18%	55%
Primary Phase	37%	10%*	5%	27%	20%*	53%
Secondary Phase	58%*	4%	7%	23%	9%	68%*
Primary academy	62%*	11%	2%	13%	12%	75%*
Primary LA maintained	20%	10%	8%	36%*	26%*	38%
Secondary academy	65%*	3%	7%	18%	7%	75%*
Secondary LA maintained	33%	4%*	7%	39%*	17%*	44%

A similar question was asked in the 2020-21 survey, without a specified timeframe (i.e., IT leads were simply asked whether their school offered cyber security training, without the focus on "the last 12 months"). [32] As shown in Table 8.2, the results were very similar across primary settings, with no significant differences evident. There was a marked increase in cyber security training that was compulsory for all in secondary settings however, despite the fact that 2022-23 survey focused on a narrower timeframe ("the last 12 months"). Additionally, levels of awareness around training appear to have increased, with 16% of secondary IT leads reporting that they did not know in 2020-21 vs. 9% in 2022.

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[32] The question asked on the 2020-21 survey was, "Do school staff undergo any cyber security awareness training?" with the same answer options as on the 2022-23 survey.

Table 8.2 Cyber security awareness training arrangements vs. 2020-2021 survey

Cyber security awareness training	Primary phase (2022)	Primary phase (2020)	Secondary phase (2022)	Secondary phase (2020)
Yes: compulsory for all	37%	36%	58%*	34%
Yes: compulsory for certain staff	10%	16%	4%	7%
Yes: optional for staff	5%	7%	7%	10%
No	27%	22%	23%	32%
Don't know	20%	20%	9%	16%*

2022-23 survey – B6. Primary IT leads (155), secondary IT leads (168).

2022-23 survey – Source: Technology in Schools Survey 2022-23 (IT leads survey).

2020-2021 survey – all technical survey respondents (primary 619, secondary 185.).

*Indicates significant difference between survey years within phase.

9. Interaction with DfE guidance and support

DfE offers schools a wide range of guidance documents, data, funding, grant information and other support packages. This chapter starts by looking at the proportions of leaders reporting that they had used DfE guidance and support, before exploring the perceived time and financial savings of doing so.

Ease of finding certain types of information on GOV.UK.

Leaders were asked how easy or difficult they found using the gov.uk website for the tasks listed in Table 9.1. This question provides an indication of the proportion who had used the gov.uk website for each of the activities, effectively a derived 'used' rating[33]. This is shown alongside the proportion that explicitly reported they had 'not used gov.uk for this information' and those who were 'unsure'.

As shown in Table 9.1, finding relevant guidance documents and finding information about new policy announcements were the most common reasons for using gov.uk of the tasks asked about (over nine-in-ten leaders reported using gov.uk for each of these activities). Advice about funding, management and recruitment of staff and building management / infrastructure were the least common reasons of the tasks asked about.

Table 9.1 Usage of gov.uk for different types of information (Leaders)

	Used (proxy)	Not used	Unsure
Finding relevant guidance documents	93%	5%	3%
Finding out about new education policy announcements	93%	5%	2%
Finding information about funding available	82%	10%	8%
Advice and support on managing and recruiting staff	68%	24%	8%
Advice and support on managing buildings / infrastructure	62%	24%	13%

J1. Leaders (n=770).

Used (proxy) is comprised of those who gave a rating of how easy/difficult the gov.uk website was to find the information above, and excludes those who said they did not use the website for this information or don't know

Source: Technology in Schools Survey 2022-23 (Leaders survey).

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[33] This measure is comprised of those who gave a rating of how easy or difficult the gov.uk website was in terms of finding information, using a scale from 'extremely easy to use' to 'extremely difficult to use. Those who said they 'did not use gov.uk for this information' or 'don't know' are excluded from the usage measure.

Figure 9.1 presents the usability ratings of those who indicated that they had used gov.uk for each of the different types of information. As shown, the tasks carried out by the highest proportion of leaders were also the tasks that the largest proportion of leaders found easy to complete; just over a half (56%) reported that they found finding relevant guidance and information about new education policy announcements easy to use, and/or finding out about new education policy announcements.

The information tasks that reportedly caused the most difficulty for leaders was finding information about funding available, with almost half of leaders (47%) rating this difficult. A large percentage of respondents found it neither easy nor difficult to find information relating to advice and support on managing and recruiting staff and advice and support on managing buildings / infrastructure (35% and 32% of leaders, respectively.

Figure 9.1 Use of gov.uk for different types of information (Leaders)
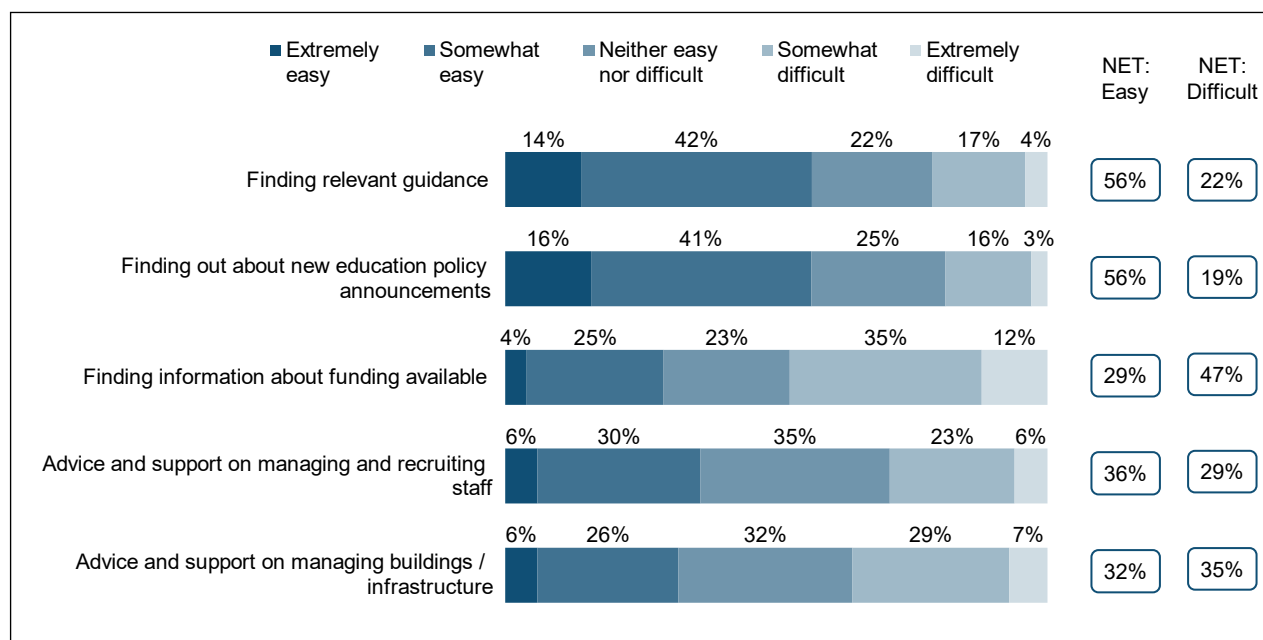
J1. Leaders using gov.uk for each purpose: finding relevant guidance (n=715); finding out about new education policy announcements (n=720); advice and support on managing and recruiting staff (n=526); finding information about funding available (n=630); advice and support on managing buildings / infrastructure (n=489). Source: Technology in Schools Survey 2022-23 (Leaders survey).

In terms of differences in views by leaders, primary leaders were more likely to report difficulties finding information about available funding (49% vs. 38% secondary leaders who provided a rating), though there was no difference in views between those working for academy and LA maintained secondary schools.

Most leaders (90%) indicated that they had used the gov.uk site to submit mandatory data returns, with just 6% unsure and 5% explaining that they had not. A smaller proportion (70%) indicated that they had made and submitted financial information via the site, with 16% unsure and 15% explicitly stating that they had not. Figure 9.2 presents

the ease of using the site for these reasons among leaders who provided a usability rating, and shows that over a half rated the site as easy to use for each of these aspects (either extremely easy or somewhat easy), and one-in-five felt the site was difficult to use

Figure 9.2 Ease of using gov.uk to complete specific tasks (Leaders)

There was no difference in usage of the gov.uk site to submit mandatory data returns by academy status within phase (89% of primary academy schools gave a proxy usage rating vs.91% of primary LA maintained schools, 85% of secondary academy schools vs. 88% of secondary LA maintained schools). In terms of making and submitting financial information, however, lower usage was recorded for primary academy schools compared with primary LA maintained schools (58% vs. 78%), with indications that this was also the case for secondary schools (66% and 77% respectively, although this difference does not withstand statistical testing). Among those said how easy or difficult it was to use gov.uk to submit mandatory data or to submit financial information, there were no differences in their views of the site by academy status.

Associated impact

Leaders were asked the extent to which they agreed that DfE guidance or services on GOV.UK had saved them time and money. As shown in Figure 9.3, only a small proportion of leaders gave a definitive answer to each of these aspects, with views slightly more positive with regards to time saved: two-in-ten (22%) of leaders agreed that the guidance had saved them time, which was twice the proportion (11%) who agreed it had saved their school money. Around a quarter of leaders disagreed with each of these statements.

Figure 9.3 Extent to which leaders agree or disagree that using the guidance or services on gov.uk saves time and money (Leaders)
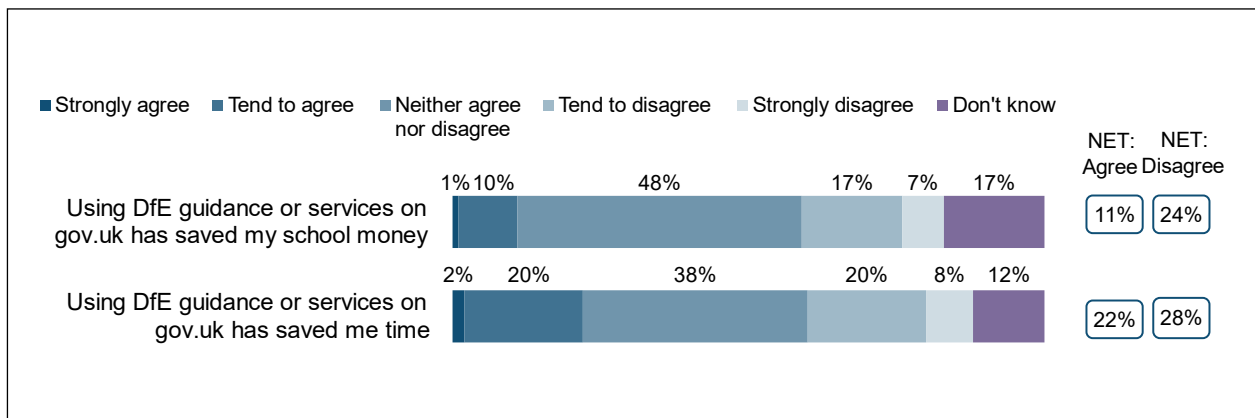
There was no particular difference in views and level of agreement by phase. However leaders at LA maintained secondary schools were more likely to disagree that using DfE guidance or services on gov.uk had saved their school money (37% vs. 20% at academy secondary schools).

10.   Conclusions

The situation in schools has changed dramatically since the 2020-21 EdTech survey. At that point, schools surveyed were still in the midst of the unprecedented changes to technology usage brought about by Covid-19 lockdowns. Using the EdTech survey as the baseline, indicative comparisons show that more schools now have a digital strategy in place, with this uplift seen across both primary and secondary schools. Likewise there has been an increase in cyber security training for staff, a rise in the level of support for pupils to use accessibility features, an increase in using technology for financial management in secondary schools, and an increase in teachers using technology for safeguarding. Ultimately, both leaders and teachers are continuing to use technology across a range of activities, and it is clear that technology is an important part of daily school life.

However, some schools still report that the technology they use does not sufficiently meet their needs, and schools were less confident about their ability to procure and use technology efficiently, including to support certain groups of pupils, such as those with SEND. In order to continue supporting the education sector, DfE should consider the following areas.

Areas for future development

- Education leaders were more positive than teachers about the impacts of technology, on both pupil attainment and workload reduction. This suggests that DfE and other relevant bodies should consider what more they could do to promote the effective use of technology, train staff, and encourage the sharing of best practice.

- Consideration should be given to how schools can be supported to procure education technology more efficiently, in particular where they need to refresh and update their technology infrastructure to bring it in line with DfE's digital standards, and how CPD can be delivered flexibly and cost-effectively to support further use of education technology.

- Development of support and guidance for schools to create a digital strategy would continue to be beneficial, particularly for primary schools in the maintained sector. Notably, primary LA maintained schools were more likely than secondary and primary academy schools to report that investment decisions about the use of technology were made at school level but were equally less likely to have in-house technical support, so it is even more important that they are supported to develop a strategy which could help to guide these spending decisions.

- Teachers at primary LA maintained schools were less likely to have received training on how to use education technology in the last academic year or to have

undertaken cyber security training within the last 12 months, so cyber security training for all schools but particularly primary LA maintained schools may need to be a consideration for DfE.

- Ensuring that robust evaluation and cost-benefit data is available on different forms of technology is likely to be useful to leaders to inform their investment decisions going forward. Schools would also benefit from clearer signposting to information about funding support for education technology. Despite high levels of usage, almost half of leaders using gov.uk to explore funding available to their school found the site difficult to use. This is a key information area to develop given that affordability was a key barrier to the increased uptake of education technology in schools.

- One of the barriers to further implementation of cloud-based storage was perceived cost and affordability, both in terms of migrating to the cloud and the ongoing costs. Given that there are potential long term cost savings, and other positive benefits, associated with moving to a cloud-based storage system this is an area where it would be good to provide further information to debunk any myths.

- Education technology was most commonly being used for homework and collaborative learning, so it is important for government to consider how pupils from disadvantaged backgrounds can be supported to have sufficient access to technology at home to enable them to engage fully in these activities.

- Assistive technology is an area where potentially more could be done to raise school staff awareness of the potential benefits to support pupils with SEND. Just under two-thirds of leaders were aware of and provided support for pupils to use accessibility features built into mainstream devices and software, so there is scope to improve this.

- Although around three-quarters of IT leads were aware of the digital and technology standards, a significant minority of these were not aware of the detail, and one-quarter were not aware of them at all. DfE continue to publish the final standards and are testing an online service to support schools with their planning with technology. Consideration should be given to how the standards and this online service can be further promoted to support schools prioritise getting the right technology in place.

Appendix 1: Survey sample details

Table A.1: Number of schools and respondents per role type in the survey sample

Number of schools	Number of leader surveys	Number of teacher surveys	Number of IT lead surveys
1,877	770	1,186	323

Table A.2: Number of schools and respondents per phase in the survey sample

Survey type	Primary		Secondary	
Leader survey	526	68%	244	32%
Teacher survey	350	30%	836	70%
IT lead survey	155	48%	168	52%

Sample Profile

The profile of the schools which responded to the survey was compared to the national profile of schools. This then informed the data weighting approach that was undertaken. Further information on the school profile of the responses received can be found in the tables in this appendix.

Respondent roles

For the leader survey, most respondents were headteachers / principals, followed by deputy headteachers / vice principals and assistant headteachers/ principals. Around one-in-five leaders who selected 'Other', were most frequently school business/operational managers.

Table A.3. Respondent roles (leader survey) - unweighted

	Number of responses	% of responses
Headteacher / Principal / Head of School	443	58%
Vice Principal / Deputy Headteacher	94	12%
Executive Headteacher / Executive Principal / CEO	27	4%
Business / Operations Manager (spontaneous)	80	10%
Assistant Headteacher / Assistant Principal	75	10%
IT Manager / Director (spontaneous)	6	1%
Other	45	6%

Table A.4. Respondent roles (teacher survey) - unweighted

Teacher role	Number of responses	% of responses
Qualified teacher (QTS / QTLS) on the Upper Pay Range	378	32%
Qualified teacher (QTS / QTLS) on the Main Pay Range who is not serving statutory induction	164	14%
Head of Department	283	24%
Head of Subject	157	13%
Senior Leader	62	5%
Head of Key Stage	61	5%
ECT: Qualified teacher who is serving statutory induction	31	3%
Head of Year	36	3%
Other	14	1%
Key Stage currently taught		
Early Years Foundation Stage	78	7%
Key Stage 1	144	12%
Key Stage 2	238	20%
Key Stage 3	767	65%
Key Stage 4	794	67%
Key Stage 5	464	39%
Subject area (secondary teachers)		
English	83	7%
Maths	117	10%
Science	170	14%
Geography	41	3%
History	37	3%
Modern Foreign Languages	60	5%
Religious Studies	39	3%
Physical Education	22	2%
Art or Drama	47	4%
Music	27	2%
Design & Technology	57	5%
Business Studies	19	2%
IT or Computer Science	60	5%
Psychology (spontaneous)	14	1%
Other	43	4%

Source: Teacher survey. Base: All teachers (n=1,186)

Table A.5. Respondent roles (IT lead survey)

	Number of responses	% of Responses
IT lead / manager / coordinator	117	36%
Network manager	76	24%
Subject leader for computing / IT	49	15%
(Internal) IT technician / support	25	8%
(Outsourced / external) IT technician / support	25	8%
Business / office manager	8	2%
Teacher	4	1%
Vice Principal / Deputy Headteacher	2	1%
School Administrator	1	<0.5%
Assistant Headteacher / Assistant Principal	5	2%
Middle leader	4	1%
Headteacher / Principal / Head of School	1	<0.5%
Curriculum lead	1	<0.5%
Digital lead	3	1%
Other	2	1%

Source: IT Lead survey. Base (n=323)

Table A.6. Role of others who contributed to the data and information in the survey (IT lead survey)

	Number of responses	% of Responses
IT lead/manager/coordinator	29	9%
Network manager	23	7%
(Internal) IT technician / support	28	9%
Business/Office manager	17	5%
Headteacher/Principal/Head of School	13	4%
Teacher	14	4%
(Outsourced / external) IT technician / support	10	3%
Subject leader for computing / IT	10	3%
School Administrator	5	2%
E-learning lead	2	1%
Assistant Headteacher / Assistant Principal	3	1%
Middle leader	9	3%
Digital lead	4	1%
Executive Headteacher / Executive Principal / CEO	2	1%
Vice Principal / Deputy Headteacher	5	2%
Curriculum lead	1	<0.5%
SENCo	1	<0.5%
Learning support assistant	1	<0.5%
No-one else contributed	213	66%

Source: IT Lead survey. Base (n=323)

Table A.7. Survey sample details: Region (national and by survey type, unweighted)

	Primary Schools				Secondary Schools			
	National profile of schools	Leader survey	Teacher survey	IT Lead survey	**National profile of schools**	Leader survey	Teacher survey	IT Lead survey
East Midlands	10%	10%	9%	7%	9%	5%	7%	6%
East of England	12%	12%	13%	15%	12%	16%	13%	8%
London	11%	10%	13%	11%	14%	15%	14%	10%
North East	5%	6%	6%	7%	5%	5%	5%	7%
North West	15%	17%	18%	10%	14%	11%	14%	13%
South East	16%	16%	16%	17%	15%	15%	19%	15%
South West	11%	10%	7%	9%	10%	12%	11%	15%
West Midlands	11%	8%	6%	12%	12%	13%	9%	14%
Yorkshire and Humber	11%	10%	13%	12%	9%	8%	6%	13%

Source: Leader, teacher and IT Lead surveys.

National profile data from Get information about schools Get Information about Schools - GOV.UK (get-information-schools.service.gov.uk)

Table A.8. School profile (national and by survey type, unweighted)

	National profile	Leader survey	Teacher survey	IT Lead survey
School type				
Academies	47%	49%	63%	52%
LA maintained	53%	51%	37%	48%
OFSTED				
Outstanding	12%	12%	17%	11%
Good	66%	67%	60%	66%
Requires improvement	7%	8%	7%	9%
Serious weaknesses/special measures	1%	<0.5%	1%	1%
Not known	15%	13%	14%	13%
Free school meals (%)				
1st quintile (most deprived)	20%	16%	12%	20%
2nd quintile	20%	19%	18%	20%
3rd quintile	20%	20%	23%	24%
4th quintile	20%	23%	27%	24%
5th quintile (least deprived)	20%	21%	18%	12%
Not known	2%	1%	2%	1%
Size within phase (number of pupils)				
Primary (150 or less)	17%	15%	4%	6%
Primary (151-250)	28%	24%	9%	10%
Primary (251-500)	31%	25%	12%	22%
Primary (501+)	6%	4%	3%	9%
Primary Unknown	2%	<0.5%	1%	0%
Secondary (500 or less)	1%	3%	2%	2%
Secondary (501-1000)	6%	12%	22%	19%
Secondary (1001-1500)	6%	12%	33%	21%
Secondary (1501+)	2%	4%	12%	9%
Secondary Unknown	<0.5%	<0.5%	1%	1%

Source: Leader, teacher and IT Lead surveys. National profile data from Get information about schools Get Information about Schools - GOV.UK (get-information-schools.service.gov.uk)

Table A.9. Survey respondent profile – headteachers and teachers (unweighted)

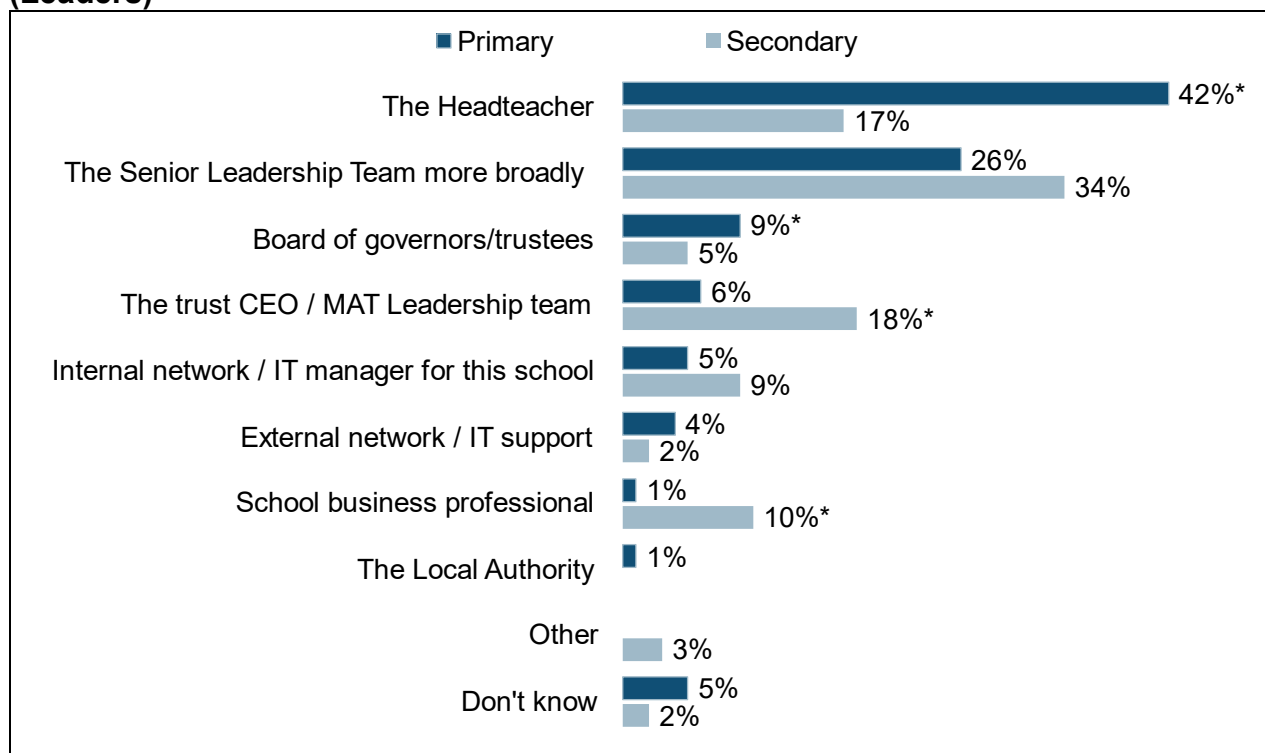|	Leader survey		Teacher survey	
	Number of responses	**% of responses**	**Number of responses**	**% of responses**
Gender				
Male	292	38%	341	29%
Female	459	60%	816	69%
Age				
18-34	43	6%	277	23%
35-44	233	30%	375	32%
45-54	343	45%	378	32%
55+	132	17%	141	12%
Length of time in teaching				
Up to 5 years	23	3%	155	13%
6 – 10 years	42	5%	230	19%
11 – 20 years	267	35%	430	36%
20 +years	366	48%	317	27%

Appendix 2: Digital technology strategy – further detail

Here we explore the specific roles and responsibilities for digital technology in schools, as reported by school leaders. This is split by whether there was a digital technology strategy in place at the school or not. We then explore more detailed elements of the strategy, namely number of years they cover and how often they are reviewed.

Roles and responsibilities with no digital technology in place

Leaders reporting that their school did not have a strategy in place were asked where overall responsibility for the use of technology sat, with the results from this question outlined in Figure B1. As shown, it was most common for this to fall under the remit of the headteacher, particularly in primary settings (42% vs. 17% in secondary settings) or the senior leadership team more broadly (reported by 26% of primary leaders and 34% of secondary leaders, with this difference not significant). As also shown, secondary leaders were more likely to report that responsibilities sat with the trust CEO / MAT leadership team (18% vs. 6% of primary leads) and a school business professional (10% vs. 1% primary schools).

Figure B1 Overall strategic responsibility for the use of technology at school (Leaders)

	Primary	Secondary
The Headteacher	42%*	17%
The Senior Leadership Team more broadly	26%	34%
Board of governors/trustees	9%*	5%
The trust CEO / MAT Leadership team	6%	18%*
Internal network / IT manager for this school	5%	9%
External network / IT support	4%	2%
School business professional	1%	10%*
The Local Authority	1%	
Other		3%
Don't know	5%	2%

F6A.Base: All leaders with no strategy in place (yet) (n=322); Primary (n=243); Secondary (n=79).
*indicates a significant difference between primary and secondary.
Source: Technology in Schools Survey 2022-2023 (Leaders survey).

Base sizes among secondary leaders do not support analysis by academy status. There were a couple of significant differences among primary leaders however, with those working at primary academies more likely to report that they did not know where responsibilities sat (11% vs. 2% of leaders at LA maintained primaries). At the same time, they were more likely to report that overall strategic responsibility sat with the trust CEO / MAT Leadership team (17% vs. none of those at LA maintained primaries).

Roles and responsibilities where a strategy was in place

Schools reporting that there *was* a digital technology strategy in place were similarly asked who held overall strategic responsibility for said strategy, both in terms of its development but also its implementation. Similar to the schools that did not have a strategy in place, it was most common for these responsibilities to sit with the senior leadership team or the headteacher (Figure B2). As shown, results were broadly consistent by phase, with the exception of:

- Primary leaders being more likely than secondary leaders to indicate that it was the headteacher's responsibility for developing (19% vs. 9%) and implementing (50% vs. 26%) their school's strategy. One-in-five primary leaders also cited that

implementation was the responsibility of the board of governors/trustees (19% vs. 8% of secondary leaders).

- Secondary leaders being more likely than primary leaders to indicate that implementation was the responsibility of the Network/IT manager for the school (54% vs. 38% of primary leaders) or the trust CEO / MAT leadership team.

Figure B2 Responsibility for developing and implementing the digital technology strategy in schools (Leaders)
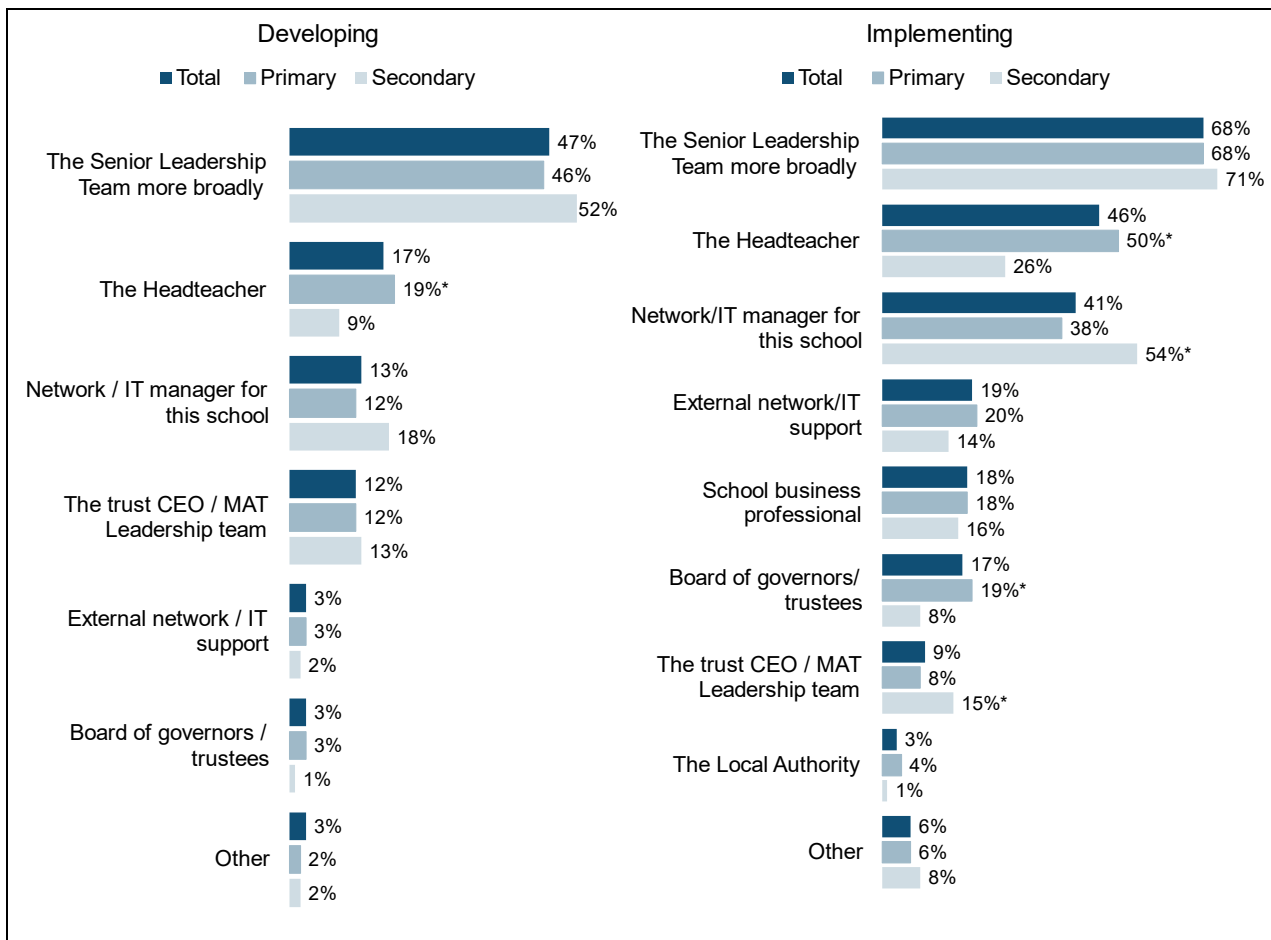
F2A/B. Base: All leaders with a strategy in place (n=448); Primary (n=283); Secondary (n=165).
*indicates a significant difference between primary and secondary. Don't Know <3% not included.
Source: Technology in Schools Survey 2022-2023 (Leaders survey).

Table B1 shows a range of differences by academy status within the primary phase. Leaders working for LA maintained primaries were more likely to report that responsibility sat with the Senior Leadership Team, for example (54% vs. 38% working a primary academies). Results by academy status within the secondary phase should be treated

with caution, owing to low base sizes.[34] There were no significant difference, in part as a result.

Table B1 responsibilities for developing and implementing the strategy

Responsibility for developing the strategy	Primary academy	Primary LA maintained	Secondary academy	Secondary LA maintained
The Senior Leadership Team	38%	54%*	49%	68%
The Headteacher	18%	21%	9%	8%
Network / IT manager for this school	9%	14%	17%	19%
The trust CEO / MAT Leadership team	25%*	-	14%	-
External network / IT support	*5%	2%	2%	3%
School business professional	-	4%*	3%	-
Board of governors / trustees	4%	2%	2%	-
Other	1%	3%	3%	3%
Responsibility for implementing the strategy	Primary academy	Primary LA maintained	Secondary academy	Secondary LA maintained
Senior Leadership Team	68%	68%	68%	81%
Network / IT manager for this school	35%	41%	52%	62%
The Headteacher	58%*	44%	27%	24%
External network / IT support	17%	24%*	15%	11%
School business professional	17%	21%	17%	14%
Board of governors / trustees	21%	18%	6%	14%
The trust CEO / MAT Leadership team	19%*	-	17%	-
The Local Authority	-	6%*	-	5%
Other	5%	6%	7%	14%

Leaders with a digital technology strategy in place, or with one in progress, most commonly reported that the strategy covered a 3 year (39%) or 5+ year (22%) period (Table B2). The latter rose to 31% among secondary leaders specifically. A significant minority (25%) reported that they did not know how many years their strategy covered.

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[34] just 37 leaders answered these questions on behalf of an LA maintained secondary school

Table B2 Number of years the digital technology strategy does (or will) cover (Leaders)

	Total	Primary phase	Secondary phase
1 year	8%	8%	6%
2 years	5%	5%*	2%
3 years	39%	39%	36%
4 years	2%	2%	2%
5 - 10 years	22%	20%*	31%*
Don't know	25%	25%	22%

F3.Base: All leaders with a strategy in place or planed (n=608); Primary (n=396); Secondary (n=212).
*indicates a significant difference between primary and secondary.
Source: Technology in Schools Survey 2022-2023 (Leaders survey).

Thinking about the frequency with which strategies were reviewed, around three-in-five leaders (61%) indicated that this took place annually, followed by just under one-in-five (16%) who reviewed it on a termly basis. Secondary leaders were more likely to review the strategy on a termly basis, as shown in Table B3.

Table B3 Frequency of reviewing digital technology strategy (Leaders)

	Total	Primary phase	Secondary phase
Termly	16%	14%	23%*
Annually	61%	62%	56%
Every 2 years	9%	10%	7%
Every three years (spontaneous)	1%	1%	1%
Rolling programme (spontaneous)	1%	1%	0%
Biannually (spontaneous)	1%	1%	0%
Other frequency	1%	<1%	2%*
Don't know	11%	11%	10%

F5.Base: All leaders with a strategy in place or planed (n=608); Primary (n=396); Secondary (n=212).
*indicates a significant difference between primary and secondary.
Source: Technology in Schools Survey 2022-2023 (Leaders survey).