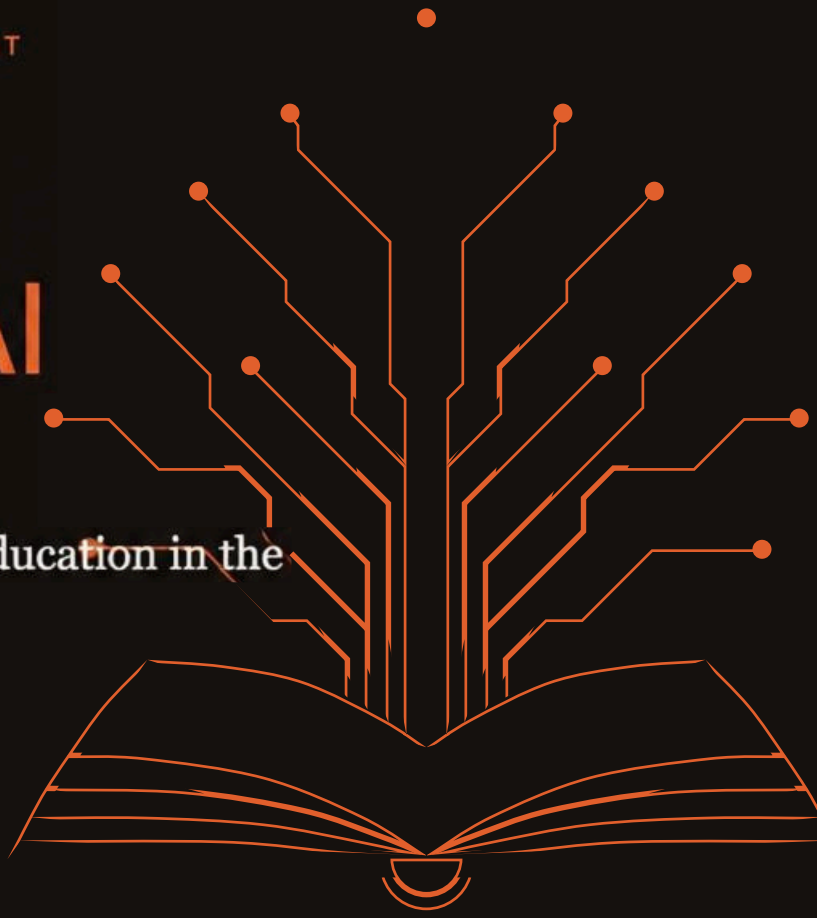
A RESEARCH REPORT FOR SHINE TRUST

Learning in the Age of AI

Technology, disadvantage and education in the North of England



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SHINE

LAIDLAW FOUNDATION

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Foreword

At SHINE, we are committed to improving educational outcomes for children and young people who face disadvantage, and to supporting the schools, families and communities around them. As a charity focused on backing innovations led by teachers, we have a responsibility not only to understand emerging technologies, but to ask a more fundamental question: who benefits from them, who might be left behind, and what do we need to do to ensure innovation helps rather than widens existing inequalities?

Artificial Intelligence is already changing the world around us, and education is no exception. Its potential is enormous. Used well, AI could help teachers personalise learning, reduce workload, support inclusion and give children new ways to develop knowledge and skills. Many funders are understandably looking at how AI might improve efficiency, streamline workload and help them make better use of their resources. But are we focusing as much attention on how AI is shaping the worlds we fund?

Access to technology, digital confidence, privacy, trust and representation are not equally distributed. There is also a risk that new technologies, if designed or implemented without sufficient thought, could reinforce existing inequalities rather than reduce them. Equally, there is an opportunity for AI to help address some of the barriers that children and families face.

We commissioned this work because we wanted to understand what the rapid development of AI means for children, families and schools experiencing poverty and socioeconomic disadvantage. We wanted to move beyond conversations about technology that are often dominated by those who have the greatest access to it, and instead listen to the people whose lives and futures will be shaped by the decisions we make today. This project brings together evidence and lived experience. Through research, school visits, workshops and conversations with teachers, children and families, we have sought to understand their hopes, concerns and experiences. We believe this matters because these voices are rarely otherwise heard.

This report is not intended to provide a definitive answer to the role of AI in education. Instead, it is a starting point for action and reflection. We will use its findings to inform SHINE's approach to responsible innovation, our thinking as a funder and our work with schools and communities. We will also explore where practical action and experimentation can help us turn learning into impact.

We hope this work will also encourage other funders to look beyond how AI can make our organisations more efficient and consider the wider worlds we are helping to shape through our funding.

Innovation should always have a purpose. For SHINE, that purpose is ensuring that every child has the opportunity to thrive. AI must be judged not simply by what the technology can do, but by whether it helps us move closer to that goal.

Fiona Spellman

CEO, SHINE Support and Help in Education

Author's Note

Ashiya is a Laidlaw Scholar from Canada, studying at the University of Toronto's Munk School of Global Affairs and Public Policy. Passionate about education and the governance of digital technologies, she worked with SHINE to investigate the effects of artificial intelligence on children facing socioeconomic disadvantage in North East England. With support from the Laidlaw Foundation, she spent the summer immersed in schools across the region to bring community perspectives to light.

Education has always been of the utmost importance to me, alongside working towards greater access and equality of opportunity for young people, of the kind I have been privileged to have myself. When I asked myself why I place so much value in education, I realised I have seen its transformative power firsthand, having watched it change and improve lives - an experience that is in itself a privilege.

Every person holds many identities within themselves that form who they are. For me, those include the role of an eldest daughter and a first-generation immigrant, who has access to many privileges thanks to the safety and the resources afforded to her by an education in Canada. Another is that of a university student and researcher supported by several organisations to whom I owe my deepest gratitude. The opportunities I have had to travel, meet and learn from people at the top of their fields and to have my perspectives continually challenged come from my access to education.

The most defining part of my identity is that of a Gen Z youth. I am acutely aware of the way technology shapes my thinking and threads through my daily life. I watched social media rise to dominance during my teenage years, change how connections were formed and how much I knew about the world beyond my own compared with my parents at my age. Then came the surge of generative AI tools, where artificial intelligence went from a subject of science fiction to a household term you hear every time you turn on a news channel. It can feel as though we are standing at the edge of something we do not fully understand - and we cannot regulate or make policy about something we do not understand, in a way that can expect to produce good long-term outcomes.

In technology policy, the rhetoric we hear most often is that "the horse has left the stable". AI has been unleashed, everyone is using it, therefore there is nothing the public can do to slow it down or manage its effects. We are simply to deal with the consequences, whatever they turn out to be. Scholars and professors in higher education have been grappling seriously with the questions it poses for the future of teaching and learning - I saw AI policies appear in my own class syllabi almost overnight. However, this discourse is concentrated with those who have the most resources and the backing of large institutions like universities, yet even they do not have the answers.

This project was designed to bring forward the voices of those who are most vulnerable and often left behind by innovation - some of the most deprived communities in England, whose views on education and technology hold powerful insights that are often missed by policymakers. This project looks at artificial intelligence through the lens of primary and secondary education, by engaging the teachers and students within it. By bringing more voices to light, I hope this report prompts you to think about the power each of us holds to take charge of how we approach this next era of education in the age of AI, and to make sure it meets our highest standards for equity, for progress, and for a better vision of learning for everyone.

Ashiya Dewan

Laidlaw Leadership & Research Scholar

Acknowledgements

This report would not exist without the many schools that opened their doors. My thanks go to the leadership teams, teachers and pastoral staff across Middlesbrough, Sunderland and Rotherham, who shared their time amidst demanding working days, spoke with a candour that made this research worth doing and welcomed me into their communities. My thanks go equally to the children who took part in my focus groups, who turned out to be among the most thoughtful commentators on artificial intelligence I met during this project! They inspired me every day with their bright minds, strong personalities, eager curiosity and big dreams for their futures.

I am especially thankful to the SHINE central team for their curiosity during these transformational few months in England, inviting me to make a serious contribution to their work. This is a reflection of the way they show up with care for even the smallest task, because they know that change is built out of little things. My particular gratitude goes to SHINE's Chief Executive, Fiona, with whom one conversation in December 2025 gave this project its shape, and who has consistently pushed my work towards uncovering deeper truths rather than easy answers. Fiona has also been a model of leadership for me: someone who makes every decision with the people she serves in mind, who meets challenges with grace and encourages all of us to treat mistakes as learning. Thank you also to Adrian Braddy, SHINE's Head of Communications, for his continual support and encouragement of my ideas, perspectives and writing. This project would also not have been possible without the enthusiasm, belief and boundless passion of Sean Harris, Director of PLACE (People, Learning and Community Engagement) at Tees Valley Education Trust, who helped establish every one of the fruitful connections with schools.

Finally, I am indebted to the support of the Laidlaw Foundation and the University of Toronto, whose Laidlaw Leadership and Research Programme provided the training and funding to carry out this project. This allowed me to be immersed in communities, which made this work as rich and as revealing as it turned out to be. Their belief in Laidlaw Scholars' capacity as young leaders and commitment to helping us grow as conscientious researchers was foundational to this journey. Visiting the Laidlaw Schools Trust in Pennywell during my fieldwork helped me understand the true scale of their impact, and how education and community engagement together can do remarkable things. This made me prouder still to be a part of that mission.

Executive Summary

This report explores how artificial intelligence is shaping learning, teaching and childhood in communities facing high levels of socioeconomic disadvantage. It brings together a review of recent national and international policy and research with six weeks of fieldwork in schools in Middlesbrough, Sunderland and Rotherham during summer 2026.

The schools involved described widespread device access, even among families facing hardship. They pointed less to a shortage of technology than to gaps in the guidance and critical skills that help children use it well. National surveys show that schools' capacity to use AI well follows existing advantage, with state schools and those serving disadvantaged pupils reporting less staff training and fewer AI strategies.

HOW THE RESEARCH WAS CONDUCTED

The study draws on 100+ semi-structured conversations of 45 to 120 minutes with teachers, headteachers, and pastoral and e-safety leads from Reception to sixth form, as well as focus groups of 15 to 30 pupils from Year 2 to Year 12 that combined discussion, ranking and drawing activities. Most fieldwork took place in Middlesbrough, with further visits to Sunderland and Rotherham. The research used reflexive thematic analysis to identify themes and then checked them against national surveys and official data. As a qualitative, exploratory study, it does not claim to represent all children or schools. Most participating schools were existing relationships rather than random selection.

KEY FINDINGS

01 SECTIONS 2.1–2.2

Disadvantage in the region is severe and concentrated

Thirty per cent of children in the North East live in relative poverty after housing costs, and 33 per cent of pupils are registered for free school meals, the highest proportion of any English region. The region's disadvantage gap is narrower than the national average at age eleven, but becomes the joint widest in England by the 16 to 19 phase. This pattern suggests the move to secondary school may be a period of particular risk.

02 SECTION 4.2

How devices are used concerned staff more than access

Staff in several schools described families facing financial difficulty who still own recent phones, tablets and games consoles. According to staff, families often use these to calm children with behavioural difficulties or as a safe indoor hobby, with limited supervision. Staff suggested that adult involvement shapes whether technology builds a child's capability and motivation, or mainly fills their time and dominates their social lives.

03 SECTION 4.1

Device use was routine for many younger pupils

Primary pupils described phones, social media, video games and AI chatbots as an ordinary part of daily life. Every child in the focus groups from around Year 2 upwards could explain how to get around age restrictions. Many saw scrolling social media as a healthy pastime comparable to reading, and few had heard anyone suggest otherwise.

04 SECTION 4.1

Many pupils showed critical awareness of AI's limits

Pupils consistently described AI as fallible and in need of checking, and none believed they were talking to a person. When asked what would make an AI tool useful, they said they would prefer one that shows them how to solve a problem rather than giving them the answer. Students unanimously claimed they would turn first to friends and teachers for help, because those people "know and understand" them.

05 SECTION 4.3

Teachers report declining attention and persistence

Staff described shorter attention spans, difficulty tolerating boredom and, since the pandemic, more pupils withdrawing completely when work becomes difficult. Nursery staff reported some children arriving able to use a tablet more easily than a pencil. Teachers linked these changes to heavy device use at home and, in some households, to few examples of effort leading to reward.

06 SECTIONS 3.5 AND 4.4

Teachers value AI for their work, but support is uneven

Almost all the teachers interviewed felt positive about using AI in their own practice, particularly to adapt texts for different reading levels and create activities tailored to pupils' needs. Most, however, had taught themselves. Nationally, independent schools provide roughly twice as much formal AI training for staff as state schools. Teachers doubted that the planned AI tutors for disadvantaged pupils would address the underlying causes of the gap.

07 SECTIONS 4.3 AND 5.4

Families are central, but can be hard to reach

Children spend around six hours a day at school and most of the rest at home, so any school-based work on technology depends on support from families. Yet when one school arranged online safety sessions after serious safeguarding incidents, no families attended. Staff saw the main barrier as parents' capacity, given long working hours, exhaustion and their own limited digital confidence, rather than a lack of concern.

THE FOURTH GAP: CRITICAL AI LITERACY

Only 15 per cent of teenagers say their school gives adequate AI guidance, and 34 per cent of parents have discussed how to judge whether AI output is true. Fewer lower-income children feel confident spotting AI-generated content: 45 per cent, against 61 per cent of higher-income peers.

Recommendations at a Glance

The recommendations below draw on the evidence in Parts Two to Four and are set out in full in Part Five. They are written for funders, school and trust leaders, and policymakers. The first set describes priorities for action, and the second sets out principles to guide decisions about AI and EdTech in schools serving disadvantaged communities.

> *"The same digital strategy can be powerful and double-edged. We are standing on a cliff edge."*
>
> HEADTEACHER, MIDDLESBROUGH

RECOMMENDATIONS FOR POLICY AND PRACTICE · SECTION 5.4

01 Build resilience and joy, alongside attainment

Most education funding supports work that measurably raises attainment or builds a specific skill. It should be complemented by work that builds resilience, curiosity and enjoyment of learning, and that helps pupils see the purpose of their education. These qualities matter most at the move to secondary school, when disadvantaged pupils are most likely to fall behind.

02 Recognise and own the critical literacy gap

Critical AI literacy, the habit of asking where information comes from and whether it is accurate, is largely untaught, and least taught to children from lower-income households. Schools and practitioners in the region are best placed to shape how it is taught. The aim should be a lasting habit of questioning rather than a checklist of warning signs, which quickly goes out of date.

03 Embed parental engagement into media literacy design

Habits formed at home largely determine whether school-based work on technology lasts. Parent sessions and letters home are not reaching the families who most need them. Policymakers and school leaders should trial, evaluate and fund new approaches to family engagement with the same rigour applied to classroom programmes.

04 Consult teachers and pupils regularly

Conversations with staff and students about their day-to-day concerns and needs produced the most useful evidence in this project, including realities that national surveys do not capture. Trusts and local authorities should run regular, structured consultation across their schools on the impact of new technologies, whilst decision-makers should look for evidence of it before adopting or funding new AI tools.

Section 5.3 also proposes the 5Es framework as a common set of questions for assessing any AI or EdTech tool before adoption, covering efficacy, effectiveness, ethics, equity and environment.

KEY PRINCIPLES · SECTION 5.2

1 Equity at the forefront	AI capability currently follows existing lines of advantage, so a useful tool can widen a gap simply by reaching some schools first. The EEF has found that EdTech can widen the disadvantage gap as readily as it closes it. Each initiative should be judged by whether it narrows or widens that distribution.
2 Relationships as the mechanism for change	Pupils said they would rather be helped by someone who knows them, and relationships are among the main ways schools in the region improve outcomes. Prioritise technology that gives adults more time and attention for children rather than standing in for them.
3 Protect agency	The value of schoolwork lies in the thinking it requires rather than its finished product. A tool that removes the difficulty of a task also removes what it was meant to teach, even if the output of the work looks better. Pupils should be encouraged to make effort while teachers remain accountable.
4 Humility in the face of evidence	Research on AI and learning is incomplete and often contradictory. This is not a reason to wait, because pupils are already growing up with these tools, but plans should state the uncertainty openly and keep teachers and pupils involved as they are put into practice.
5 Build agency	The purpose of an educational innovation is to increase what a child can do without help, so the real test is what remains once it is withdrawn. Educators and practitioners know a great deal about what works in classrooms and should act on that knowledge rather than wait for certainty.
6 Begin with the problem, not the tool	The EdTech market tends to set the agenda by announcing what is newly possible. Start instead from problems as teachers and pupils describe them, particularly where obstacles are long-standing, and be willing to conclude that technology is not the answer.
7 Proximity as the source of assessment	Provision ranges from a device for every pupil to one shared set for a whole school, and every staffroom visited had both confident and hesitant users. Policies that sound plausible from a distance often fail in practice, so stay close enough to classrooms to be corrected by them.

Key terms

EdTech. Digital technology used for teaching, learning or school administration, from a classroom whiteboard system to an AI marking tool. The term covers hardware, software and the services around them.

Generative AI. Systems that produce new text, images, audio or code in response to a prompt. ChatGPT, Gemini, Claude and Copilot are tools named most often.

General-purpose versus purpose-built educational AI. General-purpose tools are consumer products designed to complete a task efficiently. Purpose-built educational AI is designed around how children learn, and aims to build understanding rather than supply answers. The available evidence suggests that this distinction largely determines whether AI helps or harms learning.

AI literacy. Understanding what AI systems are, how they work in broad terms, what they can and cannot do, and how to use them. It covers both the technical basics and the judgement needed to decide when a tool is the right thing to reach for.

Critical AI literacy. The capacity to evaluate what an AI system produces rather than blindly accept it: to ask where the information came from, whether it is accurate, what the system was trained on, what it might have left out, and whose interests it serves. It differs from AI literacy in the same way that judging a source differs from being able to read it.

The digital access divide and digital use divide represent two distinct ways people experience digital inequality. The former is the gap between people who have physical and financial access to modern devices and those who do not. The latter is the gap in how well people use technology, driven by differences in digital literacy and confidence. The ***outcome divide*** is whether that use converts into educational, economic or social benefit.

Pupil premium. Additional funding schools receive for each pupil who is or has recently been eligible for free school meals. In 2026-27 this is £1,550 a year at primary and £1,100 at secondary [18].

Free school meals (FSM). Means-tested entitlement to a free school meal. The most widely used proxy for disadvantage in English education data. It undercounts real hardship, since not every eligible family (those on Universal Credit) registers.

The disadvantage gap. The difference in attainment between disadvantaged pupils and their peers. The Education Policy Institute measures it in months of learning at ages five, eleven and sixteen, and in grades for the 16 to 19 phase.

SEND. Special educational needs and disabilities: the term used in England for pupils who need additional or different support to access their education.

Dysregulation. A child's difficulty in managing emotional or behavioural responses proportionately to the situation. It is often visible before a child is able or willing to say anything is wrong.

Pastoral care. The non-academic support schools provide for welfare, behaviour and emotional wellbeing. In the schools studied it forms a substantial and non-optional part of the working day.

Disadvantage and deprivation. Deprivation describes basic needs starkly unmet such as enough money, secure housing or a safe neighbourhood, often used to describe the circumstances of an area. Disadvantage describes what those mean for a child: the ways they make it harder to learn and progress compared with others. The two are closely linked and are often used interchangeably in this report.

PART ONE

The Question

On the critical juncture in time that prompted this report - why it was designed this way, how the research was done, what it can and cannot show.

1.1 Why this report, and why now

1.2 Research scope & methodology

1.1

Why this report, and why now

This project began with the goal of reviewing evidence on how AI can support learning, alongside its risks and pitfalls; understanding what teachers, leaders and children think about it; and proposing principles for innovation-focused funders to shape their own ethical approach to supporting education in this new age of technology.

These objectives are the spine of this report, though fieldwork quickly revealed the realities that complicate them. It became clear that the ethical questions raised by AI in areas of disadvantage cannot be separated from the material conditions of children in them. A question about responsible use of technology is also a question about how technology is transforming the experience of childhood in the most deprived communities in England. Cognizant of how quickly the landscape is changing, this report attempts to make the current moment clearer.

A new kind of divide

Teach First and Accenture found that 60 per cent of English secondary school leaders use AI weekly, while only 2 per cent have a developed strategy governing its use [8]. The same study found that 29 per cent of school leaders in London use AI daily, against 12 per cent everywhere else in England [8]. AI is being absorbed into daily practice faster than institutions can govern it, and it is being absorbed fastest in the part of the country already furthest ahead.

Adoption is running ahead of policy

The National Education Union's *State of Education 2026* survey put day-to-day AI use among teachers in English state schools at 76 per cent, up from 53 per cent a year earlier [4]. A YouGov survey of 1,033 UK teachers for Bett, published on 27 August 2026, put use at 80 per cent, with weekly use doubling in a year [20]. Against that, 49 per cent of NEU respondents reported no AI policy at their school for either staff or students, a figure unchanged since 2025; departmental guidance on generative AI remains non-statutory.

Commitments are being made now

The white paper published on 23 February 2026, *Every child achieving and thriving*, commits the Department for Education to putting curriculum-aligned AI tutoring tools into schools by 2027, with the potential to reach up to 450,000 disadvantaged pupils a year, alongside a target of halving the Key Stage 4 disadvantage gap from ~16 points to ~8. It commits £24 million to expanding the AI in Education EdTech Testbeds programme, while eight pioneer companies have been selected at £300,000 each to co-design the tutoring tools with teachers. However, 49 per cent of state school teacher respondents oppose this initiative, with the NEU arguing that 'cognitive offloading' is largest among younger, lower-attaining pupils—precisely the group targeted—so AI tutoring risks reinforcing the disparities it aims to address [4].

The pursuit of evidence is slow

In February 2026 the Education Select Committee launched an inquiry into AI and EdTech across the education system, asking explicitly whether AI use risks perpetuating inequalities between students and how it affects critical thinking, problem solving and oracy [23]. The DfE's own submission of evidence to the inquiry states that there is very limited evidence to support the use of AI by young children, and advises early years educators to avoid AI tools, toys and chatbots until more is known about their developmental and cognitive effects; it also cites the EEF's analysis suggesting that EdTech's benefits for disadvantaged pupils may be less pronounced than for their peers. The Royal Statistical Society told the Committee there are serious knowledge gaps around AI that must be addressed before policy is set [26]. In June 2026 the EEF opened a £2.5 million research programme into how generative AI affects learning and cognition among 13- to 15-year-olds in England, centred on cognitive offloading and on whether the effects are beneficial, harmful or inequitable for different groups of pupils [13]. Commissioning is being finalised from autumn 2026 [13].

The EEF expects the first findings in 2027 [13]. The AI tutoring tools commissioned by the DfE are to be available to schools that same year, and the EEF's programme does not evaluate those tools [13, 22].

For charities and innovators that support students the system often holds back, the timing of all this is consequential: many of the tools being procured claim to be aimed at disadvantaged pupils, yet the research that would establish whether they benefit all is not expected before the tools arrive.

This shows that teachers largely adopt new technology on their own initiative, with little guidance. Government has made substantial commitments, but rigorous evidence and research lag behind in their ability to ensure the forthcoming policy decisions are the right ones. By the time you read this, there will be new developments, new research and policies in effect. The value of this report lies in connecting the current landscape to the systemic issues beneath it, and to the daily experience of people living in areas of high deprivation.

1.2

Research scope & methodology

Policymakers, funders and researchers meet children almost exclusively within schools, the one setting in which they are reliably safe, fed, supervised and supported. This produces a systematic observational bias, since most national evidence on disadvantage is gathered under those conditions. While literature reviews and desk research are an important part of this report, investigating how technological change and disadvantage is experienced in the day-to-day is distorted from behind a desk alone. This project therefore prioritised sustained in-person presence in schools and their surrounding communities, on the basis that the conditions determining whether an intervention works are largely found outside the building in which it is delivered.

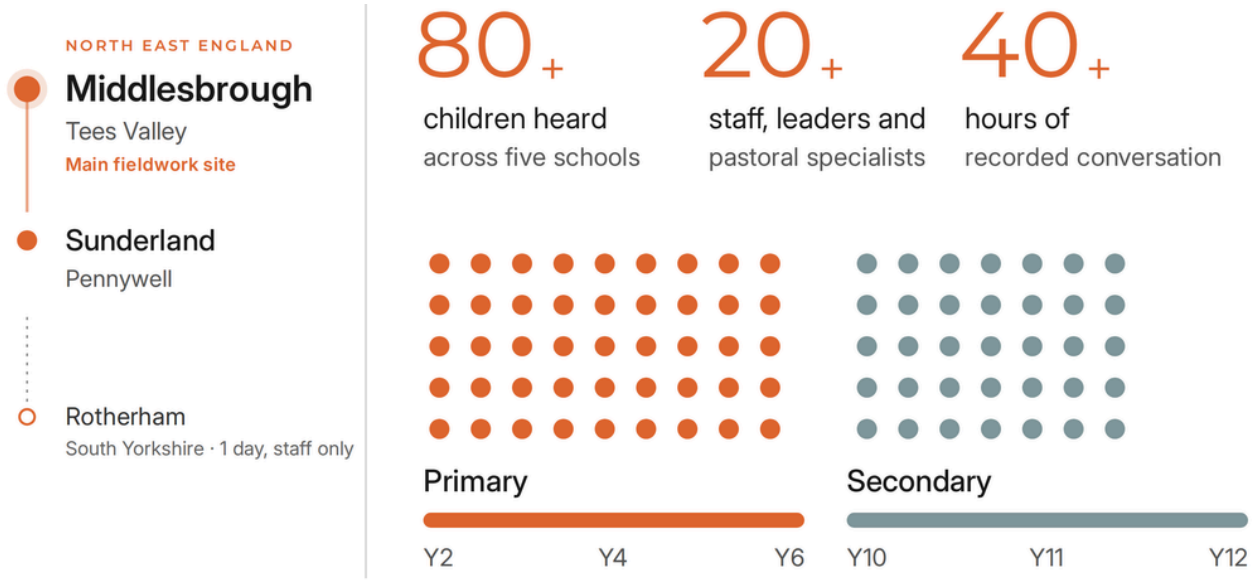
Any account of disadvantage built only from what is visible will be incomplete, erring optimistically in predictable ways. In a short focus group with engaging questions and fun activities, children will often present as highly regulated, secure and at a level playing field with their peers. Understanding the challenges they encounter day to day, how they manage them, and patterns of thinking that emerge only across hundreds of conversations is more revealing. That understanding requires repeated contact and discussion with people who have known those children and their families for years. **A single school visit may yield an accurate picture of a school but an inaccurate picture of a childhood.**

This is why the project prioritised time and proximity rather than sample size. Lengthy semi-structured conversation was preferred to surveys and repeat visits to a smaller number of schools were preferred to breadth of coverage, and interviews were sought with adults whose role affords long-run knowledge of individual children: pastoral leads, safeguarding leads and long-serving headteachers alongside classroom teachers, to provide a longitudinal view that cannot be constructed by visitors.

Research methods encompassed:

1. Semi-structured, guided interviews with school staff
2. Discussion & activity-based focus groups with a wide range of students, from Years 2 - 12
3. Comprehensive review of latest policy and research developments in the field of EdTech/AI & education

FIGURE 1 · THE FIELDWORK



Interviews with staff typically ran 45 to 90 minutes; Focus groups with children were 1-2 hours each; fieldwork was conducted over 6 weeks.

How fieldwork was conducted

The North East was the focus of this fieldwork due to its rates of acute deprivation as well as geographic location, so more time could be spent immersed in specific communities, prioritising quality and depth over comprehensive coverage. One school in Rotherham, South Yorkshire was also included for staff interviews because it possesses a uniquely proactive, AI-positive approach to teaching led by its headteacher Matthew Revill, supported in this endeavour by SHINE.

Focus groups were conducted with students across several days in each school. Focus groups ranged from 15–30 students, across the ages of 6 to 17 with tailored questions and activities to maximise engagement. Focus groups were semi-structured and conversational to invite honest opinions, thoughts and contributions beyond the scope of the questions.

In primary schools, children were asked to write or draw the technologies they use in a day, which produced hundreds of notes that were later tabulated (see section 4.1). They were also asked to rank themselves, their peers, teachers and families on a nought-to-ten scale of confidence with technology, explaining reasoning. Topics of discussion included their favourite parts about school, their hobbies and goals, who they may turn to for help, their conception of what AI is and does and their opinions on whether it makes school more or less fair. Secondary students were prompted with more complex questions along similar lines and debate-style activities.

Semi-structured interviews were held with schoolteachers, headteachers, pastoral and e-safety leads teaching across Reception to sixth form. These followed a common framework but allowed for long digressions and organic conversation, to understand their authentic experiences. Topics included their time teaching students facing disadvantage, how intangible attributes compound with socioeconomic challenges, online safety incidents, professional use of AI, barriers and hesitations to adopting new tech, and what they would wish policymakers understood about their work.

Desk research. The research drew on official statistics and government publications, sector research and international guidance, prioritising sources published in 2025 and 2026 given how quickly the policy and evidence position is moving, and Northern-specific data wherever it existed. Below are some examples of how student perspectives from fieldwork and conversation corroborated the national data compiled from literature reviews and studies.

STUDENT PERSPECTIVES FROM FIELDWORK

They would prefer an AI tool that shows them *how* to do the work, instead of the answer.

Every child, from about Year 2, could describe how to get round tech age restrictions.

When asked who they would approach for help when stuck on a topic at school, all students named their friends and teachers, citing their human touch and understanding as critical.

NATIONAL DATA

Oxford University Press, surveying around 4,000 UK teenagers in June 2026, found 44 per cent preferred AI that suggests tasks to deepen understanding and 41 per cent preferred AI that poses guiding questions [5]. Only 20 per cent wanted direct answers [5].

Internet Matters found 58 per cent of children aged 9 to 12 use platforms even though minimum age of 13 [6].

Oxford University Press found 73 per cent of teenagers could name skills their teacher has that AI cannot replace: personability, empathy, human understanding [5].

Research design, analysis and limitations

This is a qualitative, exploratory study, phenomenological in orientation, examining how students and teachers in areas with high rates of deprivation experience technology and AI. It does not test a hypothesis or claim to represent all children or families. It documents first-hand regional perspectives, sets them against national data, and identifies key considerations for policymakers and practitioners to inform a more useful approach to innovation.

Sampling

The study used purposive sampling, which means it selected participants and interviewees for the relevance of the knowledge they hold on the research aims. Their roles spanned from classroom teachers, pastoral and e-safety leads to headteachers, alongside student groups from Years 2 to 12, so similar issues could be discussed from several vantage points. One school in Rotherham, being outside the regional North East focus, was selected as an information-rich case of optimistic, leadership-led AI adoption. Access through SHINE's partnerships also makes this partly a convenience sample. As a result, the host schools each had some relationship to educational innovation, as well as experience engaging with and managing the effects of emerging technologies.

Data and analysis

Interviews and focus groups were recorded and supported by field notes, classroom and neighbourhood observation, and activity outputs. Analysis was informed by reflexive thematic analysis, which is a method for identifying recurring patterns of meaning that treats the researcher's interpretation as part of the process [28, 29]. It was inductive, meaning themes from the findings were built up from the participants' own accounts and responses, which make up Part Four of this report. A drawing activity used in focus groups to collect responses from younger children used descriptive content analysis: each item was counted and categorised to produce a telling result.

Prioritising the evidence

Observations carried greater weight where they met one or more of these criteria:

- *Recurrence.* If the same point was raised independently in different schools, year groups or conversations to form phenomena.
- *Convergence.* If children and staff described the same issue from different positions, such as pupils bypassing age limits and pastoral leads handling the fallout.
- *Longitudinal knowledge.* Observation came from staff who have known the children and families for years, often in pastoral roles.
- *External corroboration.* If the national surveys or official data from desk research reported a qualitative finding from fieldwork at scale.

Some remarks made too few times to be corroborated are still reported as individual perspectives, and contradictory views are retained in the report as informative pieces.

Triangulation

Accounts were compared across participant groups, methods and national surveys (data-source and methodological triangulation) [30]. Triangulation is central to this study's credibility: where a small regional sample and a large national dataset independently reach the same finding, as on the preceding page, there is greater confidence it reflects a wider pattern, and the fieldwork adds the context and explanation national figures lack.

ANALYTICAL PROCESS · REFLEXIVE THEMATIC ANALYSIS

01 Familiarisation
Repeated reading of all recordings, notes and activity outputs.

02 Coding
Labelling recurring ideas in the material, such as *declining resilience* or *teacher workload*.

03 Theme development
Grouping related labels into broader themes that capture patterns across the data, such as the poverty paradox explored in Section 4.2.

04 Review
Re-reading the source material to test that each theme is well supported and distinct, and adjusting as needed.

05 Definition
Naming each final theme and selecting the quotes and examples that best evidence it.

Trustworthiness

Qualitative research in this project is judged by trustworthiness rather than statistical validity, through six weeks of prolonged engagement with school leaders and professional experts, triangulation of results and peer discussion with SHINE [31]. The aim of the results is transferability: enabling readers to judge where certain findings or suggestions may apply to their own context.

Ethics and positionality

Fieldwork took place within each school's safeguarding procedures and appropriate consent forms for all staff interviews. Students are not named or identified; staff are named only with consent. As an outsider to these communities, the research relied on long-serving staff and relational roles such as pastoral leads to develop community understanding and act as a check against this.

Limitations

SCOPE
A small number of schools in primarily one area were engaged - results are not comprehensive.

FOCUS GROUP SIZE
Groups of 15 to 30 students risk dominant voices and socially desirable answers.

ONE ANALYST
Fieldwork and interpretation were conducted by one person, limiting pushback.

SELF-REPORTING
Children's accounts of technology use were not directly observed.

SETTING
Most fieldwork took place in schools, where children are at their most supported and secure.

PART TWO

The Landscape

This section provides a snapshot of the scale and character of disadvantage in the North East and Yorkshire, particularly in education, including attainment gaps and daily conditions of teaching here. It serves as a segue for how these conditions shape the way technology is likely to affect young people.

2.1 Child poverty in the North East

2.2 Attainment gaps and transitions

2.3 Disadvantage, day to day

2.4 Small worlds

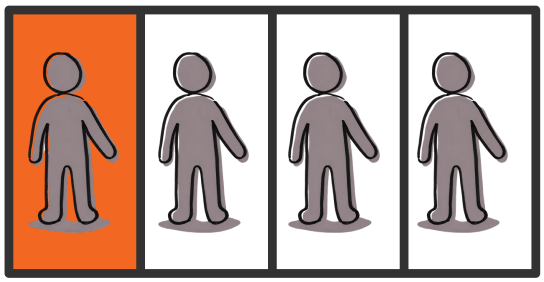
2.1

Child poverty in the North East

Official statistics published in March 2026 record 4.0 million children living in relative poverty after housing costs in the United Kingdom, or 27 per cent of all children [32].

A common assumption is that deprivation implies an absence of employment. In fact 72 per cent of children in poverty live in a working family [33]. Child poverty in Britain is not primarily a consequence of worklessness; it is a consequence of low pay, insecure hours, housing costs and the design of the benefit system [34]. Universal Credit is assessed monthly against earnings, which means a family on variable hours receives a different award every month and cannot plan around it. For some households, employment does not merely fail to lift them clear of poverty but introduces costs and volatility of its own.

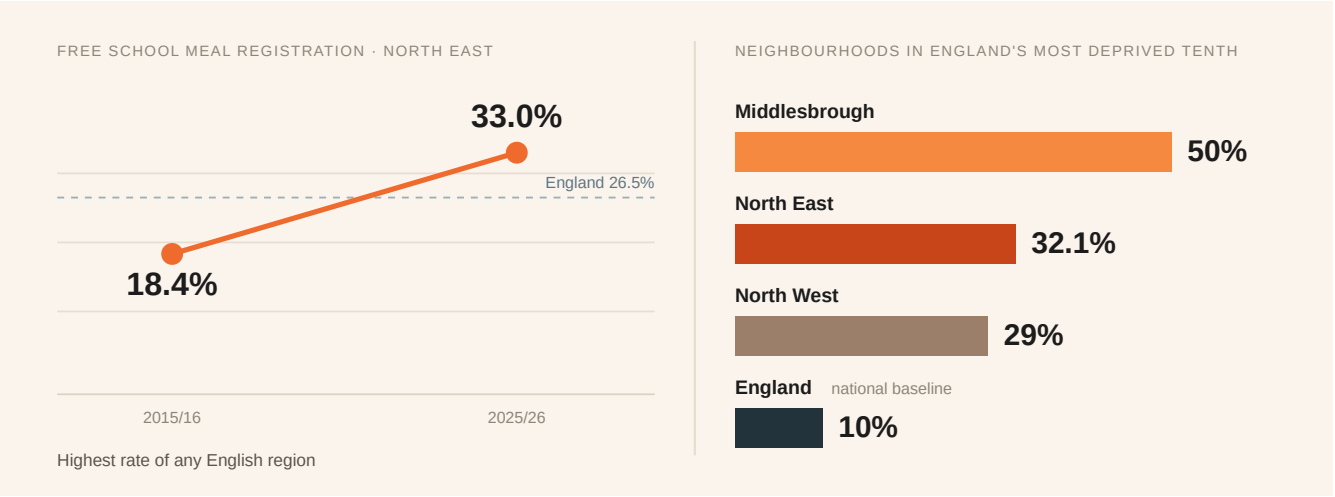
Against the national picture, the North East occupies a distinctive and deteriorating position. Thirty per cent of children in the region live in relative poverty after housing costs [35]. The clearest quantitative measure is free school meal registration. In 2015/16, 18 per cent of school-aged pupils in the North East were registered for free school meals; by 2025/26 the figure was 33 per cent, the highest of any English region. Deprivation is also more concentrated: under the Indices of Deprivation 2025, 32.1 per cent of neighbourhoods in the North East fall within England's most deprived tenth [38].



19 of the North East's 27 parliamentary constituencies, and 10 of its 12 local authorities, have **child poverty rates of at least 1 in 4** [35].

One apparent contradiction: The Joseph Rowntree Foundation puts the North East's all-age poverty rate at 21 per cent, with a national average of 22 [39]. The region's *child poverty rate*, at 30 per cent, is well above it [35]. Across England, poverty falls disproportionately on households with children; what distinguishes the North East is the depth of that pattern in its schools, where free school meal registration is the highest of any English region.

FIGURE 2 · POVERTY AND DEPRIVATION IN THE NORTH EAST



Sources: Department for Education, Schools, pupils and their characteristics 2025/26; North East Child Poverty Commission and Schools North East (2015/16 baseline); Ministry of Housing, Communities and Local Government, English Indices of Deprivation 2025.

The long shadow of industry

Middlesbrough is, on the most direct measures of concentrated deprivation, the most deprived local authority district in England [40]. Fifty per cent of its neighbourhoods fall within the most deprived tenth nationally, and it has 13 in the most deprived 1 per cent - the highest proportion of any of the 296 English districts [40]. Its child poverty rate, at 38.7 per cent, is the highest in the North East [35]. The neighbourhood of Ayresome has appeared among the hundred most deprived areas in England in every release since 2004 [41].

Given the scale of this concentration, the majority of in-person fieldwork was conducted in schools within the Tees Valley Education Trust and Endeavour Academies Trust in Middlesbrough: Brambles Primary Academy, Pennyman Primary Academy and Macmillan Academy.

Much of the North East was shaped by deindustrialisation: coal, shipbuilding and heavy engineering that dismantled through the 1970s and 1980s. Entry to industry ran through apprenticeship or direct hire as teenagers. Skill was often unaccredited and non-transferable. A generation that had done well without formal qualifications was replaced by one that could not get work without them, and the institutions that might have bridged that—further education, retraining, careers guidance—are just now catching up. Many families' relationship between effort at school and outcomes in adult life had become unreliable.

What followed was an erosion in the belief that education is related to an improvement in quality of life; the North East has England's highest rate of young people not in education, employment or training [42]. The Social Mobility Commission finds entrenched disadvantage persisting for over two decades in these former industrial areas, with the region ranking worst nationally for post-GCSE drop-out [43].

2.2

Attainment gaps and transitions

The Education Policy Institute's Annual Report of 2026 for England, finds that **the disadvantage gap is now wider at every phase of education** than it was in 2019 [19]. According to EPI, disadvantaged pupils finished secondary school 19.0 months behind their peers in 2025. An inquiry into white working-class pupils found that gaps widen through primary school and accelerate at the move to secondary, "where engagement often collapses" [97]. In November 2026 the government noted that persistent absence almost doubles between Years 7 and 9, to one pupil of every four, so they announced that Key Stage 3 will be restored as a distinct phase, with schools no longer starting GCSE courses early. It is a national acknowledgement of the concerns staff described.

The regional picture for the North East is counter-intuitive at first: at age eleven the disadvantage gap here is narrower than the national average, yet by the 16 to 19 phase it is the joint widest in England [1]. In fact, Middlesbrough is among five local authorities in England with the **largest reduction in the primary disadvantage gap** between 2019 and 2025, down by 2.0 months - meaning the most concentrated deprivation in the country is also a primary-phase improver [2].

However, the fieldwork and time spent in schools uncovered a clear explanation. Evident across the Tees Valley Education Trust primaries in Middlesbrough, and comparable in areas across Rotherham and Sunderland, was a level of attentiveness that would be remarkable anywhere. Staff understand their students in detail: their circumstances, families, unique needs, what happened at home in a particular week. Their efforts to provide extracurricular enrichment are deliberate, with field trips to broaden their horizons and academic expectations held high. Their teachers are, without exception, exceptionally kind. Two conditions, specific to the primary phase of education in areas of deprivation, make that possible:

(1) Schools within trusts have access to shared expertise and resources, thanks to local partners and charitable funders that direct money towards disadvantage. A school in an affluent catchment can concentrate largely on academics, because the experiential, emotional and physical scaffolding is usually available at home. Schools in disadvantaged regions cannot assume this, so they do their best to supply it. The nurturing is not just the nature of their staff, it is an ethos they absorb because for many kids, nobody else is going to.

(2) The architecture of primary schooling means classes are small enough for a teacher to know every child individually - one person teaches them every subject for a year. Staff have often watched a child grow from reception to Year 6, met their family, and built up a working knowledge of what support a particular child needs. This relationship is cumulative and held by a handful of people who know the whole child. The transition out of Year 6 to secondary school is often the most difficult phase of a disadvantaged child's education. They move to a large campus surrounded by hundreds of unfamiliar faces, with multiple teachers who do not have the capacity to develop such personal relationships. Homework and sustained academic pressure arrive alongside adolescent peer pressure, sharpened in communities with high rates of crime and unemployment. National data shows that 'permanent exclusion' is ten times the primary rate by Year 10, and children eligible for free school meals are more than six times likelier to be permanently excluded than their peers [44]. GCSEs arrive as the first high-stakes assessment most students face without the personalised support that carried them through primary. Primary schools have a unique ability to close gaps early, through relational work that the next institution is not built to reproduce. A good system can give a great deal to disadvantaged children while it holds them, but risks losing them when it lets go.

2.3

Disadvantage, day to day

The most consistent message from staff was that financial hardship is the most visible dimension of disadvantage but not the only consequential one.

Free school meal eligibility and pupil premium status identify which children live in low-income households. However, this is experienced differently by every student and often manifests with unique challenges in their home environment. Behavioural difficulties, domestic issues and emotional dysregulation were raised in almost every interview. These are not confined to safeguarding crises - staff repeatedly characterise routine disruptions like late-night noise, irregular household schedules and the absence of comfortable sleeping arrangements as producing measurable effects on the following day's learning.

This is consistent with the established literature. Sleep is core to memory consolidation and emotional regulation, all of which are prerequisites for classroom learning [45]. Children in overcrowded or insecure housing have more difficulty absorbing content in class. Teachers often have to be mindful of what a student might have witnessed at home, whether they have slept, eaten or need extra support to access what is taught that day.

This is why family engagement and the pastoral provisions in this region are an essential part of the work of these schools. Staff described spending parts of the day on welfare, behaviour, family liaison and regulation, not as a distraction from teaching but as the thing that makes teaching possible.

> *Teachers here aren't just teachers, they're carers, social workers, parental figures too. We never know what version of us will be needed in the morning when a child walks in.*
>
> SCHOOL LEADER, PENNYMAN PRIMARY

That observation returns in section 4.4, as it is also why time-saving technology matters so much to staff in these communities. With several competing responsibilities, incidents and roles within their roles, workload and daily demands are high, so anything that gives a teacher an hour back gives it to a system running continuously at its limit.

2.4

Small worlds

“Success belongs elsewhere”

Students from communities facing deprivation sometimes struggle to picture themselves in prosperous futures. They may have parents who lack experience with higher education or a professional progression for them to draw on. Many surrounding estates of schools visited for this project are home to generations of the same families, a substantial number of which left school early themselves. The consequence is not an absence of ability, nor of ambition. It is an absence of demonstration and exposure. Children who lack models of people “like themselves”, from their own neighbourhoods succeeding, still understand success - but as something that belongs to other people in other places.

The geography of a childhood

In interviews, several schoolteachers described that the world these children move through is measured in streets rather than in miles. Many of them have never visited their local skating rink or been to the beach a 10-minute drive away. This can leave their conception of the world beyond what they are familiar with, and their tolerance of differences, rather small - unless schools can go the extra mile to enrich them with experiences.

This lack of exposure has academic consequences, most visibly in literacy. Reading and writing are harder when a child has no experiential referent for what a text describes, because it diminishes their ability to visualise or connect to it. Teachers also reported that getting children to *read* is a persistent battle, partly because they find it hard to locate themselves in the stories or picture the worlds they describe.

Technology as the fork in the road

Technology and social media can take this in either direction. They can widen a child's exposure, provide them insight on new ideas and access to experiences outside of their physical environment. They can also circulate harmful misinformation without support to critically assess it, and build echo chambers of their existing assumptions about the world through algorithms. On balance the second outcome is the more likely one for young children, because the benefits require guidance and the harms do not.

This shapes what a child is willing to spend effort on. The schools in this study provide a holistic, high quality education. However, headteachers frequently shared that most of their pupils do not have lived evidence of what their education can provide them beyond what they are told in school. Diligence in the face of failure, and the willingness to defer reward, are not innate dispositions. They are learned by watching them work for somebody. A child who has seen an adult's qualifications convert into a stable life has a reason to endure difficulty. A child who has not is being asked to invest in an outcome not many in their world can vouch for, and the rational response to that is to stop trying too hard to get it. As reported by countless teachers, the result of this lack of exposure - of seeing themselves reflected in their education - is low resilience and self-esteem.

Aspiration is therefore better understood as a form of information than as a matter of attitude. Children are not failing to work hard enough for things they want. They are often working from an incomplete picture of what is available for them to want for their futures.

Social media and artificial intelligence change the number of influences, advice-givers and competing voices present in a child's life. Headteachers and e-safety leads highlighted that content creators and video game streamers are reshaping what their students believe easy, viable careers can be. In households where nobody restricts access to the quick, reliable dopamine of a screen, those voices are numerous, confident and unopposed.

This is a glimpse of how tightly these issues are bound together. It is not possible to think clearly about what artificial intelligence is doing to education without accounting for what social media has already done, and how technology more broadly changes the way we learn and process new information.

PART THREE

The Horizon

This section covers the changing frontier of tech policy in the context of which the fieldwork should be read. It covers the current international position, UK government policy and funding commitments, the state of the research evidence on AI and learning, the structure of digital inequality and the regional variation in school-level adoption.

3.1 International commitments
3.2 Government commitments
3.3 Research evidence
3.4 The divide has shifted
3.5 Artificial advantage

3.1

International commitments

HOW INTERNATIONAL SYSTEMS HAVE APPROACHED IT

The AILit Framework: Empowering Learners for the Age of AI (OECD and European Commission, 18 June 2026) [46]

The European Commission and OECD jointly published this framework as the new international reference document for AI literacy in primary and secondary education. It sets out four domains: Engage with AI, Create with AI, Manage AI and Shape AI, containing 19 competences across a three-level learner progression. It is tied to the PISA 2029 Media & Artificial Intelligence Literacy (MAIL) assessment, which means it will eventually become the yardstick countries are measured against rather than just guidance.

The EU AI Act, amended by the Digital Omnibus (in force 27 July 2026) [47]

The EU AI Act classifies AI systems by risk, placing education at the top. Systems that determine admissions, evaluate learning outcomes, assign students to programmes or levels, or monitor behaviour are high risk, which obliges suppliers to document their systems, test them and demonstrate human oversight. Those obligations were due to take effect on 2 August 2026. New amendments have postponed this, giving schools, universities and EdTech suppliers 16 more months before the requirements become enforceable [48]. Since February 2025 the Act has also required organisations (including schools) deploying AI to ensure that staff operating them have a sufficient level of AI literacy. From 2 August 2026 it has also required that people be told when they are interacting with an AI system and that AI-generated content be labelled.

UNESCO AI Competency Frameworks for Students and Teachers (3 September 2024) [49, 50]

UNESCO has two AI Competency Frameworks — one for students, one for teachers — which remain the most developed international guidance on AI in education currently available. The student framework covers: a human-centred mindset, the ethics of AI, AI techniques and applications, and AI system design; the teacher framework includes AI pedagogy and AI for professional development. The governing principle that AI should support human decision-making and intellectual development rather than replace it, and an explicit warning against using AI to compensate for systemic problems, such as teacher shortages, that require sustained investment.

There is currently no binding international commitment specifically about AI in education. The EU AI Act's education provisions and obligations based on risk assessments do not apply to the UK, but it is currently the most detailed articulation of what a high-risk education AI system should comply with. The current international posture prioritises building capability before deploying tools, which the UK should adopt.

Every child achieving and thriving, the schools white paper published in February 2026 under the Starmer administration, set the government's policy direction for schools in England for the rest of parliament. Its headline targets were to halve the disadvantage gap (framed as low-income pupils achieving one full grade higher in each GCSE subject), raise attendance by 1.3 percentage points by 2028/29, and lift more than half a million children out of poverty [12]. Andy Burnham's administration has yet to confirm its stance on the paper or issue, but it has not been withdrawn and remains one benchmark for national policy [95].

The white paper also contains this critical passage:

> "General-purpose AI in education often has negative outcomes, because it gives answers rather than building understanding. Purpose-built educational AI, rooted in pedagogy, shows promise." [12]

TECHNOLOGY COMMITMENTS

- ***AI tutoring tools*** for secondary pupils by 2027: curriculum-aligned and described as 'safe by design', intended to give access to personalised support outside lesson time with the potential to support up to 450,000 disadvantaged pupils a year [12].
- ***£23 million*** for testing AI and EdTech products against classroom evidence before they reach schools at scale, and ***£325 million*** for connectivity [12].
- An ***AI Safety and Pedagogy Taskforce*** bringing teachers together with AI experts to set expectations for how these tools are built and used in classrooms, with Google DeepMind and OpenAI named among the partners.
- Digitisation of the national curriculum as sector infrastructure, and ***Digital Individual Support Plans*** replacing paper documentation for every child with identified special educational needs [12].

3.2

Government commitments

Deployment in practice

The gap between commitment and implementation became visible in June 2026, when the government selected a pioneer group of eight companies, each receiving £300,000, to develop the AI tutoring tools [22]. The tools target Years 9 and 10 in English, mathematics, science and modern foreign languages. Suppliers must co-design with teachers, align to the national curriculum, show clear benefit for disadvantaged pupils, meet accessibility standards and satisfy the Department's Generative AI Product Safety Standards. No identifiable pupil data will be published, and pupil work cannot train AI systems without parental consent [22].

This is not an unconsidered deployment of consumer chatbots to children; the conditions are substantive. However, the distance between this pilot and a personal tutor for every disadvantaged child is considerable. The contracts are for research and development, and tools for schools would be procured separately. Suppliers report on their own impact, with no independent evaluator named [22].

The white paper has six core digital standards for schools to meet by 2030, set after a DfE consultation as a long-term expectation, not a statutory duty [14].

The six standards are broadband, wireless network, network switching, filtering and monitoring, cyber security, and digital leadership and governance [14]. Five concern infrastructure, one concerns governance - none concern pedagogy, capability or curriculum, nor mention education, and the compliance date falls three years after AI tutoring tools are due to be available.

No statutory framework governs how AI is used in teaching and learning, so policy is inconsistent nationally and in schools. The Department's generative AI guidance is non-statutory, leaning on legislation designed for other purposes, such as data protection and the UK GDPR [9]. Statutory safeguarding guidance now points schools to the product safety standards, but as a safety matter only. Schools and trusts are left to build their own governance. Some are doing so thoughtfully, at considerable cost to time. Many are not doing so at all.

3.3

Research Evidence

The research on artificial intelligence and learning is rather contradictory. This section reviews key examples that demonstrate some of its positive and negative consequences at various scales.

A case for optimism

[Global]

Edo State, Nigeria. A randomised controlled trial in nine public secondary schools evaluated GPT-4 tutoring - delivered to students working under teacher supervision across twelve after-school sessions [51]. It found gains equivalent to nearly 1.5 years of typical learning, and girls, who started behind, gained the most [52]. This was a great success of personalised AI tutoring in a low-resource setting [53]. However, it is important to note that pupils worked in pairs rather than alone, a teacher was present throughout and the programme had a fixed structure and duration [51]. The tool was used to prompt and explain rather than to complete work, which is different from the way children use the same underlying technology unsupervised.

[National]

EEF lesson preparation trial. In 2024, the EEF commissioned the National Foundation for Educational Research to run a randomised trial of ChatGPT in Key Stage 3 science lesson preparation [54]. 68 secondary schools and 259 teachers were chosen, with one group given an AI tool and an implementation guide and the other asked to use no generative AI at all [54]. Weekly planning time for those with the AI tool was reduced by 31 per cent [54]. An independent panel, not told which lessons had been planned with the tool, found no decline in the quality of materials teachers created.

[North of England]

TechFirst is the government's national technology skills programme, through which the North East has received £2 million in regional investment [55]. The commitments are unusually specific: 30,000 primary school children with early AI and digital skills, 80,000 students trained by 2029, 1,000 local teacher training places, and 150 work placements in the region's tech and AI employers [55]. Delivery includes discovery days where they explain to schools what careers involve, with mentoring from Sage and Accenture aimed particularly at bringing girls into tech [55].

The programme's mechanism is contact between students and adults doing AI and digital work for a living, framed explicitly around the career pathways opening up in the region's AI Growth Zone - promoting reasons to stay in and give back to the region [55].

A case for caution

[Global]

South Korea. Around 1.3 trillion won (~£650 million) went into AI digital textbooks introduced from early 2025 [56]. Adoption dropped from 30 to 19 per cent after the first semester, and the government retreated from a nationwide mandate in the face of opposition from teachers and parents. In August 2025 the National Assembly stripped the textbooks of official status [56]. The technology was not unsound, but the policy had been pushed through without teacher consent and without evidence of its benefits. National or organisational ambition must not overrun teacher readiness.

[National]

Ofqual grading algorithm. When the pandemic cancelled exams in 2020, Ofqual graded A-level students in England with a statistical model [15]. Schools submitted predicted grades and a rank order of their students. The model then adjusted those grades using each school's past results. On results day, 39 per cent of teacher-assessed grades, (280,000 entries), were lowered by at least one grade [15]. Small classes were much more common in private schools, and the model largely left small classes alone, so private-school students were far less likely to be marked down. Pupils at less advantaged schools were hit hardest. After protests, the government reversed course and students received their teachers' grades instead [15]. The model's failure was in deploying it to make high-stakes decisions about individual children without giving teachers a role in checking it, or offering a fair way to appeal.

[North of England]

Greater Manchester AI curriculum. In May 2026 the Greater Manchester Combined Authority and the training company IN4 Group launched what they describe as an AI super curriculum [57]. It is giving more than 3,000 secondary pupils access to digital learning and an AI Academy [57]. It is framed as giving young people clear line of sight to good jobs [57].

It is unevaluated and unknown whether students who complete it use AI more critically or progress differently. Its focus is on employment and 'workforce supply', which is a important in places with concentrated youth unemployment. However, without critical literacy, a programme optimised for employment will not reliably produce understanding.

IN4 Group is also running the government's pilot AI skills bootcamp for school leavers at risk of unemployment in Lancashire and Greater Manchester, with completers guaranteed a paid AI apprenticeship and a national rollout planned for 2027/28 if the pilot succeeds [118].

The same technology can produce opposite results depending on how it is designed and supervised. Systems that deliberately constrain AI to scaffold knowledge rather than to solve problems, produce learning gains. Frictionless tools optimised for task completion, produce learning losses. That is a distinction between purpose-built and general-purpose AI [12]. An October 2026 trial with 2,300+ US university students found that access to an AI course tutor lowered final grades and reduced engagement by 0.37 standard deviations, with the biggest losses for first-generation students [102].

3.4

The divide has shifted

Some 1.6 million people in the UK have no internet connection, and 1.7 million households have no laptop, tablet or desktop computer [58]. Research in 2025 with 2,000 low-income parents and 600 teachers found that 75 per cent of teachers see children falling behind because of poor home access, and that most schools have no plan at all for digitally excluded pupils [59]. Government response has been proportionate: an £11.9 million Digital Inclusion Innovation Fund, a device donation pilot with the Digital Poverty Alliance, and a partnership with Google training more than 100 care leavers in the North East [60].

> *Access alone does not translate into capability, and without guidance early adopters pull away while others stall.*
>
> TEACH FIRST AND ACCENTURE, JULY 2026 [8]

However, the access issue is insufficient framing. The standard model of digital inequality distinguishes three levels: **an access divide**, concerning whether a household has a device and a connection; **a use divide**, concerning whether that equipment is used in ways that build capability; and **an outcome divide**, concerning whether such use converts into educational, economic or social benefit [17]. UK policy remains concentrated on the first, and five of the six digital standards required of schools by 2030 concern infrastructure [14].

Section 4.2 details one of the most counter-intuitive results of the research. Children in some of the most deprived neighbourhoods in England are not, necessarily, short of devices. Households classified as materially deprived are frequently well equipped with phones, tablets and consoles, while those items are replaced faster than many other things in the home. What is scarce is the supervision, the modelling and the guidance that convert access into capability.

3.5

Artificial advantage

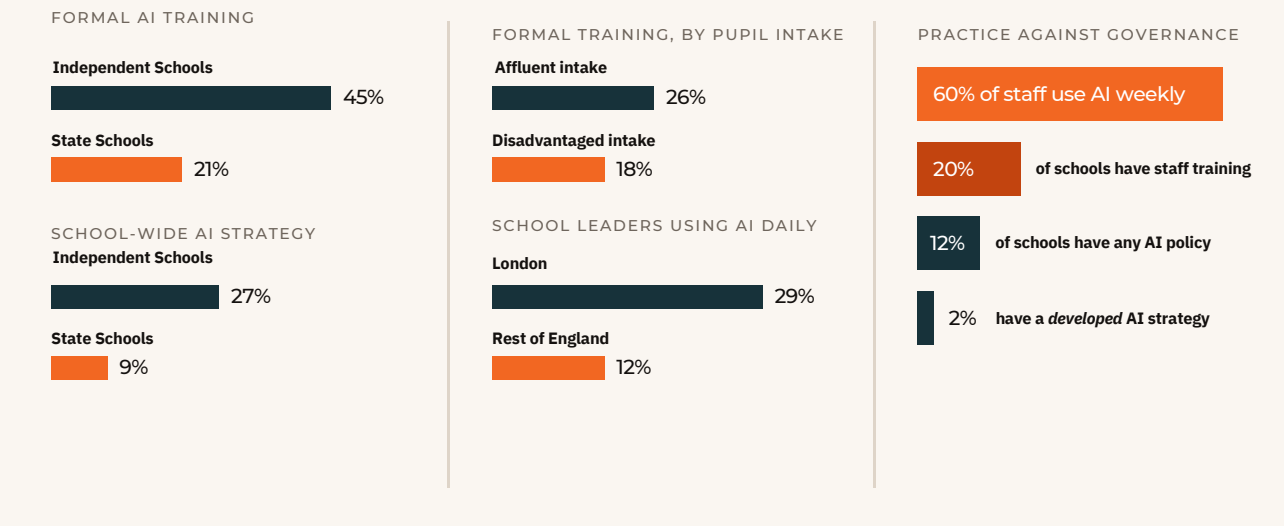
Three substantial pieces of UK research published between 2025 and 2026 describe how unevenly AI capability is distributed across English schools. Together they establish a divide on three axes:

(1) Between sectors. The Sutton Trust's *Artificial Advantage* report, based on a Teacher Tapp survey of more than 10,000 teachers, 600 headteachers and 2,000 senior leaders across England in April 2025, highlighted that independent school teachers are more than 2x as likely to have had formal AI training as their state sector counterparts, and their schools are 3x as likely to have a school-wide strategy [3].

(2) Within the state sector. Schools with affluent intakes report formal AI training at 26 per cent against 18 per cent in schools with disadvantaged intakes [3]. The same pattern appears by inspection rating: 35 per cent of 'Outstanding' schools report formal training against 11 per cent of those rated 'Requires Improvement' or 'Inadequate' (the Ofsted grades in use at the time) [3]. The schools with the least capacity to develop an AI strategy are schools serving the most disadvantaged children and under the greatest inspection pressure.

(3) Between London and everywhere else. Research by Teach First and Accenture in July 2026, based on a survey of nearly 200 school leaders, 30 semi-structured interviews and 6 specialist interviews, found that AI use is far ahead of governance [8]. 60 per cent of leaders use AI at least weekly and 80 per cent believe it could improve teaching and learning outcomes, while 20 per cent of schools have provided training, 12 per cent have any policy and 2 per cent have a developed strategy [8]. The barriers that leaders reported are instructive, because cost is the least of them: 63 per cent cite limited staff confidence or skills, 51 per cent data privacy, 41 per cent limited understanding of AI's educational value, and 16 per cent cost [8]. The authors explicitly warn that uneven access to AI training could widen the gap between schools, particularly outside London.

FIGURE 3 · AI CAPABILITY FOLLOWS EXISTING ADVANTAGE



Sources: Sutton Trust, *Artificial Advantage* (2025); Teach First and Accenture (July 2026).

Student use & exposure

Ofcom's 2026 report found that 64 per cent of 8 to 17 year olds use chatbots, while 83 per cent of students own their own smartphone at age 11, due to the transition to secondary school [61, 62]. Sixty-five per cent of parents of children aged six months to two years report that their child already goes online [61]. A critical dataset is Internet Matters' research on children's use of AI chatbots, because it disaggregates by vulnerability [6]:

VULNERABLE CHILDREN ARE

70%
use AI chatbots, a higher rate than their peers, against 60 per cent.

3x
nearly three times more likely to use companion chatbots such as Character.ai or Replika.

50%
say chatting to an AI feels like talking to a friend, against 35 per cent overall.

23%
use AI chatbots because they have "nobody else to talk to", against 12 per cent overall.

PARENTS

79%
of children's parents know they use AI.

34%
have discussed with their child how to judge whether what an AI says is true, and how to identify misinformation.

> Though 62 per cent of parents are worried about its accuracy.

Many families are worried about AI's accuracy but not able to equip their children to assess it. The space between concern and capability is where critical literacy education should be. **Among parents earning up to £10,000,** 34 per cent are unsure whether their child uses AI chatbots, against 12 per cent of those **earning £80,000 or more**; 43 per cent have talked to their child about AI, against 72 per cent [104].

PART FOUR

The Realities FINDINGS FROM THE GROUND

This section presents the primary evidence gathered through fieldwork in the North East and Yorkshire. It sets out children's own accounts of the technologies they use, teachers' observations, the position of staff on using AI in their own work, as well as their calls to action for policymakers and funders.

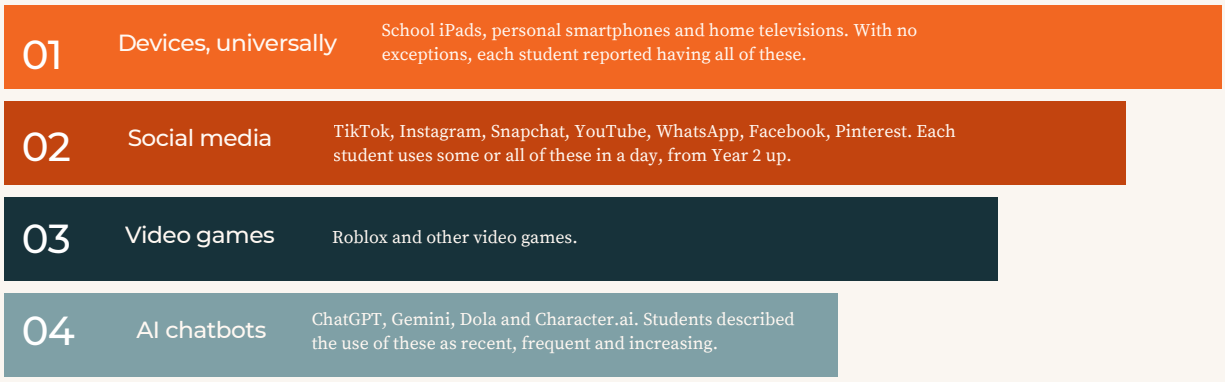
4.1 Student Use: Patterns and Perspectives
4.2 The poverty paradox
4.3 Observations of Educators
4.4 Teachers and artificial intelligence
4.5 Voices from the staff room

4.1

Student Use: Patterns and Perspectives

In focus groups, primary school children were asked to draw and discuss each of the technologies and applications they use in a day. Out of hundreds of submissions, four main categories emerged, in order of frequency from top to bottom:

FIGURE 4 · DEVICES AND APPLICATIONS RECORDED BY STUDENTS



Girls recorded using slightly more social media, boys slightly more gaming: personal devices and AI tools are universally popular.

The most significant aspect of the exercise was that children did not describe these applications as activities they *choose*. They drew them as constituents of an ordinary day, sitting alongside meals, school and sleep without distinction. When further prompted on their hobbies and what their day consists of, their technology use turned out to be immensely difficult to separate from other parts of their lives.

Sophisticated conceptions of AI

When prompted about their relationship with and thoughts on artificial intelligence, children across every focus group emphasised that AI is "not a person", that it is frequently wrong, that it works in effect as a faster search engine and its results must be checked by a human. No one expressed a belief, contrary to common anxieties about children and chatbots, that they are talking to something conscious. This reflects their far superior understanding of AI and its implications than previously assumed.

> *If you use it all the time, you won't learn much.*
> YEAR 4 FOCUS GROUP PARTICIPANT

When asked what would make an AI tool useful for them, students consistently described a tool that *shows you how* to do something rather than one that gives you the answer. This is a pedagogically sophisticated position, reflecting the distinction the white paper draws between purpose-built and general purpose AI [63]. It is also the distinction the research evidence identifies as the difference between whether AI helps or harms learning. Children as young as Year 4 were adamant about the importance of this feature in order for them to use AI for school, having already experimented heavily with it and noticed its negative or pointless effects on their learning.

Human support is valued

Students were asked who they are likely to go to first for help if they were stuck on something at school. Among options including peers, educators, AI tools, books, videos and more, all participants named their friends and teachers as the first resorts, citing the reason that those people understand them personally and thus know better how to help.

This demonstrates that even students are distinguishing between *information*, which they accept a machine can supply, and being *understood* as an individual, which they do not believe it can. Even young children were articulating a preference for relationship and context over speed and availability.

Doom-scrolling understood as a hobby

Every child in the focus groups from as young as Year 2 was well-versed in getting around age restrictions on social media and video games, especially as the UK looks to enforce new bans. The national finding is that ~60 per cent of children aged 9 to 12 use platforms with a minimum age of 13, making the gap between the nominal age of these platforms and the actual age of their users the normal condition [6].

The most concerning finding through the fieldwork was that doom-scrolling is seen as a positive, healthy and normal pastime in the minds of young children, on precisely the same plane as reading a book or playing outside. This emerged because children were asked about their hobbies, or to compare activities they enjoy doing after school.

> *My favourite thing to do after school is to lock myself in my room and scroll.*
> YEAR 5 FOCUS GROUP PARTICIPANT

They did not perceive any negative dimension to the habit. On the contrary, some students expressed feeling as though they are doing a good deed by spending more time on social media, describing how "liking" other creators' posts is a way of showing support and making someone else happy.

The word 'doom'-scrolling itself carries a judgement they did not recognise or share. Probed on this point, they responded matter-of-factly with: *what else would I do with my time?* When asked if there is something they would *not* miss about social media if it disappeared tomorrow, most could not name a single thing.

The normalisation of digital connection and the extent to which technology is intertwined with their daily lives has resulted in a lack of stigma around screen time, or any conception that it might be a negative, among the youngest users who are not taught otherwise. They have never known a world without social media or AI, so they cannot compare their process of learning or habits to that of a different time.

Students were also specific about what EdTech tools they do find useful. Gamified learning, such as *Times Tables Rock Stars* was a popular favourite, a tool developed with SHINE support. Many have engaged with ChatGPT to revise for tests or during imaginative, guided school assignments. Some were actively critical of over-reliance: one Year 6 student, who prefers to write and draw by hand, described feeling "angry" watching her older sibling generate work using AI in secondary school. Children who have kept a creative practice of their own appear most sceptical of tools that would replace it, which has implications for the connection between placing value in one's education and effort, and a healthy relationship with technology.

In June 2026 the government announced that under-16s will be barred from certain social media platforms from spring 2027 [116] and that "romantic companion" chatbots must enforce a minimum age of 18; in July it added mandatory breaks for under-18s using AI chatbots and default overnight curfews for 16- and 17-year-olds [117].

The significance is not that children enjoy their phones. It is that a category of experience (doom-scrolling) which adults, researchers and public health bodies treat as a recognised harm is, for these children, not visible at all. They are not defending doom-scrolling against criticism - they may have never encountered the criticism.

Attitudes towards AI marking

Children were asked whether it matters, in principle, if a teacher or a machine marks their work. Answers were evenly split. Most accepted that AI tools would be less *biased*, but opinion divided on whether reduced bias was worth losing the human touch of reading and analyzing your work. Several students would prefer their teacher's marking, even acknowledging that it might be flawed, affected by mood or result in a slightly lower grade. Some would rather the outcome be as objective as possible. A frequently proposed middle position was a human-in-the- loop model - an AI tool marking with a teacher proofreading.

4.2

The poverty paradox

The fieldwork appears to show that the problem, ironically, is over-access to technology rather than under-access.

Children in some of the most deprived areas in England are often not short of devices, connectivity or screen time. Often, they have more unsupervised access than many of their more affluent peers. A new form of disadvantage lies in how well and productively those tools are taught to be used.

Material rich, experience poor. One curious observation raised independently by staff across multiple schools, was the phenomenon of families classified as deprived being well equipped with the latest technology. A household may depend on free school meals and be in financial difficulty, while also having access to new phones and more than one gaming console. Some schoolteachers described such items as among the most rapidly replaced possessions in many homes.

Screens as sedatives. Staff shared a concern of parental capacity rather than parental indifference. Parents working long or irregular hours, managing an array of challenges, are frequently exhausted and without critical media literacy of their own. A screen can be the fastest and most reliable way to calm a child, and it is used accordingly, particularly with children whose behaviour is hard to manage. One consequence is a systematic mismatch between home and school: when teachers raise behavioural concerns, parents frequently do not recognise the description, because at home the device functions as a sedative and the behaviour teachers describe does not appear.

The relevant concept here is the digital use divide: the gap that opens between people who have equivalent access to technology but do not use it in equivalent ways [17]. It concerns purpose rather than possession of devices. Productive use means directing a tool at a task, evaluating what it returns, and producing something that did not exist before. Consumptive use means allowing the tool to direct the child, absorbing whatever it supplies. The same device supports both use cases, which means access alone does not determine benefit.

A student that uses technology productively acquires transferable capability: how to frame a question, judge a source, recognise when an answer is wrong, and treat the tool as something to be interrogated and used well. Those skills compound, and are increasingly what employment and higher education require. A child who uses the same technology consumptively builds a lower tolerance for difficulty and an expectation that answers arrive immediately. Over-access does not mean one owns too many devices. It means their access is constant with technology available to them for every purpose at every hour.

4.3

Observations of Educators

Teachers and school leaders were asked about the trends they have observed over their careers, specifically what has changed about learning over time as new technologies were introduced. Their accounts were remarkably consistent across schools, areas and phases of education.

Erosion of critical attributes

The most frequently raised concern was attention. Staff attribute severely reduced attention spans to what they called 'swipe culture': constant device use, in which anything that is not immediately engaging can be removed with a simple gesture. Where films were once shown in class as a reward for good behaviour, teachers lament that students can no longer sit through 5 minutes of them, let alone a less interesting lesson.

This habit generalises. Children accustomed to swiping past anything unengaging within a second do not develop the capacity to stay with something difficult until it has the chance to become rewarding. A related observation was that children do not know how to be bored, raised as a serious concern because boredom is the state from which curiosity, independent reading and self-directed exploration emerge.

Underneath all of this is the disappearance of *productive struggle*. Learning is most effective when its process includes attempting something difficult, failing, and trying again. Instant access to correct answers removes a critical part of that process.

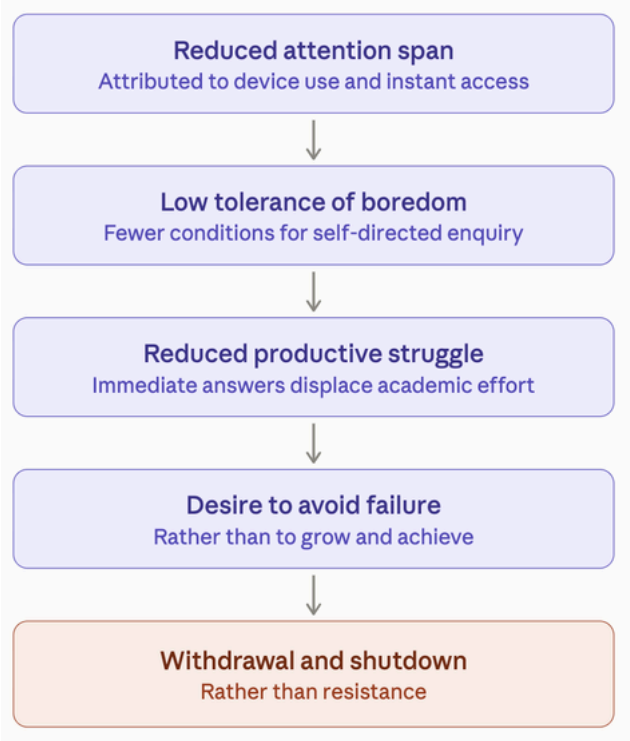


FIGURE 5 · SEQUENCE OF DISENGAGEMENT

This is also exacerbated in areas of disadvantage by a shift from the need to achieve toward a need to avoid failure. A child oriented toward achievement is more likely to use a tool that helps them get better. A child oriented toward avoiding failure is likely to use that tool to produce a perfect answer. This is compounded by low resilience in the pursuit of hard things, as discussed in section 2.4 - many students struggle to pick themselves up and reattempt a task after making mistakes, choosing to opt out of the discomfort. In disadvantaged communities this is often exacerbated by a lack of role modelling on the value of doing difficult tasks in pursuit of an education - in addition to the universal challenge of screen addiction and swipe culture.

Disengagement under difficulty

A striking behavioural change is how children respond to failure. Since the COVID-19 pandemic, staff report a sharp rise in shutdown behaviour. Previously, a child faced with difficult work or an uninteresting task may have expressed anger and resistance, but eventually be coaxed into completing it. Instead, staff now describe complete withdrawal, with symptoms like hiding under desks, sitting in corners, refusing eye contact and not responding at all.

> A community liaison officer in Pennywell, Sunderland - an area often characterised by anti-social behaviour as a result of stark deprivation - highlighted that **children who visibly defy authority, shout and even swear are easier to work with than children who shut down,** because a defiant child still produces a response that can be further engaged with.

A child who shuts down and refuses that engagement cannot easily be persuaded out of it. Staff are convinced this is connected to their access to devices and persistent use of social media at home, producing an echo chamber in which they rarely have to sit with anything uncomfortable or difficult.

Onset in early childhood

The developmental consequences appear earlier than expected. Schools running two-year-old nursery provision report an increasing number of children who arrive struggling to hold a pen and must be trained to grip it through fine motor skills, but can easily navigate an iPad.

Staff have also described having to teach children how to play with toys and with dolls when they first arrive at school. Home visits revealed that several households kept no toys or books, believing devices are sufficient for continuous entertainment as they have multiple applications within them. It is difficult to raise this as an issue with families: explaining why it is so important for a child to have something to play with that is not a screen, especially in households of low means, is a delicate challenge.

Conversational AI toys remove the last remaining barrier, as they can be used by children of all ages and literacy levels. Consumer testing in 2025 found AI toys marketed for ages 3 to 12 built on the same large language models their developers do not recommend for children, due to problems like accuracy, inappropriate content or addictive design intended to extend engagement [64]. Common Sense Media has advised against such toys for children aged five and under and urged extreme caution for six to thirteens, and a Fairplay advisory against buying them was signed by more than 150 organisations, child psychiatrists and educators [65, 66]. A household that has concluded that devices provide sufficient entertainment is more vulnerable to these risks.

Modelling begins at home

Many students reported that their parents spend more time on their phones than they do. One account from a pastoral lead in Rotherham described with distress that the vast majority of families arrive to pick up their children while entirely absorbed in their phones, missing the moment of reunion with their child. The consequences of this are so stark that he proposed phones be banned at school gates to the extent possible.

When these critical moments of physical connection are not present or modelled well, digital connection via a constantly available software, like AI chatbots, can quickly turn to attachments and erode social skills based on early language and emotional development in vulnerable populations.

Physical development & device dependence

Several school leadership staff, having observed changes in cohorts of students across decades, identified developmental costs associated with sustained indoor, sedentary screen use, describing a gradual increase in students who are overweight, lacked core strength, or arrive in nursery struggling to grip a pen compared to pressing buttons on devices. They attributed these patterns to extended time indoors on devices. National data corroborates this: In the 2024–25 academic year, less than half of young people in England met the Chief Medical Officers' guideline of an average of 60 minutes of physical activity per day, lower among children from less affluent families [67].

Staff in several schools often used the language of ‘addiction’ around this phenomenon. Children showing the clearest signs of dependence on devices are frequently those presenting the most extreme behaviour, which creates a commonly experienced dilemma for teachers: an iPad can lock a dysregulated child into a lesson and manage their behaviour effectively, while also feeding the dependence with more screen time.

Screens as safety

An insight offered by staff concerns perceived neighbourhood safety. In areas with elevated crime, some families regard time spent indoors on a screen as safer for their children than time spent outdoors. Local data support this concern. In Middlesbrough, police-recorded crime over the year to March 2026 was the highest rate of any local authority in England and Wales outside central London [68]. The wider literature is consistent with this finding. A review of 25 studies of children aged 7–14 found that parental concerns about social safety limit children's independent outdoor play [69].

Physical and safety considerations concern different types of risk. Some risks families seek to avoid are immediate and identifiable. The harms to a child’s social and physical wellbeing described by staff are cumulative and become apparent over a longer period. Several schools in this study responded by expanding supervised outdoor provision, including year-round running tracks and Outdoor Play and Learning (OPAL) agreements. Measures of this kind help address both concerns.

Safeguarding in the age of technology

Conflict that starts online at home reliably arrives at school the next morning. Staff identified Snapchat's disappearing messages and WhatsApp's lack of guardrails as some of the biggest tech-related problems on primary school grounds. One reason for this is that there is no longer any place-based escape from bullying. A student that might once have been targeted at school was safe at home, whereas now an infinite stream of conflictual or inappropriate messages can follow them home.

On a behavioural level, there is a striking dissociation between online and offline conduct. Children often do not perceive the messages they send as a real action, because they cannot see the person receiving them. One student was reported to have sent highly threatening messages to a peer and arrived at school the next day as though it had not occurred, with this response when confronted:

> *I didn't say it, I just messaged it.*
> YEAR 6 STUDENT, REPORTED BY STAFF

Some of the material gathered in this fieldwork concerned serious safeguarding incidents. Some incidents described by staff included young children groomed online, sent explicit photographs which were then circulated among peers, live streams broadcast from school toilets, and AI-generated explicit images of a young girl circulated among children who knew her.

Though the most commonly used chatbots have developed guardrails and both police and parents were involved in these cases, staff observed that parents who were disengaged enough for these incidents to occur in the first place were also sufficiently disengaged to not limit their child's access to those technologies afterwards.

Typical safeguarding responses assume that parental knowledge is the primary issue, when it is often a lack of capacity to implement awareness. When online safety sessions were delivered after these incidents at one school, no families attended. This raises a concern that information-led interventions misdiagnose the problem: where the barrier is capacity, offering more information to parents is unlikely to change what happens at home.

Exacerbated misinformation

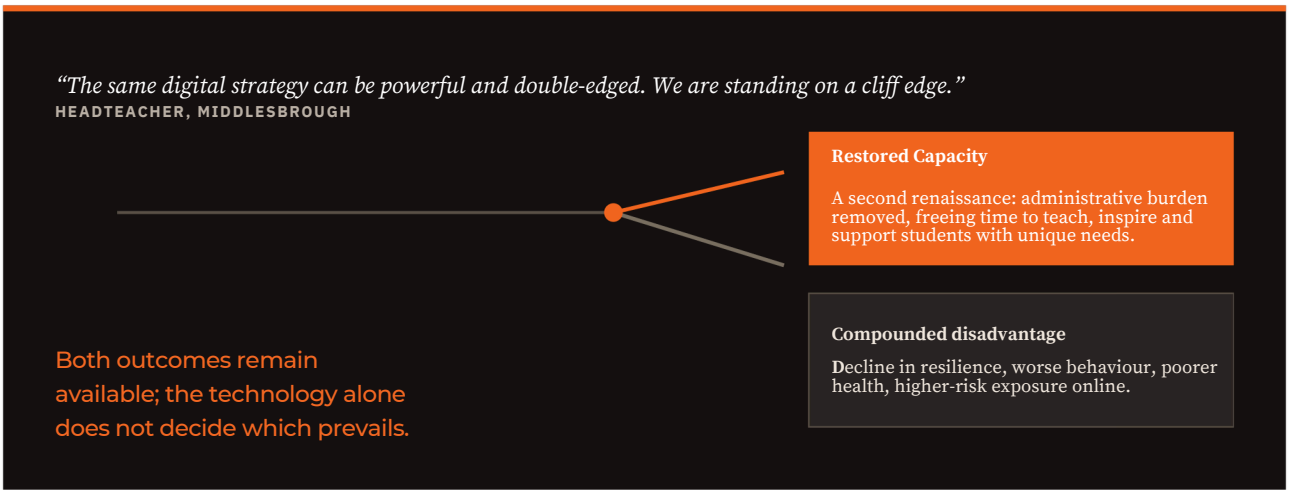
Staff described that primary-aged children often treat online content as authoritative, with little instinct to interrogate a source. The first answer they encounter is generally accepted as the correct answer. National data corroborates this observation: Ofcom's 2026 report on children's media use records that 62 per cent of 8- to 17-year-olds describe themselves as confident in judging whether information online is true or false, though this confidence does not reliably align with their ability to evaluate information or to identify advertising [70].

Generative AI intensifies this. Standard search engines present several results and visible sources, which at least preserves the structure of a choice between different accounts. A chatbot returns a single answer in continuous prose, with no source or alternative opinions displayed unless requested. Ofcom's qualitative work found that children largely did not distinguish between different AI tools and rarely questioned their accuracy, and that 40 per cent of teenage AI users would trust an AI-generated news article as much as or more than one written by a person [62, 70].

Several teachers in Middlesbrough reported that children absorb prejudiced views from social media or reflect those of their parents in school, who have often themselves picked things up from social media misinformation. Disorder in Hartlepool on 31 July 2024 was followed on 4 August by violence in Middlesbrough involving a crowd of around 400, part of national unrest propelled substantially by online misinformation about the Southport attack [71]. Subsequent prosecutions on Teesside included racially aggravated offences and publishing material intended to stir up religious hatred [72]. Children in these communities began to show up in class regurgitating polarised and discriminatory opinions they or their parents had seen online, until concerned headteachers and e-safety leads had to intervene and set up critical media literacy lessons with parents, emphasising that not everything they see online is true.

Low exposure as described in section 2.4 often results in entrenched assumptions about ethnic and religious minorities with whom children have no direct contact. Compounded by AI-driven hallucinations and a lack of instinct to question what they are told, this can produce harmful consequences for safeguarding and critical literacy.

FIGURE 6 · THE CLIFF EDGE



4.4

Teachers and artificial intelligence

Not one teacher interviewed was negative about artificial intelligence for their own professional work.

This does not mean teachers are uncritical; section 4.3 demonstrates otherwise, and their scepticism about AI tutoring for pupils is set out below. However, on the question of AI as a tool in their own practice, the position was unanimous.

Teachers' pattern of adoption falls into two broad categories. Some have been experimenting since these tools became publicly available a few years ago and are now highly sophisticated users. Others were initially wary, persuaded by colleagues to try it, and are now equally committed. Some teachers reported using TeachMate and Microsoft Copilot through school provision, ChatGPT on personal accounts, and Gemini with pupils, while Macmillan Academy just launched a trust-wide Claude licence. The national picture is clear here - these are capable, motivated, self-taught practitioners operating with almost no institutional scaffolding [3]. Individual initiative is filling an institutional vacuum.

Enhancement, not replacement. Teachers were unanimous that AI should enhance their work rather than replace or replicate it, and that it is not currently capable of replacing them in any case. Its primary value is time-saving. Using AI to complement their role, especially the tedious bits or efforts to make lessons more engaging with activities they may not have come up with on their own, gives them back hours. Those hours go to the parts of teaching that they love about their profession - being able to support and engage students as much as possible. Several described it as freeing up time to become more of the teacher they had intended to be... because of all the additional responsibilities that come with teaching in a disadvantaged area, which many of them anecdotally expressed seeing firsthand by comparing to when they taught in more affluent areas.

The lone planner. One finding emerged from talking to staff at particularly small primary schools. In a single-form-entry school such as Woodsetts Primary in Rotherham, there is one teacher per year group, planning a full year's curriculum across every subject alone. This means there is nobody to compare approaches with, to test an idea against, and share the workload. Teachers in that position described AI functioning as an educated companion for planning, where the value is not the time saved but having something to think with. That maps onto the Tutor CoPilot trial in the United States, in which pupils whose human tutors were assisted by an AI tool reached higher mastery rates than controls, with the largest gains going to the least experienced tutors [73]. **These tools appear to do most good where professional support is thinnest.**

Adaptive teaching and SEND. Teachers described AI as *revolutionary* for adaptive teaching, primarily because in areas of disadvantage many schools cannot fund specialist provision for every child who would benefit, or do not have specialist schools in the area, so SEND pupils are integrated into the mainstream. Some teachers shared their use of AI tools when working with a Year 6 pupil working at Year 1 level as well as a student with impaired vision - it allowed them to tailor stories to their level so they could access the same content as their peers and feel included, or have it read aloud. For teachers managing thirty children that each present varied circumstances, behavioural difficulties or a wide spread of literacy levels, in addition to pupils with substantial special educational needs, a tool that can produce five versions of a text at five reading levels in minutes is not just a productivity enhancement. It makes the difference between a child accessing the lesson in an effective way and not accessing it at all.

Staff use cases

Levelling texts. The most widely adopted application of AI tools by teachers is producing multiple versions of one text for different reading ages or SEND requirements, so every child can access the same story without the teacher having to manually rewrite it. This allows teachers to focus on coming up with activities that support each child's critical engagement of the text while being able to participate in class discussions, rather than just being able to read something.

Curriculum-tailored texts. For English classes, teachers are able to feed in the specific curriculum targets a child must meet in a particular unit, to generate a single text that contains every required strand of grammar and vocabulary. This way, one resource is able to satisfy the objectives, rather than increasing the workload of the teacher to manually hunt for a text that hits every target amidst frequently changing curricula, or giving students more work to read multiple texts while juggling fast-paced units.

Lesson sequencing. For primary school teachers that teach across the curriculum - including history, science, english, maths and more, where they are stronger at some than others - AI tools are very helpful to break a curriculum topic down into an effective sequence that covers all required strands in an engaging order.

Creative variation. Experienced teachers often shared a sense of feeling stuck in the way they have taught the same content for years, which not only diminishes student engagement but their own stimulation, creativity and imagination as teachers. They described that using AI to come up with new activities and fresh methods to teach the same material was transformative in bringing joy back to teaching, ensuring the lessons do not go stale for either the teacher or the students.

Vocabulary brought to life. A student-favourite assignment across multiple schools, was being given the opportunity to engage with classic books they read (e.g. the Narnia series) by visually reinventing their characters. Students would input descriptions of what they'd like a character to look like from their own imagination into an AI tool, generating an image from their original ideas, and revising the vocabulary they use if it did not turn out right. Students described this as motivating and magical because it made their ideas come to life, while teachers observed improvements in the way they analysed their own writing, sought improvement, and strengthened their descriptive language skills using a high level of detail and creativity.

MACMILLAN ACADEMY

Macmillan Academy in Middlesbrough stands out for their innovative uses of AI to support students. Deputy headteacher Adrian King built **internal analysis tools** that pinpoint the level each pupil is working at and the subjects where they need support, to aid them and their teachers in yearly transitions. They've also recognised that students working *above* the average or aiming for prestigious universities without a community or private coaching require another level of support. He built websites that automatically supply these pupils with **competitions and opportunities** to showcase and submit their work beyond school, and give sixth formers AI-based adaptive practice for the hardest admissions tests. In addition, sixth-form teacher Jonny Foster, with the support of SHINE, has developed a widely used **adaptive revision** tool called *Prodigy*, that combines skills from mathematics and physics, with tailored practice and progress trackers to improve their engagement with the content. These prove the power of AI to provide unprecedented personalised learning supports, especially in **high-need environments.**

Two constraints

Skill. Teachers emphasised that using these applications effectively as a teaching tool requires considerable expertise as an educator. It is not enough to ask it to generate a text of a given length. The teacher must know precisely what output they need, its required features in detail, what will and will not connect with their students. They must evaluate what it produces and re-prompt repeatedly. The tool amplifies existing professional expertise but does not substitute for it.

Time. AI tools and generative AI chatbots only become useful after substantial investment: taking the time to teach it your preferences, feed in relevant documents, curriculum specifications and an individual teaching style. Until that time investment is made, its output is generic and ineffectual. For many teachers in disadvantaged communities, the barrier to maximising the potential of these tools is the time it takes to set them up on top of an existing workload, since there is by and large no institutional guidance or in-built policies to aid that transition. Teachers under the greatest pressure are often least able to make the initial investment to learn how they can be of use.

> *The only way that we can understand it is by doing it and being interested.*
> PRIMARY TEACHER, ROTHERHAM

When asked how they initially learned to use these tools, teachers making use of them always responded that they had worked it out themselves or learned from a colleague. That is the fieldwork counterpart to the national finding that only 21 per cent of state school teachers have had formal AI training versus 45 per cent in independent schools [3]. Capability is currently distributed according to individual curiosity and personal time, both unevenly available.

One striking finding was the reception that met the term 'AI' by teachers in a small school in Rotherham - Woodsetts Primary. Teachers excitedly volunteered demonstrations of the assignments they had been running with pupils and the resources they had generated to complement their own subject expertise. They described the technology as transformative for pupil engagement, for their own workload and wellbeing, and above all for adaptive learning.

Nationally, only 14 per cent of teachers support the planned AI tutors for disadvantaged pupils, with 49 per cent opposed [4]. When asked during the fieldwork, teachers here took the same position, with the following reasons:

On **quality**, they described the current general-purpose output of AI tools as unreliable, prone to hallucination, and not something they would put unsupervised in front of pupils who can least afford to be given wrong information. On **provision**, this offer to disadvantaged pupils feels as though it is meant to make up for the fact that wealthier families can afford a human tutor; some teachers read this as a bandaid solution rather than an equal provision, that does nothing to solve the underlying systemic issues. On **diagnosis**, every educator interviewed emphasised that they attribute the disadvantage gap to socioeconomic issues like poverty, attendance, quality of life at home, exposure, self-esteem and motivation - not to a shortage of access to educational content and high-quality teaching.

Teachers primarily value AI as an instrument in the hands of a skilled professional who exercises judgement over its output. They doubt it as an unsupervised substitute for young children, especially as it does nothing to address the deeper issues that prevent disadvantaged children from engaging deeply with their education.

4.5

Voices from the staff room

Every interview closed by asking teachers what EdTech or AI tools they would find most useful; if they could build anything, and what would it be? The question was designed to surface unmet needs and prompt innovative thinking on real challenges faced in the region. Some of their responses are recorded below.

* Note that none of the responses describe a content generation or productivity tool in the conventional sense. Three of the five are instruments for seeing children more clearly: knowing that a child is struggling before it becomes an incident, knowing how a class is faring on a given day, and capturing what a child is capable of expressing rather than what they manage to get onto the page. The fourth is an instrument for enlarging what children get to see of the world. The fifth is notable for its meaningful human-in-the-loop approach, designed to maximise student learning.

This is a finding in its own right. The educational technology market is overwhelmingly organised around efficiency and content generation, and the government's own AI priorities for schools are framed largely in terms of teacher workload [12]. Teachers working in some of the most demanding circumstances in England, when asked what they would build if they could build anything, asked instead for attention, for exposure, and for a way of bringing the advantages of those to their students. *

01

A digital worry monster

For a child to raise a difficulty with a teacher privately, they must walk up to the front of the class, which is a barrier for many. Some classrooms use a 'worry monster': a physical box in which children post written notes for the teacher to read. These are often not read in time, and early dysregulation is easy to miss in a busy room until it has escalated, particularly among SEND pupils. The request was for a digital version. Most of these schools use one-to-one iPads, so an app that lets a child report how they are feeling instantly and privately, with something as simple as an emoji, and can put the signal in front of the teacher while it is still small.

02

A class mood barometer

One pastoral lead, a one-man team in his school who finds himself unable to anticipate every student's needs, described a wish he has long held: a way for children to score how they are feeling electronically at the start of the day. The scores would be visible to staff, so that a child registering something low could be given a brief check-in, but anonymous to the rest of the class. The individual scores would then combine into an aggregate score for the class. If the class number is low, children know that somebody among them is struggling without knowing who, and can respond by being more kind and careful that day. It treats mood as a shared condition of the room and makes empathy something practiced collectively.

03

Immersive shared environments

AI-based virtual reality tools were recommended by several teachers as something that would be transformative for their students. It would allow them to step into a Viking village for history lessons, the seaside or major cities to visualise books they're reading in English. This would give students a common reference, pseudo-experience to talk and write about. It would help counter their absence of real-world exposure described in section 2.4, and would be a way past the cost barriers that have made school trips difficult. SHINE is already funding and supporting related VR work!

04

Child-friendly dictation

Some children have rich, complex ideas that they are comfortable vocalising but struggle to hold in their minds long enough to write down. This results in what reaches the page being far simpler than what they are capable of producing. Teachers made this point most strongly about SEND pupils with short-term memory difficulties: children who are intellectually capable and full of stories, held back by writing. They say existing tools are clunky and do not handle regional accents in the north-east well. The request is for a simple interface designed for children with AI that learns an individual child's speech over time.

05

An adaptive revision tool

When a student submits a test or an assignment, the teacher marks it and identifies the weak points, exactly as now. The tool then generates revision exercises targeted at those specific weaknesses and returns them to the student. The teacher remains central and human judgement does the grading, so the diagnosis is never handed to the machine, while allowing every student to benefit from personalised improvement, pushes and strategies.

FIGURE 8 · MESSAGES FOR POLICYMAKERS

Teachers were asked the one thing they wish policymakers knew about their students and experiences teaching in the North East.

01

Children are using AI and social media every day

Children spend much of their time outside school online, using social media and AI tools. Much of what they see and the views they pick up reach them through algorithms and opinions circulating in their feeds. Staff felt that current guidance still treats this mainly as an e-safety issue about what children should avoid. They want the curriculum to go further and teach children to question what they read, where it came from and why it was shown to them. AI and phones are already a major part of children's lives. Teachers were clear that banning them or leaving them out of lessons does not prepare pupils to use them well. They ask for an approach that treats children as active participants in a digital world that is already shaping how they think and interact with the world.

02

Schools are expected to lead on AI without the funding to do it

The government talks about the UK leading the world in AI, but staff said this has not come with money for schools to put it into practice. Schools are expected to teach pupils about AI, train their staff and use the tools well, yet many lack the devices, training time or specialist support to do so. Provision varies widely: one school we visited gives every pupil an iPad, while another shares one set of devices across the whole school. When schools are given a responsibility without the resources to meet it, those with the least capacity are the most likely to fall short.

03

Exam results do not show how far pupils have come

Teachers said standardised results leave out much of what shapes a pupil's progress: where they started, whether English is their first language, whether their housing is secure, and whether they arrived as refugees. A school can be doing exceptional work in very difficult circumstances, with a great deal of pastoral support in place, and still look below standard on raw scores. Its pupils may have made more progress than those at a higher-scoring school, but outcome measures only record where pupils finish. Staff felt that judging schools mainly on exam results makes those in the hardest circumstances look worse and hides the progress they have made.

04

Safeguarding in the age of AI

Community members in Pennywell described a case in which AI-generated explicit images of a young girl were circulated among children who knew her (see section 4.3). Making images like this takes no technical skill and nothing more than an ordinary photograph, and the harm to the child is the same as if the image were real. Staff felt that safeguarding policy did not fit cases like this well. Since September 2026, the statutory guidance *Keeping Children Safe in Education* has explicitly named AI-generated and altered images, and the *Crime and Policing Act 2026* classifies nudification tools an offence, though that is not yet in force [111]. What staff now need is the time, training and support to apply these rules, so that schools are not working it out alone.

05

Interventions are band-aid solutions without parental involvement

Children spend around six hours a day in school and the rest at home, so what schools teach about technology can easily be undone outside school. Staff said the usual ways of involving parents are not working in these communities. At one school, no families came to online safety sessions arranged after serious incidents, and attendance did not improve when the sessions were offered online. Information sent home often goes unread. Staff felt that the parents whose involvement would make the most difference are the hardest to reach, and that working out how to reach them deserves time and funding of its own, rather than being added on to programmes aimed at children.

06

Come and spend a day in our schools

The invitation came up in several interviews. Teachers asked policymakers to spend a full day in a school like theirs: to see children arrive at the gate, sit in on lessons, and walk around the estate where pupils live. Behind it was a concern that pupils in deprived northern areas are too often assumed to have little chance of doing well. Teachers wanted policymakers to know that these children are capable and have ambitions of their own, even when those ambitions look modest from the outside, and that they want to learn and build good lives. Staff asked that they not be written off because of where they live.

PART FIVE

The Future PRIORITIES & RECOMMENDATIONS

This section synthesises and converts the evidence into recommendations, based on firsthand accounts and research. It covers the critical literacy gap, the question of learning in the age of AI, the centrality of families in supporting positive change, as well as key principles and proposals for imagining a better way forward.

5.1 The case for critical AI literacy
5.2 Key Principles
5.3 A.N.C.H.O.R. & the 5Es
5.4 **Recommendations**
5.5 A Window for Action
5.6 Conclusion

5.1

The case for critical AI literacy

Funding and policy attention in educational technology are generally focused on two things: access to new tools and basic digital skills for the ability to use them (digital literacy). *Critical* AI and media literacy, meaning the capacity to interrogate what a machine, algorithm or a platform presents, is a relatively new consideration.

Students are largely not acquiring critical AI literacy at school: only 15 per cent of teenagers report receiving adequate guidance from their school on the use of AI [5]. Nor are they acquiring it at home: only 34 per cent of parents have discussed with their child how to judge whether information produced by AI is true. The consequences are already measurable: among AI users aged 13 to 17, 40 per cent would trust an AI-generated news article as much as, or more than, one written by a person [70]. Speaking at the Confederation of School Trusts conference in October 2026, Education Secretary Lucy Powell said she wants children to **"master technology, not be mastered by it"**, but the new government has yet to set out an AI-in-education policy to make that happen [119].

The socio-economic dimension makes this imperative. Children in C2DE households were less likely than those in ABC1 households to identify an AI-generated image correctly, less likely to recognise paid search results and markedly less confident in identifying AI-generated content, at 45 per cent against 61 per cent [70]. This also runs through behaviour: the National Literacy Trust's 2026 survey of over 40,500 young people aged 13 to 18 found that 24 per cent simply copied what AI told them when using it for homework, rising to 32 per cent among those from lower-income backgrounds [7]. In media literacy lessons, the topics least covered are often about spotting misinformation, spotting AI-generated content and identifying advertising [70]. Children in ABC1 households are considerably more likely than those in C2DE households to recall having had such lessons at all, at 91 per cent against 79 per cent [70].

An underestimated gap

The Sutton Trust identifies three gaps in AI adoption in schools: preparedness, training and evidence [10]. This provides a useful framework for understanding the institutional challenges schools face. Alongside these, there is also a case for recognising a fourth gap: critical AI literacy – children's capacity to evaluate what these systems produce and actively seek productive rather than passive uses for them. The three gaps together help us understand what schools need to support effective AI use; this fourth gap focuses on what children themselves are able to do with it.

FIGURE 9 · COMPOUND EFFECTS OF TECH AND DISADVANTAGE

CONDITIONS IN THE HOME AND COMMUNITY

CONDITION ONE

Early and unsupervised access to devices

Screens often calm children and keep them indoors where streets feel unsafe (Sections 4.2–4.3). Use starts young: most parents of under-twos say their child goes online [61], and Year 2 pupils knew how to get around age limits (Section 4.1).

CONDITION TWO

Stretched adult capacity

Staff described parents as stretched thin rather than indifferent (Section 4.2). Many parents have not talked with their child about how to tell whether AI is accurate [6]. When one school ran an online safety session for parents, no families came (Section 4.3).

CONDITION THREE

Narrow direct experience

Teachers describe children whose world is measured in streets; some have never been to a beach ten minutes away. Meeting few people unlike themselves, they may have little outside knowledge to test online claims against (Section 2.4).

The critical literacy gap

Critical AI literacy includes the ability to ask where the origins of different claims, verify and fact check, consider who benefits and when it is beneficial or harmful to AI at all. Unlike the three recognised gaps in preparedness, training and evidence, it concerns what pupils can do [10]. Children from lower-income homes, who may have less assistance with this at home, are also less likely to recall media literacy lessons at school [70].

EFFECTS ON CHILDREN · HOW THEY JUDGE INFORMATION (TOP) AND APPROACH LEARNING (BOTTOM)

Children often take answers at face value

Children rarely question a chatbot's accuracy, perhaps because it gives one fluent, unsourced answer [62]. Many teenage AI users would trust an AI-written news story at least as much as a human one [70].

Confidence exceeds ability

Most children feel confident judging what is true online, but that confidence does not reliably match their ability [70]. Even adults struggle to spot AI content by eye and are reported to mostly guess.

Prejudiced views can go unchallenged

Children often repeat views about groups they have never met, sometimes echoing parents (Section 4.3). Unrest fuelled by misinformation [71] led headteachers to run media literacy lessons for parents.

Children see scrolling as a harmless pastime

Many pupils regard scrolling as a hobby akin to reading or playing outside, with little sense of the case against it (Section 4.1). This is closely tied to what is role modeled and their access to experiences.

Less persistence with difficult work

Staff see more pupils shut down when work is hard (Section 4.3). Lower-income pupils more often copy AI's homework answers [7], and in one trial, pupils who leaned on a chatbot did worse without it [80].

Uncertainty about the purpose of learning

Pupils often asked "what is the point?" of doing work a machine can do (Section 5.6). That may be hardest to answer where few adults around them have seen schooling pay off or lead to a better life (Section 2.4).

LIMITED SUPPORT FROM THE EDUCATION SYSTEM

Policy

Few secondary schools surveyed have an AI policy, and fewer still have a strategy for it [8].

Training

Almost all teachers interviewed valued AI, but most had taught themselves to use it (Section 4.4).

Equity

Formal AI training is least common for teachers in state and disadvantaged schools [3].

Standards

None of the six digital standards that schools should meet by 2030 concern what pupils learn [14].

Reading is part of the answer: pupils who enjoy reading are more likely to check what AI tells them and less likely to trust it outright, yet the reading enjoyment gap between pupils on free school meals and their peers *more than doubled* in 2026 [110].

SHINE-funded projects are working to close this gap through initiatives such as *Fluency for All*, where North East pupils build fluency and confidence through peer-tutored reading aloud, as well as *Reading Reimagined* in Sunderland and *Are You Really Reading?* across the North West. AI is most useful here when it draws pupils back into reading rather than past it, as when pupils invent and refine characters for the books they read using their own imagination and vocabulary, or teachers tailor texts so that pupils with learning difficulties can access the same stories. Even so, generating images for book covers or pupil-designed characters raises ethical questions, and using AI to summarise readings is a greater concern still.

A Practical Guide to Critical AI Literacy

Critical AI literacy is the capacity to judge what an AI system produces, how it produced it, and whether to use it at all. This page turns the critical literacy gap in Figure 9 into a practical framework, drawing on research beyond this report. Its goal is well-placed trust: in experiments in three countries, fact-checks and media literacy tips cut belief in false claims but also in true ones [76].

FOUR COMPONENTS

01 Understanding how outputs are made

Generative AI predicts plausible text and images from patterns in its data rather than retrieving checked facts. In one test, 18% of citations generated by GPT-4 did not exist [77]. In a study of 18 countries, 45 per cent of AI's answers about the news had at least one major issue. Learning to identify and use independent sources to support claims is essential, as well as knowing where to look [84].

02 Evaluating what is produced

Education Secretary Powell, in October 2026, announced that oracy will become a new strand of the English curriculum with equal status to reading and writing. She argued that with AI on the rise, schools must "go harder on the skills that make us human". Explaining and defending answers aloud, independently, makes oracy a natural vehicle for the questioning that critical AI literacy depends on.

03 Recognising interests and influence

Most AI tools serve commercial aims, and a chatbot's warm, human tone is a design choice. Children may take it at face value: most 6 to 11-year-olds in one study overestimate a smart speaker's intelligence [86]. Narrow experience may compound this (Section 2.4).

04 Judging when to use AI

AI can improve work without improving learning, sometimes called metacognitive laziness [87]. In an experiment with 1,000 high school pupils in Turkey, unrestricted access to a genAI tool raised practice scores by 48 per cent, but once it was removed, pupils scored 17 per cent lower than classmates who never had it. A version of the tool that gave hints instead of answers largely avoided the harm.

HOW IT IS CULTIVATED

Modelled on expert practice

Fact-checkers judged unfamiliar websites faster and more accurately than historians, who were misled by logos and domain names [88]. This can be taught: after some lessons, high school students became 2x as likely to spot questionable websites as before.

Grounded in subject knowledge

Adults who trust their own knowledge question AI output more than those who trust the AI [89]. Subject knowledge is therefore part of AI literacy, especially for pupils with narrow experience (Section 2.4).

Aimed at discernment

A reanalysis found two popular misinformation games raised doubt in all news without improving discernment [90]. Lessons should be judged on whether pupils accept accurate claims as well as reject false ones.

FOUR HABITS TO PRACTISE · FOR PUPILS, STAFF AND FAMILIES

STOP AND SIFT Any claim, from any source	CHECK EACH SOURCE Essays, homework, research	PUSH BACK When AI agrees with you	EXPLAIN IT BACK After using AI to study
Stop, **Investigate** the source, **Find** better coverage and **Trace** the claim to its original context: fact-checkers often use these four quick steps.	Look up every source an AI provides before citing it. 'Hallucinated' / made-up references can pair real authors' names with fake titles, so links, claims and sources are often incorrect [77].	Chatbots tend to favour answers that match the user's own views over accurate ones [92]. Ask the AI you are engaging with to argue from different perspectives and compare the results!	Close the tool you are using and explain the idea aloud or solve a similar problem independently to test the depth of your understanding. Better-looking work does not prove better learning [87].

RECOMMENDATIONS FOR POLICY AND PRACTICE

Trusts and school leaders

AI detectors may need to be used with caution, as they can wrongly flag writing [85]. Seven AI detectors flagged over half of essays by non-native English writers as AI-written due to their natural style [85].

The revised national curriculum, due to be published this year, offers an opportunity to recognise critical AI literacy as an expected outcome for pupils [81].

Trusts and local authorities

Sharing teaching materials across a Trust could save time, particularly for small schools where one teacher may plan for a grade level alone (Section 4.4). A number of free, research-informed resources already exist and could be adapted rather than using AI.

Teacher training and development

Teacher training and professional development could include how to teach critical AI literacy, so that staff in every subject feel confident building it into their lessons.

Schools working with families

Schools working with families: Support for families may work best when it is simple and fits into daily life. A shared habit, such as asking "*How could we check that*?" together, may reach more homes than information sessions have so far (Section 4.3).

Evaluation and assessment

It may be more useful to measure what pupils actually do, such as checking a claim, than what they say they can do. Most existing measures of AI literacy rely on self-report questionnaires [83].

5.2

Key Principles

These principles serve as a guide to bridging education and innovation in ways that promote ethical progress. Rooted in the discussions and reflections of fieldwork, they offer a foundation for navigating the opportunities and challenges of AI while keeping children, relationships, equity, and agency at the centre.

1 Equity at the forefront

AI capability is currently distributed along the existing contours of advantage. This means technology does not need to be harmful to widen a gap; it only needs to be useful and unevenly distributed or trained for. The Education Endowment Foundation's review of EdTech for disadvantaged pupils found that it can act as a gap-widener as readily as a gap-closer [25]. A new tool or initiative should be assessed on whether it narrows or widens that distribution.

2 Relationships as the mechanism for change

One of the primary things schools in the North East provide that can truly change outcomes for students is *relationships*. Fieldwork showed that students appreciate this well enough to prefer having help from someone who knows them over help from something that knows everything. Prioritise technology that returns adult time and attention to children over technology that substitutes for it, aligned with UNESCO's governing principle that AI should support human decision-making rather than replace it.

4 Humility in the face of evidence

The research on artificial intelligence's benefits and pitfalls in learning is often contradictory. Schools and policymakers *can* defensibly act under uncertainty, but not as though the uncertainty were resolved. Uncertainty is not a sufficient reason to delay engaging with AI in schools, as students are already growing up in a world shaped by it. Move forward with an awareness of the current landscape and expect the same from new projects. Plans to embed AI should acknowledge uncertainty, demonstrate that they are ready to meet the current moment by keeping people at the heart of implementation, and balancing optimism with pragmatism.

3 Protect agency

The value of a piece of schoolwork lies in the struggle it requires, not in the artefact it produces, so a tool that removes the difficulty of achieving a learning objective removes the objective itself - while misleadingly leaving the evidence of learning intact. Innovation should ensure students carry the cognitive load of their work and teachers make decisions they can defend, as a meaningful human-in-the-loop.

5 Build agency

The purpose of any educational innovation is to enlarge what a child can do *without* help, so the true test of any intervention is what remains once it is withdrawn: it should produce a good outcome while leaving the child with more agency than before. Nobody can predict where this technology may go, and waiting for certainty means ceding the decisions to whoever is willing to act without it. Schools and practitioners have a working knowledge of what survives contact with a classroom and what does not. They should trust their regional experience and instinct, recognising that they have the power to shape a better way forward by focusing on making the next right decision each day.

6 Begin with the problem, not the tool

The EdTech market sets the agenda by announcing what is now possible, which reframes the question from what children need to which new capability might be applied to them. Prioritise starting from the *problem* as practitioners describe it. This is a method that matters most in the context of disadvantage, where the obstacles are long-standing and cannot always be resolved by a new tool or a wider access scheme. Let the *need* determine whether technology is part of the answer for a particular problem, and be willing to conclude that it is not.

7 Proximity as the source of assessment

Schools across the North East vary greatly in their comfort with and access to EdTech tools as well as basic technologies. Provision ranges from one-to-one devices to a single shared set of iPads for a whole school, and every staffroom contains both sophisticated users and colleagues with little confidence or desire to experiment with AI at all, either due to hesitation or personal preference. Initiatives should not assume a common baseline between all staff and students at one school. Distance from the classroom is what allows a policy to sound plausible when it is not, while closeness is what exposes gaps between how the potential of new tools are described and how they behave in practice. Stay close enough to the ground to be corrected by it, treating teachers' and students' accounts as both critical feedback and evidence.

5.3

A.N.C.H.O.R.

A framework for AI and EdTech in schools serving disadvantaged communities

An anchor holds a vessel steady while the water around it keeps moving. In the same way, AI tools and the policies that govern them are changing quickly. Schools will keep facing new products, new guidance and pressure to adopt them. This framework is a guide to keeping decisions grounded in the needs of pupils and learners of all ages. A.N.C.H.O.R. is also a nod to the shipbuilding and port history of Sunderland and Teesside, where much of this research took place.

A AGENCY

AI tools should expand what learners can accomplish independently

Schools should judge a tool not only by pupils' performance while using it, but by their ability to problem-solve and think creatively on similar tasks without its aid. In practice, this favours tools that explain, prompt and guide pupils to attempt tasks on their own over tools that generate complete answers or products.

Pupils with little homework help at home are more likely to rely on whatever support is available to them. Fostering independence is a particular priority in schools serving disadvantaged communities.

N NEED

Adoption should be based on concrete needs and potential identified by schools

Decisions to introduce new technology should begin with a clear account of the problem a school wants to address, and only then consider whether a tool is the right response. In some cases, expanding staff time, teaching or pastoral support will address the root problem more effectively.

In the North of England, common barriers to education include low attendance, poor wellbeing, low confidence and pressures at home, which a new product is unlikely to resolve on its own. Staff who work with pupils every day are well placed to judge and offer ideas on where technology could help, and leaders should involve them in decisions about adoption.

C CHALLENGE

Pupils should remain incentivised to think and reason for themselves

Pupils learn best by working through a task themselves, including its challenging or unappealing parts. Tech-based tools should leave the work of critical thinking to the pupil.

Pupils with limited experience beyond their local area often struggle with questioning information or identifying assumptions. They may have fewer reference points against which to test what social media or AI tools tell them. Verification and critical reasoning are essential.

H HOME

Critical AI literacy should engage the home but work without it

Children form most of their habits with technology at home, so media literacy work in school needs to reach parents as well. The essentials for families are a few practical skills: understanding the importance of checking the validity of information, recognising AI-generated and sponsored content, understanding how apps are designed to hold attention, and setting guidelines or talking with children about what they see online.

Parents often care about their children's education but have limited time and, in many cases, limited confidence with technology themselves. Evening sessions or courses may struggle to attract families. Schools are more likely to reach them through short, practical materials and through existing points of contact such as the school gate and parents' evenings.

O OUTWARD

Technology should widen pupils' experiences beyond the screen

Technology in schools should help connect pupils to people, places, books and activities away from the screen, and help them understand where their learning could lead. Products designed to maximise time on a platform work against this aim.

Many pupils have little experience of places and people beyond their immediate area and spend much of their free time on their phones. For these pupils, the value of a tool depends partly on whether it extends their experience of the wider world and of possible futures.

R RELATIONSHIPS

Tech-based tools should serve to enhance teacher time with pupils

Schools should be able to show that the time a tool saves goes back into teaching, conversation and care. Decisions about individual pupils should stay with the adults who know them. AI tools have the potential to inform those decisions rather than make them.

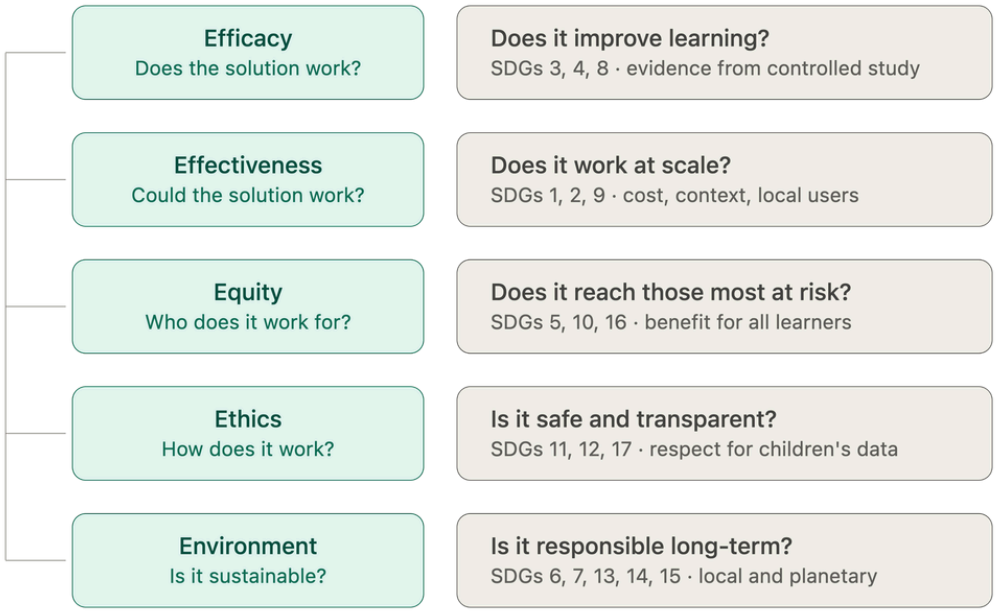
Relationships with staff are central to keeping pupils in school and engaged, particularly when circumstances at home are difficult. Technology should support this work, such as by reducing administrative tasks or the workload of adaptive teaching, not take the place of conversations between staff and pupils.

5.3

The 5Es FRAMEWORK

The 5Es framework was introduced in 2023 by Professor Natalia Kucirkova and has since been operationalised through the International Centre for EdTech Impact and the EduEvidence certification work, which mapped it against the 17 Sustainable Development Goals [11]. It offers a developed structure for school leaders, trusts, funders and policymakers to assess AI and EdTech tools before adoption, one that asks not only whether a tool improves learning but who it works for, how it handles children's data, and what it costs the environment.

The 5Es provide one set of questions that can be asked of any tool under consideration, whether in a school's procurement decision or a policy review. Three of its five domains—equity, ethics and environment—are rarely addressed by a product's own evidence [11].



Ethics · How does it work?

- Under UK GDPR and the Data Protection Act 2018, the school remains the data controller when it adopts an AI tool, which means it carries the responsibility for what happens to pupil data [74].
- As schools begin using AI to analyse attendance, behaviour and attainment data internally, **the system starts producing inferences** about individual children (their likely outcome and probable needs) that can be extremely helpful as well as inadvertently follow a pupil through their schooling **as though they were established fact**. Before adopting an AI tool, practitioners should be able to explain how pupil data will be used, who can see what the system infers, and how pupils and families can **object or opt out.**

Environment · Is it sustainable?

- A June 2026 assessment projected that **AI data centre electricity consumption will triple by 2030**, with its water footprint projected to equal the basic annual water needs of all 1.3 billion people in Sub-Saharan Africa [75]. Its environmental impact, such as drawing heavily on local water and grid capacity, is one of the main grounds on which people object to generative AI.
- There is an inconsistency in asking children to think critically about AI and be conscious of the impact their actions have on others, while handing them **a tool whose costs are invisible to them by design**.
- To raise young citizens that are mindful of sustainability, AI tools should come with curriculum content about **environmental cost**. When selecting tools, schools and trusts may consider favouring those proportionate to the task, such as small models or purpose-built applications, rather than a frontier system used for routine work.

5.4

Recommendations for Policy and Practice

1 Consider resilience and joy, alongside attainment

The default in education policy and provision is to prioritise work that measurably improves attainment, or that builds a specific skill towards a defined goal. While this is essential, it must be complemented with initiatives that build inner character and positively reshape students' relationship with their education, not just their outcomes. This includes projects that bolster resilience, curiosity and enjoyment of learning, and help them see themselves reflected in their education so that they can feel its purpose rather than be told.

Section 2.2 explains that children facing disadvantage struggle most during secondary school transitions, due not to skill but support, intrinsic motivation, self-belief and tolerance for discomfort, qualities that are rarely cultivated deliberately in schools or recognised in how success is measured.

2 Own the critical literacy gap

In the North, unsupervised over-access, limited parental literacy or capacity and narrow real-world exposure can combine to produce unique harms. This must be addressed by those who see the impact of everyday technologies on the ground and understand how they are felt by students, centring schools and practitioners closest to them.

Students are forming their working habits with these AI systems as we speak, and habits formed in adolescence persist long after. The work of defining what critical AI literacy *should* consist of has largely been done by international frameworks and specialised non-profits. This will eventually be measured, so schools will come under pressure to deliver it, but it may be a long time before such curricula are tailored to the experiences of disadvantaged children in England.

The most effective strategy is to build a critical *disposition* rather than a checklist of things to watch out for when using AI systems, as the cues can rapidly change. The reflex of questioning sources and information, the desire to use tech tools for productive gains, to create more than consume and close the digital use divide, is a muscle that can be built and transferred across contexts.

3 Treat parental engagement as a design problem

Families must be part of the solution. Fieldwork repeatedly proved without support from the guiding figures of a child's life, the 6 hours a day they spend in school, role modelling critical use of AI and a balanced relationship with technology, will not hold up against the rest at home. Media literacy for guardians should be a core strand of work, not just a delivery challenge of programmes aimed at children. Education alone is not enough to lift communities facing deprivation out of poverty, as various issues complicate the pursuit of it. This is why schools across the North East prioritise relational and holistic work to engage their students - but often face roadblocks when engaging families, which are at the root. PISA 2025 found pupils reporting less family support for their learning than in 2022 in almost every country, with the sharpest falls among disadvantaged students [109]. Progress will depend on policymakers, school leaders and funders being willing to trial, evaluate and resource new approaches to family engagement with comparable rigour to classroom provision.

4 Continue pursuing voices from the classroom

In this project, staff and students were asked for their genuine thoughts, worries and opinions about EdTech and AI. The findings helped shape a new understanding of their needs and the environment they work in. This approach is worth embedding as structured consultation that informs decisions about new tools, programmes and policies. Consulting staff and students is one of the quickest, least costly and most rewarding forms of evidence a school, trust or local authority can gather. Asking teachers to evaluate the tools they already have generates opinions about products. Asking them what they would hope to build, or their opinion on new ideas, generates insight into the challenges they face and whether they are responsive. Students, too, hold defensible positions on grading, trust and effort at school that the sector has largely assumed they are incapable of forming on their own. Evidence of classroom consultation should be an expectation before new EdTech tools or AI policies are adopted. Trusts and local authorities should consider building a recurring, structured 'cycle of listening' across their schools over one-off visits or evaluations. In a field changing so quickly, a continuous read on what is experienced in classrooms allows them to notice a shift while it is forming rather than reading about it in national data.

5.5

A Window for Action

Policy on technology, education and disadvantage has moved quickly during this research. The schools white paper of February 2026 committed to halving the disadvantage gap and to making AI tutoring tools available to up to 450,000 disadvantaged pupils by the end of 2027, and eight companies are now developing them [12, 21, 22]. A £24 million EdTech Testbed will trial products in more than 1,000 schools and colleges, the social media ban for under-16s begins in spring 2027, and new limits will apply to children's use of AI chatbots [113, 116, 117]. The new government has kept these plans in place since July, and Education Secretary Lucy Powell has made oracy a new strand of English, restored Key Stage 3 as a distinct phase and said that AI raises big questions she intends to answer [115, 98]. Internationally, the OECD and European Commission have set out an AI literacy framework that PISA will assess from 2029, and education ministers meeting at UNESCO have called for education to remain a common good in the age of AI [46, 99].

WHAT THIS MEANS FOR SCHOOLS AND POLICYMAKERS

01

Key decisions are still open

Evidence from classrooms in disadvantaged areas can still shape national decisions on AI. The Education Secretary has said AI raises big questions she intends to answer, the new national curriculum will be taught from 2028, and the AI tutoring tools are still being developed [115, 81, 22].

02

Restrictions and critical literacy work best together

Age limits will narrow which platforms children use, but they will not teach children to judge what they see, and AI chatbots and messaging apps fall largely outside the ban [116, 117]. Critical AI literacy can be taught now, in existing lessons and alongside families (Sections 5.1 and 5.4).

03

Wider access to tools makes evidence more valuable

AI tools are set to reach up to 450,000 disadvantaged pupils through a tutoring programme, and more than 1,000 schools and colleges through the EdTech Testbed [21, 113]. Yet in the largest UK trial so far, better answers during tutoring did not lead to higher test scores, so the key question for any tool is whether pupils keep what they learned once it is removed [101].

PROMPTS FOR PRACTITIONERS AND DECISION-MAKERS

01 Children learn to use and question technology from the adults around them. How can schools, trusts and local services build critical AI and media literacy among pupils, staff and families together?

02 What evidence would show that progress made with an AI tool becomes lasting learning that persists once the tool is withdrawn?

03 Where AI is used to reduce teacher workload, how will leaders know whether the time saved is spent on direct work with pupils?

04 As restrictions on children's social media use take effect, who will make sure that pupils in disadvantaged communities have worthwhile things to do offline, especially chances for connection and new experiences?

05 Local perspectives were essential to this research. How can the experiences of pupils and teachers in the North of England be heard as national AI policies take shape?

5.6

Worth the Effort: Why We Learn Conclusion

During focus groups, children often asked "*but what is the point?*" of working something out themselves when a machine can do it for them. This is a fair question, one that people in every affected profession are asking about in their own work, and students can generally tell when an adult is answering it badly. It also forces a prior question that education systems are now being forced to confront: what is valuable about the process of learning itself, and why does that value still hold when answers are freely available?

Something ironic about artificial intelligence is it directs attention onto what it means to be human. If a large proportion of what people *do* can be augmented or replaced by a machine, then there must be something more that makes human creativity, ingenuity, empathy, intellectualism and the pursuit of understanding so unique.

An education system is confined to teaching what it measures. The English system is designed around exam boards, the SATs, GCSEs and A-Levels - an assessment regime based on correct answers, that gives students an entirely rational reason to prefer something that supplies those answers. Section 4.3 of this report established that many children have lost a tolerance for difficulty and the muscle that motivates them to do hard things. Section 2.4 identified that many cannot see themselves in the positive outcomes education produces. Section 5.1 recognised that they have no comprehensive framework for critically evaluating what a machine tells them. This cannot be resolved by a curriculum reform or technology intervention alone. The response must be concerned with promoting resilience, motivation and joy in learning - things the system does not measure and therefore does not fund. Charities and funders willing to tackle deeper issues at the root of systemic divides, whether digital or otherwise, are positioned to innovate in new and beneficial ways.

In each case what is missing is an account of the purpose of learning that helps students, especially those in vulnerable or precarious circumstances, connect with their education and the process of learning itself. That account is neither neatly a curriculum nor a technology intervention, but it is one that any innovative funder focused on uplifting children out of deeper, systemic issues is positioned to reflect and act on.

THE ESSENTIAL QUESTION:

What tools and support will help students *feel aspirational*, and able to act on their goals?

References

[1] Education Policy Institute (2026). 'Regional gaps', Annual Report 2026. EPI. https://epi.org.uk/annual-report-2026/annual-report-regional-gaps-2026/

[2] Education Policy Institute (2026). 'Local authority gaps', Annual Report 2026. EPI. https://epi.org.uk/annual-report-2026/annual-report-local-authority-gaps-2026/

[3] Sutton Trust (2025). Artificial Advantage. Sutton Trust. https://www.suttontrust.com/our-research/artificial-advantage/

[4] National Education Union (2026). 'State of Education 2026: AI' [press release]. NEU. https://neu.org.uk/latest/press-releases/state-education-2026-ai

[5] Oxford University Press (9 June 2026). 'New research shows teenagers are divided over AI use for schoolwork'. OUP. https://corp.oup.com/news/new-research-shows-teenagers-are-divided-over-ai-use-for-schoolwork/

[6] Internet Matters (July 2025). Me, Myself and AI: Understanding and Safeguarding Children's Use of AI Chatbots. Internet Matters. https://www.internetmatters.org/wp-content/uploads/2025/07/Me-Myself-AI-Report.pdf

[7] National Literacy Trust (2026). 'Using generative AI to support literacy: what we know so far'. National Literacy Trust. https://literacytrust.org.uk/blog/using-generative-ai-to-support-literacy-what-we-know-so-far/

[8] Teach First and Accenture (July 2026). 'AI in schools: what school leaders need to know'. Teach First. https://www.teachfirst.org.uk/reports/ai-schools-what-school-leaders-need-know (reported in ResultSense, 1 July 2026, 'English schools: AI outpaces strategy': https://www.resultsense.com/news/2026-07-01-english-schools-ai-outpaces-strategy/

[9] Department for Education (2023, updated 12 August 2025). Generative artificial intelligence (AI) in education [policy paper]. GOV.UK. https://www.gov.uk/government/publications/generative-artificial-intelligence-in-education

[10] Sutton Trust (n.d.). 'Mind the gaps: three areas to watch for AI disadvantage'. Sutton Trust. https://www.suttontrust.com/news-opinion/all-news-opinion/mind-the-gaps-three-areas-to-watch-for-ai-disadvantage/

[11] Kucirkova, N., Schewe, O., Campbell, J., Lindroos Cermakova, A. and Pitchford, N. (2025). 'Developing evidence indicators for evaluating K12 EdTech: towards a consensus on educational impact'. Humanities and Social Sciences Communications, 12, 947. https://www.nature.com/articles/s41599-025-05330-9

[12] Department for Education (February 2026). Every child achieving and thriving [schools white paper]. GOV.UK. https://www.gov.uk/government/publications/every-child-achieving-and-thriving

[13] Education Endowment Foundation (June 2026). 'New landmark programme of research to investigate the impact of generative AI on cognition'. EEF. https://educationendowmentfoundation.org.uk/news/new-research-generative-ai-on-cognition

[14] Department for Education (n.d.). 'Meeting digital and technology standards in schools and colleges'. GOV.UK. https://www.gov.uk/guidance/meeting-digital-and-technology-standards-in-schools-and-colleges

[15] Hazell, W. (2020). A-level results 2020: 39% of teacher predicted grades downgraded by algorithm amid calls for U-turn. 13 August 2020. https://inews.co.uk/news/education/a-level-results-2020-grades-downgraded-algorithm-triple-lock-u-turn-result-day-578194

[16] HM Government (2025). 'AI to accelerate national renewal and growth as Google DeepMind backs UK tech and science sectors'. GOV.UK. https://www.gov.uk/government/news/ai-to-accelerate-national-renewal-and-growth-as-google-deepmind-backs-uk-tech-and-science-sectors

[17] van Deursen, A. J. A. M. and Helsper, E. J. (2015). 'The third-level digital divide: who benefits most from being online?' In Communication and Information Technologies Annual (Studies in Media and Communications, Vol. 10), pp. 29–52. Emerald.

[18] Department for Education (2026). Pupil premium: overview (funding rates for the 2026 to 2027 financial year). GOV.UK. https://www.gov.uk/government/publications/pupil-premium/pupil-premium

[19] Education Policy Institute (2026). 'Disadvantage', Annual Report 2026. EPI. https://epi.org.uk/annual-report-2026/annual-report-disadvantage-2026/

[20] Schools Week (August 2026). 'AI use cuts teacher workload but not hours worked, study suggests' [reporting a YouGov survey for Bett]. https://schoolsweek.co.uk/ai-use-cuts-teacher-workload-but-not-hours-worked-study-suggests/

[21] Department for Education (2026). '450,000 disadvantaged pupils could benefit from AI tutoring tools' [press release]. GOV.UK. https://www.gov.uk/government/news/450000-disadvantaged-pupils-could-benefit-from-ai-tutoring-tools

[22] Department for Education (June 2026). 'EdTech and AI companies invited to help build safe AI tutoring tools for disadvantaged pupils'. GOV.UK. https://www.gov.uk/government/news/edtech-and-ai-companies-invited-to-help-build-safe-ai-tutoring-tools-for-disadvantaged-pupils

[23] House of Commons Education Committee (2026). The use of Artificial Intelligence and EdTech in Education [inquiry launched 26 February 2026]. UK Parliament. https://committees.parliament.uk/work/9642/the-use-of-artificial-intelligence-and-edtech-in-education/

[24] Department for Education (2026). Written evidence submitted to the Education Committee inquiry on the use of Artificial Intelligence and EdTech in Education (AIE0205). UK Parliament. https://committees.parliament.uk/writtenevidence/165930/html/

[25] Education Endowment Foundation (n.d.). 'Research agenda theme: EdTech'. EEF. https://educationendowmentfoundation.org.uk/projects-and-evaluation/research-agenda-themes-priority-areas/research-agenda-theme-edtech

References

[26] Royal Statistical Society (2026). Written evidence submitted to the Education Committee inquiry on the use of Artificial Intelligence and EdTech in Education (AIE0147). UK Parliament. https://committees.parliament.uk/writtenevidence/165106/html/

[27] Patton, M. Q. (2015). Qualitative Research and Evaluation Methods (4th edn). SAGE.

[28] Braun, V. and Clarke, V. (2006). 'Using thematic analysis in psychology'. Qualitative Research in Psychology, 3(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

[29] Braun, V. and Clarke, V. (2019). 'Reflecting on reflexive thematic analysis'. Qualitative Research in Sport, Exercise and Health, 11(4), 589–597. https://doi.org/10.1080/2159676X.2019.1628806

[30] Denzin, N. K. (1978). The Research Act: A Theoretical Introduction to Sociological Methods (2nd edn). McGraw-Hill.

[31] Lincoln, Y. S. and Guba, E. G. (1985). Naturalistic Inquiry. SAGE.

[32] Department for Work and Pensions (26 March 2026). Households Below Average Income: an analysis of the UK income distribution, FYE 1995 to FYE 2025. GOV.UK. https://www.gov.uk/government/collections/households-below-average-income-hbai--2

[33] Child Poverty Action Group (March 2026). 'New data shows 4 million children in poverty'. CPAG. https://cpag.org.uk/news/new-data-shows-4-million-children-poverty

[34] Institute for Public Policy Research and Action for Children (19 May 2026). Work isn't working: Family, work and progression on a low income. IPPR. https://ippr-org.files.svdcdn.com/production/Downloads/Work_isnt_working_May26.pdf

[35] Children North East (2026). 'From the CEO: 2026 child poverty statistics, North East still facing highest rates in the country'. Children North East. https://children-ne.org.uk/from-the-ceo-2026-child-poverty-statistics-north-east-still-facing-highest-rates-in-the-country/

[36] North East Child Poverty Commission and Schools North East (n.d.). Free School Meals and Auto-Enrolment in the North East [briefing]. NECPC. https://nechildpoverty.org.uk/content/images/uploads/NECPC_Schools_North_East_briefing_FSMs_and_auto_enrolment_in_the_North_East.pdf

[37] Department for Education (2026). Schools, pupils and their characteristics: academic year 2025/26. Explore Education Statistics. https://explore-education-statistics.service.gov.uk/find-statistics/school-pupils-and-their-characteristics/2025-26

[38] Ministry of Housing, Communities and Local Government (October 2025). English Indices of Deprivation 2025: Local Deprivation Explorer. MHCLG. https://deprivation.communities.gov.uk/

[39] Joseph Rowntree Foundation (n.d.). 'Geography and poverty', UK Poverty Statistics. JRF. https://www.jrf.org.uk/uk-poverty-statistics/geography

[40] Ministry of Housing, Communities and Local Government (2025). The English Indices of Deprivation 2025: Research Report. MHCLG. https://assets.publishing.service.gov.uk/media/68ff547a49d08dd781b48351/ID_2025_Research_Report.pdf

[41] Gazette Live (2025). 'Bad for many years: Middlesbrough tops unwanted deprivation measure'. https://www.gazettelive.co.uk/news/teesside-news/middlesbrough-poverty-tops-list-figures-32809048

[42] HM Government (July 2026). Get Britain Working: labour market insights, July 2026. GOV.UK. https://www.gov.uk/government/statistics/get-britain-working-labour-market-insights-july-2026/get-britain-working-labour-market-insights-july-2026

[43] Social Mobility Commission (n.d.). 'Former industrial heartlands have faced 50 years of disadvantage, says Social Mobility Commission'. https://socialmobility.independent-commission.uk/former-industrial-heartlands-have-faced-50-years-of-disadvantage-says-social-mobility-commission/

[44] Department for Education (2025). Suspensions and permanent exclusions in England: 2024/25 autumn term. Explore Education Statistics. https://explore-education-statistics.service.gov.uk/find-statistics/suspensions-and-permanent-exclusions-in-england/2024-25-autumn-term

[45] Rasch, B. and Born, J. (2013). 'About sleep's role in memory'. Physiological Reviews, 93(2), 681–766. https://doi.org/10.1152/physrev.00032.2012. https://pmc.ncbi.nlm.nih.gov/articles/PMC3768102/)

[46] OECD and European Union (2026). Empowering Learners for the Age of AI: An AI Literacy Framework for Primary and Secondary Education. OECD Publishing, Paris. https://doi.org/10.1787/65cd27d4-en

[47] European Union (2024). Regulation (EU) 2024/1689 laying down harmonised rules on artificial intelligence (Artificial Intelligence Act). Official Journal of the European Union. https://eur-lex.europa.eu/eli/reg/2024/1689/oj

[48] European Commission (July 2026). 'AI Omnibus enters into force'. Shaping Europe's Digital Future. https://digital-strategy.ec.europa.eu/en/news/ai-omnibus-enters-force

[49] UNESCO (September 2024). AI competency framework for students. UNESCO. https://www.unesco.org/en/articles/ai-competency-framework-students

[50] Miao, F. and Çukurova, M. (2024). AI Competency Framework for Teachers. UNESCO. https://doi.org/10.54675/ZJTE2084

[51] De Simone, M., Tiberti, F., Barron Rodriguez, M., Manolio, F., Mosuro, W. and Dikoru, E. J. (2025). From Chalkboards to Chatbots: Evaluating the Impact of Generative AI on Learning Outcomes in Nigeria (Policy Research Working Paper 11125). World Bank. https://documents.worldbank.org/en/publication/documentsreports/documentdetail/099548105192529324

References

[52] VoxDev (2025). 'How AI tutors improved learning in Nigeria'. https://voxdev.org/topic/education/how-ai-tutors-improved-learning-nigeria

[53] World Bank Blogs (2025). 'Addressing the learning crisis with generative AI: lessons from Edo State in Nigeria'. Let's Talk Development. https://blogs.worldbank.org/en/developmenttalk/addressing-the-learning-crisis-with-generative-ai--lessons-from-

[54] Roy, P., Poet, H., Staunton, R., Aston, K. and Thomas, D. (12 December 2024). ChatGPT in Lesson Preparation: A Teacher Choices Trial — Evaluation Report. Education Endowment Foundation and NFER. https://educationendowmentfoundation.org.uk/projects-and-evaluation/projects/choices-in-edtech-using-generative-ai-chatgpt-for-ks3-science-lesson-preparation-2024-teacher-choices-trial

[55] HM Government (n.d.). 'North East AI drive to boost local skills and business growth opportunities'. GOV.UK. https://www.gov.uk/government/news/north-east-ai-drive-to-boost-local-skills-and-business-growth-opportunities

[56] Kwon, J. (October 2025). 'AI-powered textbooks fail to make the grade in South Korea'. Rest of World. https://restofworld.org/2025/south-korea-ai-textbook/

[57] IN4 Group (2026). 'Greater Manchester Baccalaureate and mega hubs expand AI super curriculum to connect thousands of young people to technology careers'. https://in4group.co.uk/press/greater-manchester-baccalaureate-and-mega-hubs-expand-ai-super-curriculum-to-connect-thousands-of-young-people-to-technology-careers/

[58] Department for Science, Innovation and Technology (2026). Digital Inclusion Action Plan: One Year On. GOV.UK. https://www.gov.uk/government/publications/digital-inclusion-action-plan-one-year-on/digital-inclusion-action-plan-one-year-on

[59] Digital Poverty Alliance with RM Technology (2025). 'New research reveals the hidden cost of digital inequality in UK schools'. Digital Poverty Alliance. https://digitalpovertyalliance.org/research/new-research-reveals-the-hidden-cost-of-digital-inequality-in-uk-schools/

[60] Department for Science, Innovation and Technology (2026). 'More than one million helped get connected and get online thanks to government Digital Inclusion Action Plan'. GOV.UK. https://www.gov.uk/government/news/more-than-one-million-helped-get-connected-and-get-online-thanks-to-government-digital-inclusion-action-plan

[61] Ofcom (2026). Children's online experiences: research report. Ofcom. https://www.ofcom.org.uk/online-safety/protecting-children/childrens-online-experiences-research-report https://www.ofcom.org.uk/siteassets/resources/documents/online-safety/research-statistics-and-data/protecting-children/childrens-online-experiences-research-report.pdf?v=418198)

[62] Ofcom (2026). 'Younger phone owners, the rise of AI and consumption over creation: our latest look at UK children's media lives'. Ofcom. https://www.ofcom.org.uk/online-safety/protecting-children/younger-phone-owners-the-rise-of-ai-and-consumption-over-creation-our-latest-look-at-uk-childrens-media-lives

[63] Browne Jacobson (2026). 'Every child achieving and thriving: schools white paper explained'. https://www.brownejacobson.com/insights/every-child-achieving-and-thriving-schools-white-paper-explained

[64] U.S. PIRG Education Fund (2025). Trouble in Toyland 2025. https://pirg.org/edfund/resources/trouble-in-toyland-2025/

[65] Common Sense Media (January 2026). AI Risk Assessment: AI Toys. https://www.commonsensemedia.org/sites/default/files/ai-ratings/csm-ai-risk-assessment-ai-toys-01142026.pdf

[66] Fairplay (2025). 'AI toys unsafe for kids this holiday season, advisory warns'. https://fairplayforkids.org/ai-toys-unsafe-for-kids-this-holiday-season-advisory-warns/

[67] Sport England (4 December 2025). Active Lives Children and Young People Survey: Academic Year 2024–25. Sport England. https://sportengland.org/news-and-inspiration/childrens-activity-levels-rising-inactivity-remains-too-high

[68] Office for National Statistics (23 July 2026). Crime in England and Wales: year ending March 2026 (including recorded crime figures for Community Safety Partnership areas). ONS. https://www.ons.gov.uk/peoplepopulationandcommunity/crimeandjustice/bulletins/crimeinenglandandwales/yearendingmarch2026

[69] Visser, K. and van Aalst, I. (2022). 'Neighbourhood factors in children's outdoor play: a systematic literature review'. Tijdschrift voor Economische en Sociale Geografie, 113(1), 80–95. https://ideas.repec.org/a/bla/tvecsg/v113y2022i1p80-95.html

[70] Ofcom (21 May 2026). Children and Parents: Media Use and Attitudes Report 2026. Ofcom. https://www.ofcom.org.uk/siteassets/resources/documents/research-and-data/media-literacy-research/children/2026-children-and-parents-report/children-and-parents-media-use-and-attitudes-report-2025-6.pdf?v=418231

[71] Cleveland Police (August 2024). 'Investigation underway following violent disorder in Hartlepool'. https://www.cleveland.police.uk/news/cleveland/news/2024/august/investigation-underway-following-violent-disorder-in-hartlepool/

[72] Cleveland Police (January 2026). 'Middlesbrough man sentenced for stirring up racial hatred and possessing weapons'. https://www.cleveland.police.uk/news/cleveland/news/2026/january/middlesbrough-man-sentenced-for-stirring-up-racial-hatred-and-possessing-weapons/

[73] Wang, R. E., Ribeiro, A. T., Robinson, C. D., Loeb, S. and Demszky, D. (2024). Tutor CoPilot: A Human-AI Approach for Scaling Real-Time Expertise. Stanford SCALE. https://scale.stanford.edu/publications/tutor-copilot-human-ai-approach-scaling-real-time-expertise

[74] Information Commissioner's Office (n.d.). 'The Children's code and education technologies (edtech)'. ICO. https://ico.org.uk/for-organisations/uk-gdpr-guidance-and-resources/childrens-information/childrens-code-guidance-and-resources/the-children-s-code-and-education-technologies-edtech/

[75] United Nations University Institute for Water, Environment and Health (2026). 'Environmental cost of AI's energy use: carbon, water and land footprints'. UNU-INWEH. https://unu.edu/inweh/news/environmental-cost-of-AIs-Enrgy-use-carbon-water-and-land-footprints

[76] Hoes, E., Aitken, B., Zhang, J., Gackowski, T. and Wojcieszak, M. (2024). 'Prominent misinformation interventions reduce misperceptions but increase scepticism'. Nature Human Behaviour, 8, 1545–1553. https://doi.org/10.1038/s41562-024-01884-x

References

[76] Hoes, E., Aitken, B., Zhang, J., Gackowski, T. and Wojcieszak, M. (2024). 'Prominent misinformation interventions reduce misperceptions but increase scepticism'. Nature Human Behaviour, 8, 1545–1553. https://doi.org/10.1038/s41562-024-01884-x

[77] Walters, W. H. and Wilder, E. I. (2023). 'Fabrication and errors in the bibliographic citations generated by ChatGPT'. Scientific Reports, 13, 14045. https://doi.org/10.1038/s41598-023-41032-5

[78] Wineburg, S., Breakstone, J., McGrew, S., Smith, M. and Ortega, T. (2022). 'Lateral reading on the open Internet'. Journal of Educational Psychology. Digital Inquiry Group. https://cor.inquirygroup.org/research/lateral-reading-on-the-open-internet

[79] Frank, J., Herbert, F., Ricker, J., Schönherr, L., Eisenhofer, T., Fischer, A., Dürmuth, M. and Holz, T. (2024). 'A representative study on human detection of artificially generated media across countries'. 2024 IEEE Symposium on Security and Privacy. https://doi.org/10.1109/SP54263.2024.00159

[80] Bastani, H., Bastani, O., Sungu, A., Ge, H., Kabakcı, Ö. and Mariman, R. (2025). 'Generative AI without guardrails can harm learning: evidence from high school mathematics'. Proceedings of the National Academy of Sciences, 122(26), e2422633122. https://doi.org/10.1073/pnas.2422633122

[81] Curriculum and Assessment Review (5 November 2025). Building a world-class curriculum for all: Final Report; and Department for Education (5 November 2025). Curriculum and Assessment Review Final Report: government response. GOV.UK. https://www.gov.uk/government/publications/curriculum-and-assessment-review-final-report

[82] Raspberry Pi Foundation (2026). Experience AI impact report. Raspberry Pi Foundation. https://static.raspberrypi.org/files/about/Experience_AI_Impact_report_2026.pdf

[83] Lintner, T. (2024). 'A systematic review of AI literacy scales'. npj Science of Learning, 9, 50. https://doi.org/10.1038/s41539-024-00264-4

[84] Brodsky, J. E., Brooks, P. J., Pavlounis, D. and Johnston, J. L. (2023). 'Instruction increases Canadian students' preference for and use of lateral reading strategies to fact-check online information'. AERA Open, 9. https://doi.org/10.1177/23328584231192106

[85] Liang, W., Yuksekgonul, M., Mao, Y., Wu, E. and Zou, J. (2023). 'GPT detectors are biased against non-native English writers'. Patterns. https://arxiv.org/abs/2304.02819

[86] Andries, V. and Robertson, J. (2023). 'Alexa doesn't have that many feelings: children's understanding of AI through interactions with smart speakers in their homes'. Computers and Education: Artificial Intelligence, 5, 100176. https://arxiv.org/abs/2305.05597

[87] Fan, Y., Tang, L., Le, H., Shen, K., Tan, S., Zhao, Y., Shen, Y., Li, X. and Gašević, D. (2025). 'Beware of metacognitive laziness: effects of generative artificial intelligence on learning motivation, processes, and performance'. British Journal of Educational Technology, 56(2), 489–530. https://arxiv.org/abs/2412.09315

[88] Wineburg, S. and McGrew, S. (2019). 'Lateral reading and the nature of expertise: reading less and learning more when evaluating digital information'. Teachers College Record, 121(11). https://doi.org/10.1177/016146811912101102

[89] Lee, H.-P., Sarkar, A., Tankelevitch, L., Drosos, I., Rintel, S., Banks, R. and Wilson, N. (2025). 'The impact of generative AI on critical thinking: self-reported reductions in cognitive effort and confidence effects from a survey of knowledge workers'. Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems. https://doi.org/10.1145/3706598.3713778

[90] Modirrousta-Galian, A. and Higham, P. A. (2023). 'Gamified inoculation interventions do not improve discrimination between true and fake news: reanalyzing existing research with receiver operating characteristic analysis'. Journal of Experimental Psychology: General, 152(9), 2411–2437. https://doi.org/10.1037/xge0001395

[91] Caulfield, M. and Wineburg, S. (2023). Verified: How to Think Straight, Get Duped Less, and Make Better Decisions about What to Believe Online. University of Chicago Press.

[92] Sharma, M., Tong, M., Korbak, T., Duvenaud, D., Askell, A., Bowman, S. R. et al. (2024). 'Towards understanding sycophancy in language models'. International Conference on Learning Representations (ICLR 2024). https://arxiv.org/abs/2310.13548

[93] Learning and Work Institute (August 2026). NEET analysis. https://learningandwork.org.uk/three-in-five-young-people-who-are-neither-learning-nor-working-have-never-had-a-paid-job-new-analysis-finds/

[94] Milburn, A. (28 May 2026). Young People and Work: interim report. Department for Work and Pensions. https://www.gov.uk/government/publications/young-people-and-work-interim-report/young-people-and-work-interim-report

[95] Department for Education (15 October 2026). Key stage 4 performance 2025/26. https://explore-education-statistics.service.gov.uk/find-statistics/key-stage-4-performance/2025-26

[96] Department for Education (2026). Key stage 2 attainment 2025/26 (provisional). https://explore-education-statistics.service.gov.uk/find-statistics/key-stage-2-attainment/2025-26-provisional

[97] Public First (29 June 2026). The Independent Inquiry into White Working Class Educational Outcomes. https://www.publicfirst.co.uk/white-working-class-educational-outcomes-report-june-2026

[98] Department for Education (8 November 2026). Curriculum overhaul to re-engage pupils in vital early secondary years. https://gov.uk/government/news/curriculum-overhaul-to-re-engage-pupils-in-vital-early-secondary-years

[99] UNESCO (September 2026). Education ministers call for education to remain a common good in the age of AI. https://www.unesco.org/en/articles/education-ministers-call-education-remain-common-good-age-ai-unescos-digital-learning-week

[100] Aston, K. et al. (24 June 2026). Evaluation of Maths-Whizz. EEF/NFER. https://www.nfer.ac.uk/publications/evaluation-of-whizz-education-maths-whizz-intelligent-tutoring-programme/

[101] Eedi (29 October 2026). Full findings from AI tutor trial. https://www.eedi.com/news/eedi-publishes-full-findings-from-its-most-recent-ai-tutor-trial

[102] Liu, J. et al. (October 2026). The Effects of Course-Integrated AI Tutoring on Student Performance and Engagement. EdWorkingPaper 26-1598. https://doi.org/10.26300/y3f8-vh05

References

[103] Digital Poverty Alliance (July 2026). Smartphones Aren't Enough: Every Child Needs a Laptop. https://digitalpovertyalliance.org/news-updates/dpa-launches-schools-census-report-on-digital-access-in-education/

[104] Internet Matters (4 June 2026). Deepening existing divides: AI and household income. https://www.internetmatters.org/?p=61576

[105] Fortune (29 October 2025). Character.AI bans teens from talking to its chatbots. https://fortune.com/2025/10/29/character-ai-ban-children-teens-chatbots-regulatory-pressure-age-verification-online-harms

[106] HM Government (2026). Fact sheet: new rules to protect children online. https://www.gov.uk/government/publications/fact-sheet-new-rules-to-protect-children-online/fact-sheet-new-rules-to-protect-children-online

[107] Education Endowment Foundation (2026). Aila Teacher Choices trial. https://educationendowmentfoundation.org.uk/projects-and-evaluation/projects/aila-teacher-choices-trial

[108] Royal Society (2026). Written evidence AIE0215. https://committees.parliament.uk/writtenevidence/166561/html/

[109] OECD (8 September 2026). PISA 2025 Results, Volume I. https://www.oecd.org/en/publications/pisa-2025-results-volume-i_73451bc5-en/full-report/executive-summary_3701b0ef.html

[110] Clark, C., Picton, I. and Arif, A. (2026). Children and young people's reading in 2026. National Literacy Trust. https://literacytrust.org.uk/research-services/research-reports/children-and-young-peoples-reading-in-2026/

[111] Department for Education (2026). Keeping children safe in education 2026. https://www.gov.uk/government/publications/keeping-children-safe-in-education--2

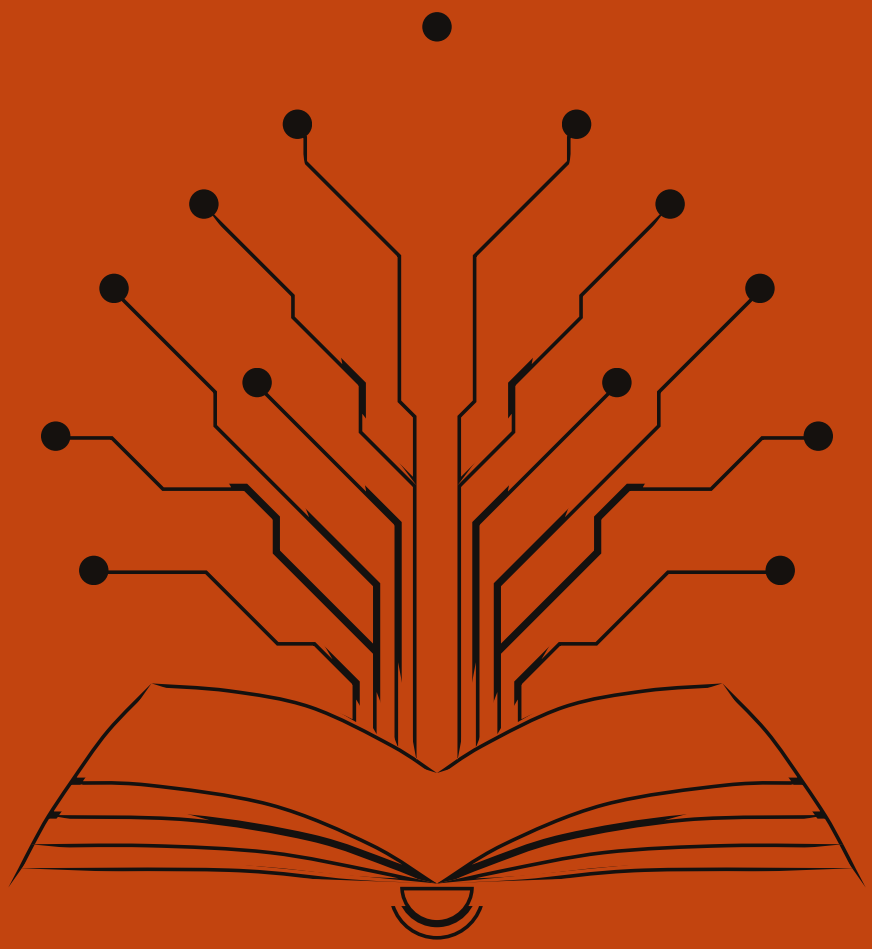
[112] HM Government (5 December 2025). Our Children, Our Future: Tackling Child Poverty. https://www.gov.uk/government/publications/our-children-our-future-tackling-child-poverty

[113] Department for Education (24 September 2026). EdTech Testbed Programme: guidance. https://www.gov.uk/government/publications/edtech-testbed-programme/edtech-testbed-programme-guidance

[114] Schools Week (2026). Google no longer helping government develop AI tutoring tools for schools. https://schoolsweek.co.uk/google-no-longer-helping-government-develop-ai-tutoring-tools-for-schools

[115] Department for Education (15 October 2026). Education Secretary speech at CST Conference 2026. https://www.gov.uk/government/speeches/education-secretary-speech-at-cst-conference-2026

[116] GOV.UK, 'Social media to be banned for under-16s in landmark government move to give kids their childhood back' (DSIT, 15 June 2026) https://www.gov.uk/government/news/social-media-to-be-banned-for-under-16s-in-landmark-government-move-to-givekids-their-childhood-back.

[117] Department for Science, Innovation and Technology, Growing up in the online world: government response (DSIT, CP 1643, July 2026) https://www.gov.uk/government/consultations/growing-up-in-the-online-world-a-national-consultation/outcome/growing-up-in-the-online-world-government-response-july-2026.

[118] GOV.UK, 'Entry-level jobs support, AI bootcamps and tech training as government supports young people into the jobs of the future' (DSIT and DWP, 6 June 2026) https://www.gov.uk/government/news/entry-level-jobs-support-ai-bootcamps-and-tech-training-as-government-supports-young-people-into-the-jobs-of-the-future.