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Ormiston Academies Trust
ACHIEVING MORE TOGETHER

Evidence Summary – smartphone use [updated August 2025]

The number of smartphone users across the world now tops 4.8 billion (Turner, 2024). Research suggests children are some of the heaviest users of digital devices. For example, one study reports that children aged 8-12 spend approximately 5.5 hours a day using a screen and children aged 13-18 spend nearly 8.5 hours using devices (Rideout et al, 2022). 35% of 13-14 year olds and 52% of 15-17 year olds say they are on line 'constantly' (PEW Research Centre, 2022).

The body of evidence about the effects of device and social media use on things like learning and mental health is relatively nascent, and one of the key debates about existing literature is whether the evidence demonstrates correlation or causation. Odgers (2024) and Warner (2024) suggest it is unclear whether device use is to blame for the rises in mental health, and that the focus on phones could be distracting us from other causes of mental health and poor psychological wellbeing. Other researchers have responded to these views to argue that the evidence does suggest causation (i.e. that phones do impact negatively upon children in a range of ways). A growing body of research seems to suggest that the influence of digital devices – in particular smart phones and social media – may be problematic for children.

This paper summarises research into the following three categories and uses this evidence in support of a case for making schools phone free environments.

- Learning and academic performance
- Mental health and wellbeing
- The impact of mobile phone bans in school

What do we mean by phone-free environments?
One of the challenges of many of the research into the impact of mobile phones is that they either don't adequately describe what they mean by phone-free environments, or as is sometimes the case, the use of the word 'ban'. The OECD report that 'even in schools with phone bans, 29% of students reported using smartphones several times a day'. At OAT we use the following levels (adapted from Haidt) to define possible approaches:
Level 0: No restrictions on phones
Level 1: Students can take their phones out during class, but only to use them for class purposes. They are free to use them at break times.

Level 2: Students can hold onto their phones but are not allowed to take them out of their bags at all during the school day.
Level 3: Lockable pouches. Students are required to put their phone into their own personal pouch when they arrive at school, which is then locked with a magnetic pin. Students keep the pouch with them but cannot unlock it until the end of the school day.
Level 4: Students lock their phones into a secure unit when they arrive at school and get access to the phone lockers again only when they leave school.

*evidence suggests that only 13% of schools in England and Wales actually separate students from their phones for the duration of the school day, i.e. levels 3 and 4. (Policy Exchange, 2024).

Part 1: Impact upon learning and academic performance:

The study of the impact of mobile phones or devices is extremely complex to unpick from wider societal impacts. However, it is important to note that interrogation of their impact takes place against a backdrop of concern relating to international pupil performance. The World Economic Forum reports on a pattern of declining PISA test results in English, maths and science. The OECD write that: 'In mathematics, performance remained close to the 2003 level through all assessments up to 2018, then dropped sharply between 2018 and 2022. In reading and science, the strongest performance was observed in 2012 and 2009, respectively, then the trajectory turned negative: the causes of this decade-long decline have deeper origins that go beyond the COVID-19 shock'. The data prompted a series of recommendations for schools, of which number 4 is to 'limit the distractions caused by using digital devices in class' (World Economic Forum, 2023).

The OECD suggest that mobile phones may be at least in part responsible for the declining PISA scores outlined above. Their research finds that pupils who spend less than one hour of "leisure" time on digital devices a day at school perform better in math than those whose do so for five-seven hours a day. This performance gap holds even after adjusting for socioeconomic factors. The gap they identify is about four times that of America's pandemic-era learning loss. The research also highlights that screens also seem to create a general distraction throughout school, even for students who aren't looking at them. Students who reported feeling distracted by their classmates' digital habits scored lower in maths. Finally, the report also finds that nearly half of students describe feeling "nervous" or "anxious" when they didn't have their phones or devices near them and that this phone anxiety was negatively correlated with math scores.
In sum, the OECD writes, 'students who spend more time staring at their phone do worse in school, distract other students around them, and feel worse about their life' (OECD, 2023).

Studies into the impact of mobile phones lean towards – but are by no means exclusively negative about – device-based use having a negative effect on pupil performance and outcomes. For example:

- A study (Kuznekoff and Titsworth, 2013) investigating the impact of mobile phones (during a class lecture) on student learning found that there were differences in the behaviour and performance of students depending on whether they did or did not use a mobile phone. Participants in three study groups (low-distraction, high-distraction and a control group) watched, took notes and then took two assessments on a video lecture. Students who were not using their mobile phones wrote down 62% more information in their notes, took more detailed notes, were able to recall more detailed information from the lecture, and scored 1.5 grades higher on a test compared to students who were actively using their mobile phones.
- Another study (Han and Jeong Yi, 2018) found that the academic performance of older students (of college age) was positively influenced by smartphones, although the authors caution that the way the phones (as learning tools) were introduced and managed as was crucial to this impact.
- A study (Liu et al, 2020) based on survey and academic data from more than 11,000 students in China found that pupils who used a mobile phone for ≥2 hours/day on weekdays and ≥5 hours/day on weekends were significantly more likely to report poor overall academic performance and scored significantly lower on mathematics and English achievement tests.
- A study from Brazil (Felisoni and Godoi, 2018) found that, for every 100 min spent using a device (per day), a pupil dropped 6.3 points in the school's ranking of pupils. When phone usage took place during class time only, as opposed to during free time and weekends, the effect was almost twice as high. The authors describe the magnitude of the effect found as 'alarming', suggesting it provides evidence of the 'potential harm of excessive smartphone use'.
- A meta-analysis undertaken using studies conducted over a ten-year period also finds that use of phones has a negative impact on pupil attainment (Kates et al, 2018).
- A study conducted in 2024 (Dorris et al) on primary pupils found that mobile device-based literacy and numeracy interventions had a significant, positive impact in short term attainment.
- A 2019 study (Glass & Kang) found that, whilst access to devices (for a non-academic purpose) didn't negatively affect student performance within a lesson (as measured by quiz questions) it did lead to 'reduced long-term retention of the classroom lecture, which impaired subsequent unit exam and final exam performance'.
- Thornton (2014) reports that the 'mere presence' of a phone, even if is not being used, can still 'serve as a distractor and result in attentional and performance deficits.' The deficits noticed in the study were not present during simple tasks but appeared when participants were asked to engage in more complex tasks – exactly the sorts of tasks we want pupils to be engaging in on a daily basis. The author reasons that, because a smartphone represents 'the potential for contact with a very

broad social and informational network' the phone becomes a conditioned stimulus 'capable of creating a distraction from the immediate task or situation at hand'. In short, the presence of a phone acts to deplete the available cognitive resource.

- Results from two further studies corroborate the finding that simply the presence of a smartphone can negatively affect cognitive function, specifically, it can affect memory and recall (Tanil and Yong, 2020) and general task performance. In the second study, it was only when these devices were turned on (in silent mode, high availability) and not when they were turned off (low availability) that they had a negative effect. This effect was more significant for individuals with 'positive urgency' – an emotion related impulsivity trait, reflecting other findings which show that some pupils may be more susceptible to the effects of mobile phones than others.
- A recent investigation conducted by Policy Exchange (2024) found 'that schools with an effective ban were more than twice as likely to be rated Outstanding as the national average'. It also found that pupils 'at schools with an effective ban achieved GCSE results that were 1 – 2 grades higher (equivalent to a Progress 8 differential of 0.13 – 0.25) compared to children at schools with laxer policies' and that 'this was despite the fact that schools with effective bans had a higher proportion of pupils eligible for Free School Meals than schools with less restrictive policies'.
- Crucially, causal evidence is building: a recent randomised control trial finds evidence linking smart-phone ban with improved outcomes. They find the impact to be approximately 1-2 month's progress but this impact is higher for low prior attaining pupils. but this impact may compound over time). The authors write that 'Removing Phones from Classrooms Improves Academic Performance' Sungu (2025). Removing phones has 0.086 SD impact (1 month) rising to 2 month for lower prior attaining pupils.

Without conclusive evidence that the impact of devices is positive, we should consider the use of devices in classrooms extremely carefully, not simply because they have the potential to impact positively on pupil performance and long-term learning.

<u>Part 2: Impact upon mental health and wellbeing outcomes:</u>

Whilst the question of causation and correlation (between phone/social media use and mental health) still rages, what is clear is the decline in mental health amongst the adult population. The number of individuals aged 8-25 with a probably mental disorder has risen from just over 1 in 10 in 2017 to 1 in 5 in 2023. A recent article in British Journal of Clinical Psychology suggests that 34% of adolescents globally, aged 10-19, are at risk of developing clinical depression. The exact role devices and social media play in this situation is hard to tease apart and certainly further research into the relationship between smart phone use and mental health

and wellbeing is crucial. However, research into the impact of devices and social media suggests they may have a negative impact. For example:

- Evidence from one study (Dwyer, 2018) found that smartphone use acts as a distractor during social interactions, reducing both the likelihood that individuals will engage in interaction and the enjoyment they get from it when they do.
- A meta-analysis of 25 observational studies published between 2011 and 2019 found 'suggestive but limited evidence that greater use of MP/WD [mobile phones and wireless devices] may be associated with poorer mental health in children and adolescents' (Girela-Serrano et al, 2024). The relationship between the use of devices and the impact on children's wellbeing and mental health is described as complex and depends on a number of different factors. For example, interactive screen time (e.g. using a computer) has been found to be more detrimental to sleep than passive screen (e.g. watching television). The paper reports on a new construct: 'problematic smart-phone use' (PSU) which has been categorised similarly to criteria used to describe substance abuse. 'Problematic smartphone usage' is thought to affect approximately one in every four children and young people (Sohn et al, 2019). Such use has been "associated with difficulties in cognitive-emotion regulation, impulsivity, impaired cognitive function, addiction to social networking, shyness and low self-esteem" (Sohn et al, 2019).
- One study (Twenge, 2018) reported that moderate use of mobile phones (which they define as 4 hours per day) was associated with lower psychological well-being. Individuals who spent more than 7 hours per day were less curiosity, self-control, and emotional stability and more than twice as likely to:
    - Have been diagnosed with depression or anxiety
    - Have been treated by a mental health professional
    - Have taken medication for behavioural issues in the last 12 months

- A study (Abrahamsson, 2024) suggests that banning mobile phones could have positive effects on the psychological health outcomes and academic outcomes of girls, especially girls from lower socio-economic backgrounds. The study also finds banning phones leads to a reduction in bullying of both boys and girls. Research suggests that the biggest negative impact of the use of smart phones and social media is on girls, who have been found to be more at risk of concentration problems (Panayiotou et al, 2023) and lower psychological wellbeing (Twenge and Martin, 2020).
- Another study (Craig et al, 2021) examines the effect of social media on minority groups, specifically LGBTQ+, finding that 'social media … helps stigmatized youth maintain critical access

to emotional support, develop their identities, find important information, and be entertained'; it might be that different groups of pupils stand to gain more from access to social media.

- It could be that the impact of mobile phones is to some extent mediated by their effect on other aspects of a child's life. For example, Al-Amri et al (2023) find that children addicted to smart phones (as assessed by the Smartphone Addiction Scale-Short Version (SAS-SV) (Kwon et al., 2013a)) had significantly lower physical activity levels than the addicted children, suggesting that 'smartphone addiction reduced physical activity'. Whether this reflects causation or correlation isn't clear, but given the beneficial impact of physical activity, anything that serves to reduce it is problematic.
- Concerningly, evidence suggests excessive use of digital devices may negatively affect brain function and cognitive development (Eirich et al, 2022), especially for pupils with ADHD, which evidence suggests is mediated by physical changes to the microstructure of white matter in the brain (Hutton et al, 2020). These results have led Lin et al (2024) to conclude that 'screen time has a direct adverse impact on early childhood brain development'.
- Data from the Office for National Statistics suggests that nearly 20% of children aged 10–15 have experienced bullying behaviour online, three-quarters of which occurred during school time (ONS, 2024).

As with the impact of devices on performance and attainment, ascertaining causation (over correlation) is problematic. One recent study attempted to overcome this by assigning participants into a month-long intervention in which they either did, or did not have access to mobile internet (they could still use their phone to text and call and use their internet via a different device, e.g. desk-base computer). The authors found that 91% of participants improved in at least one of the following categories: mental health, subjective well-being, and objectively measured ability to sustain attention, arguing their results 'provide causal evidence that blocking mobile internet can improve important psychological outcomes', and suggest that 'constant connection to the internet may be detrimental to time use, cognitive functioning, and well-being' (Castelo, et al, 2025).

Part 3: The effects of a mobile phone ban:

One study (Beland and Murphy, 2015) which surveyed schools in four English cities (Birmingham, Leicester, London and Manchester) found that 'student performance in high stakes exams significantly increases post ban'. Specifically, a ban on mobile phones in schools increased students' GCSE scores. Crucially, the impact of the ban was especially positive for lower-achieving students. The positive effect the study finds (i.e. on pupil test results) 'is driven by the most disadvantaged and underachieving pupils whilst students in the top quartile are neither positively nor negatively affected by a phone ban' suggesting that low-achieving

students are more likely to be distracted by the presence of mobile phones, whereas higher achieving pupils can maintain focus in spite of the presence of phones. The authors conclude that a mobile phone ban 'can be a low-cost policy to reduce educational inequalities' but only if the ban is carefully and widely complied with.

In contrast, another study conducted in Sweden (Kessel et al, 2020) finds no additional gains (in 9th grade pupils) from banning phones. The authors of the research suggest that this may be because schools in Sweden have had a long tradition of integrating educational technology into the classroom (and as such have developed effective strategies to manage phone use). Relatedly, a recent study by Goodyear et al (2023) found that there was no evidence that 'restrictive school policies (i.e. schools which have a ban in place) are associated with overall phone and social media use or better mental wellbeing in adolescents'. This study has, however, been the subject of significant criticism (Haidt et al., 2025). The terms restrictive and dismissive were, in reality, quite blurred; for example in only four of the twenty schools that had restrictive policies were phones actually inaccessible during the day; hours of phone use was collected via self-report (notoriously unreliable) and the academic effects were calculated using teacher judgements (a fairly subjective measure).

Conclusion:

The evidence base about device and social media use is relatively nascent and developing all the time. On balance, research suggests there may be some problematic implications for those who use them, especially for children and young people. The evidence is not yet robust enough to convince everyone (although some are convinced) that the impact of phones on negative outcomes is causal rather than correlational and it is clear there is more work to do to understand in what circumstances device and social media use is most harmful. For example, evidence points to differences in the way they affect boys/girls, different ages, different cognitive styles, different socio-economic status and depending on how the device is used.

Evidence shows that phones compete for the limited attention humans have, they can distract us from the task in hand. They enable anonymity and distorted social interaction, enable access to potentially harmful content. Most critically, they seem to have more of a negative effect on pupils from lower socio-economic backgrounds. The most powerful argument for making schools phone free is one that Haidt (2024) and Christodoulou (2024) have both made. Haidt explains by asking 'suppose everyone who thinks that social media has harmed their children is wrong?....that everyone has simple fallen for another "moral panic"'. If this is true, he suggests, very little would come of it. Children would spend more time playing and talking with each other and more time listening to their teacher. If, however, those who think social media is harmful are correct, he writes: 'the cost of additional suffering and learning loss is almost incalculable'.

Indeed, one upside of limiting mobile use is the amount of time it frees up for children to enjoy other pursuits, particularly, physical activity. One study of 25,000 children in the US found that children who spent more than 5 hours using a device were 43% more likely to be obese (Kenney et al, 2016).

Usually, Haidt explains, especially when children are concerned, we don't wait for evidence of harm to be certain before we intervene and, in this instance, there is enough evidence to suggest that implementing restrictions when it comes to mobile phone and social media access is likely to be a positive measure for pupil . Indeed, a very recent study finds that 'receiving a smartphone before age 13 is associated with poorer mind health outcomes in young adulthood, particularly among females, including suicidal thoughts, detachment from reality, poorer emotional regulation, and diminished self-worth' and because of the extent of the risk smartphone and social media access presents, calls for adoption of the 'precautionary principle' specifically, 'the implementation of a developmentally appropriate, society-wide policy approach, similar to those regulating access to alcohol and tobacco, that restricts smartphone and social media access for children under 13, mandates digital literacy education, and enforces corporate accountability' (Thiagarajan et al, 2025). Relatedly, although about ed-tech more broadly, UNESCO call for greater vigilance about the ways that digital tools are reshaping education. They suggest that technology can be a 'powerful enabler of inclusive, equitable and high-quality education' but only in the right hands – those with a deep understanding of pedagogy and only when considered in relation to what we want education to achieve.

Whilst it is clear that more evidence into the specific nuances that might apply to use of phones, social media, gaming and screen time generally, on balance, experts find in favour of (oftentimes significantly) greater controls around phone and social media use. Whilst creating phone-free environments is a small piece of a bigger puzzle, the evidence outlined above provides strong rationale for schools and trusts to adopt strict phone-free environments.

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