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TOWARDS A NEW NORMAL: THE EVOLUTION OF DIGITAL EDUCATION STRATEGY IN ENGLISH SECONDARY SCHOOLS AMIDST COVID-19

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Article Info

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Abstract

This article examines the impact of the Covid-19 pandemic on strategic planning for digital education in English secondary schools. It draws on the strategy as learning literature to explore whether schools have changed their strategic digital planning as a result of the pandemic and evaluates the impact of the pandemic on digital education in high socio-economic deprived areas. The study adopts a strategy as learning approach to examine qualitative data from 50 interviews with school leaders and chief executive officers (CEOs). The article provides insights into the challenges and opportunities that emerged during the pandemic and suggests that digital strategy-making is a vital aspect of strategic leadership in secondary schools. The study identifies eight key communalities of schools that have succeeded in sustainable digital integration, including embedding digital learning into core curricula, establishing cooperation with external partners to raise funding, and improving digital and pedagogical knowledge of staff. In addition, the article proposes twelve key areas of focus that emerged within the empirical work, which aim to provide a more comprehensive picture of what factors are holding schools back from the development of digital learning during and post-pandemic. This study contributes to the literature on digital education and provides insights to policymakers, educators and other stakeholders.

INTRODUCTION

Since the Covid-19 pandemic struck, schools across the world, have closed, either periodically or over a considerable time. According to the Organization for Economic Co-operation and Development (OECD; 2021), globally, over 1.2 billion children over this period have been out of the classroom. As a result, schools moved part or all of their curriculum online, teaching remotely via digital platforms.

Before Covid-19 there was already an increasing trend towards the adoption of digital learning in schools, with global EdTech investments reaching 18.66 billion US dollars by November 2020 (Insider, 2021), and the overall market for online education projected to reach 350 billion US dollars by 2025. Since Covid-19, the uptake of

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online products and platforms has surged (OECD, 2021). From mid-February 2020, after the Chinese government instructed a quarter of a billion full-time students to resume their studies through online platforms, the world witnessed the greatest online movement in the history of education with approximately 730,000, or 81% of K–12 students, attending classes via the Tencent K–12 Online School in Wuhan (OECD, 2021).

Many schools have and are forming partnerships with digital providers, both in the UK and internationally. Media organisations such as the British Broadcasting Corporation (BBC), have also contributed to virtual learning; for example, Bitesize Daily, a service launched on 20 April 2020 developed 14 weeks of curriculum-based learning for UK learners, with celebrities teaching some of the content (BBC, 2020).

Yet although the pandemic has undoubtably provided opportunities for schools and tech companies, it has also revealed the realities of the impact of poverty and socioeconomic deprivation (SED) on the ability of learners to take up digital opportunities, for example, according to the OECD report (2021) on digital learning during the pandemic, in Brazil, Mexico and Panama, fewer than 20% of students in disadvantaged schools had access to an digital learning support platform, whilst almost 60% or more students in advantaged schools in those countries had access (OECD, 2021, p: 2).

For some, the pandemic has disrupted education systems that, in their view, were starting to lose currency anyway. In his book, academic Yuval Noah Harari outlines how schools continue to focus on traditional academic skills and rote learning, rather than on skills such as critical thinking and adaptability that are key to the future resolution of complex societal problems (Harari, 2018). Research emerging from the pandemic reflects the mixed feelings of school leaders: some feel that the pandemic has instigated a rush to *deliver*, compromising the quality of digital practices and offerings. For others, Covid-19 provided a unique opportunity for innovation, free from the normal constraints under which schools often labour, supporting the idea that major world events are often an inflection point for rapid innovation. While research is emerging about the effects of the pandemic restrictions on pupils and staff in relation to key issues such as mental health and educational attainment, very little is known about the impact on school leaders' strategic planning processes (Jia et al., 2020). As the first national study to explore the impact on school leaders' digital strategy, this UK Research and Innovation-funded paper offers an important and original contribution to knowledge, by asking: at what stage of digital strategy planning were English secondary schools before, during and within the post-Covid-19 period and what insights on this emerged from school leaders? Did this differ for schools in areas of high SED and what insights from headteachers emerged which relate to this? And finally, what does the data tell us about investigating digital strategy in the future?

Leadership of digital learning in England

While integrating digital learning into classroom practice has been on the policy agenda in the UK since the early 1980s, it was not until the mid-1990s with the emergence of the concept of a global information society that it gained momentum. (Younie, 2006). The first national assessment of the impact of ICT was conducted with the Impact Report in 1993. This report highlighted a need for in-service training in ICT, as well as other problems, which were reiterated by the Stevenson report (Stevenson, 1997). This independent inquiry into the ‘issues and opportunities’ with ICT concluded that, ‘the state of ICT in UK schools was primitive and it was a public priority to increase its use’. Having identified no coordinated strategy to develop ICT in schools, the report urged government to develop a cohesive national strategy. Consequently, the new Labour government of 1997 launched the UK's first national ICT strategy, with the flagship initiatives of the National Grid for Learning and the New Opportunities Fund. Yet 22 years on, despite billions of pounds' worth of funding, schools are still struggling with the five key areas outlined as problematic when the the ICT in Schools Programme was established: management, funding, technology procurement, ICT training and impact on pedagogy (Younie, 2006,p,385). In short, the full integration of digital learning into secondary schools in England has not lived up to the early initiatives. One reason for this is that some teachers and headteachers are not convinced that digital learning leads to improvement

of learning outcomes for all students—a fact supported by the effects of digital poverty on inclusion and equity, brought into stark relief by research carried out in schools during lockdown (Crick et al., 2021; Rouleson et al., 2021). According to a meta-analysis of research carried out in 2012, the authors concluded that:

> Overall, the research evidence over the last forty years about the impact of digital technologies on learning consistently identifies positive benefits. […] However a causal link cannot be inferred from this kind of research. It seems probable that more effective schools and teachers are more likely to use digital technologies more effectively than other schools. […] We do not know if it is the use of technology that is making the difference. (Higgins et al., 2012, p. 3)

Because it has been so difficult to state whether digital learning improves learning outcomes, it is perhaps unsurprising that some leaders have been cautious in embedding it into their plans for the future. However, what does emerge clearly from the literature is that in order for it to be successfully integrated into schools, it requires the support and vision of school leaders to create and sustain a culture of digital learning (Eickelmann, 2011). In order for this to happen, a strategy for digital integration is required (Brooks & McCormack, 2020; D'Mello, 2021).

Eickelmann (2011) identifies eight communalities of schools that have succeeded in sustainable digital integration:

1. Their leaders possess strong leadership skills and a sound understanding of the potential of ICT to enhance learning.
2. They have established cooperation with external partners to raising funding.
3. They realise intra-school cooperation which is integrated into school concepts and culture. In this way, the digital and pedagogical knowledge of staff has been improved.
4. Their leaders have developed concepts to cope with new digital trends, for example, the implementation of new staff development schemes.
5. They use their radius of operation on the process level to deal with problems and challenges regarding digital integration and do not externalise problems.
6. They disseminate the idea of digital learning to improve learning outcomes throughout the school.
7. They link digital learning to existing and prospective pedagogical aims, and have designed an infrastructure with these in mind.
8. They integrate digital learning by embedding it into core curricula (Eickelmann, 2011, p. 93).

In other words, there needs to be an effective digital strategy in place in order for digital integration to occur. Strategic leadership is a key dimension of any leadership activity and there has been a great deal written about what strategic leaders do, and the characteristics that strategic leaders display (Davies & Davies, 2006). Davies and Davies, writing in 2006, describe five key activities of strategic leaders in schools: setting a vision; ensuring strategy is reviewed regularly in light of external/internal drivers; taking advice from staff and empowering them; adopting a learning what works approach; and thinking ahead/strategically. The above suggests a strategy as learning approach, which we will discuss later in the paper. First we turn to the events during the pandemic and their effect on schools.

Background and the effects of the pandemic restrictions

In England, lockdowns began in March 2020 and continued until March 2021 (although not continuously). Periods of notice for lockdown were short, as the Institute for Governance, analysis reports (Table 1).

During this period school leaders were placed under considerable pressure to rapidly innovate and prepare their staff for teaching online, often with little notice (Greenhow et al., 2021). Pressures on schools during the period 2020–21 were compounded by the introduction of regional lockdowns, based on the number of cases of Covid-19 in that region. This led to confusion and public perceptions of government bias towards more deprived towns

and cities (Newton, 2020), leading to a lack of public compliance with regulation, with schools and school leaders often bearing the brunt of public frustration with government (Newton, 2020).

Several studies from the UK have identified some of the challenges and opportunities that have arisen during this time; for example, a study by Beauchamp et al. interviewed 12 school leaders, across the UK on schools' use of technology (Beauchamp et al., 2021). Their study revealed that collegial leadership was vital in engendering what they term, 'a form of usness' (Haslam et al., 2020), key to the resilience of leaders and followers (Reicher et al., 2005). This was achieved by, for example, innovative use of technologies, such as video logs (Vlogs) and intensive communication with students, teachers and families. Beauchamp et al. (2021) argue that the study reflects a wider distribution of leadership, which in itself, helped deliver community leadership (p. 13). They also state that, 'the values, attitudes and moral imperatives of heads, invoked a strong sense of emotional leadership of all members of the school community' (p. 14). However, the study also reports some loss of identity for leaders, those whose identity was strongly linked to their physical presence within the school. Research from the US, such as that done by Varela and Fedynich (2020), examines how the pandemic impacted school leadership in K–12 schools (25 principals), revealing that '97% of respondents agree/strongly agree that the Covid-19 pandemic will change how they will lead their campus' (Varela & Fedynich, 2020, p. 6). A recent systematic literature review of education during the pandemic at the K–12 level (Bond, 2021) reveals that leadership is a key influencing factor in the future adoption of digital learning. Whilst these studies reflect strongly how inequities of hardware provision and parental support negatively impacted on learners, there is also an indication that practices adopted during Covid are here to stay. Moreover, many leaders are now in a position to be built upon to create new ways of learning and development, for both learners and their teachers.

However, in the UK, a report carried out in 2021 by the Department for Education (Gibson, 2021) revealed that just 54% of secondary schools have a digital strategy in place, and that academies were more likely than local authority-maintained schools to have such a strategy (34%). 'Schools in London (52%) and the North East (54%) were most likely to have a strategy in place, whilst schools in the South East (34%), South West (36%) and East Midlands (38%) were least likely' (p. 76). The same report states that 84% of secondary schools indicated that their school had increased or upgraded technology in the previous 12 months and 64% of these heads indicated that the upgrade was due to the pandemic. A minority of just 7% stated that they had already planned these changes before the pandemic.

This, combined with the literature referred to earlier (Davies & Davies, 2006; Eickelmann, 2011), strongly supports the idea that digital strategy making, as described earlier, is indeed a learning activity that can be explored through narrative methods. This also supports our previous empirical work on the subject (Baxer & Floyd, 2019; Baxter & Cornforth, 2019; Baxter & John, 2021).

Building on these insights, this study adopts a strategy as learning approach to examine data from 50 qualitative interviews with school leaders and chief executive officers (CEOs) in English secondary schools and multi-academy trust (MAT) groups of schools led and governed by a central senior leadership team and trustees (Baxer & Floyd, 2019) to gauge their plans for digital innovation before, during and after July 2021, when the UK Government lifted restrictions. In the following section we explain our theoretical framework.

TA B L E 1 National lockdown periods in England (Newton, 2020)

Date	Announcement
2020	
23 March	Prime Minister (PM) Johnson announces first lockdown
25 March	Coronavirus Act 2020 gains royal assent
26 March	National Lockdown England

16 April	Lockdown extended by 3 weeks
10 May	PM announces conditional plan for lifting lockdown
1 June	Phased re-opening of schools in England
29 June	Local lockdowns implemented, beginning with Leicester
14 September	Rule of six, indoor and outdoor social gatherings above six banned in England
22 September	New restrictions announced including return to working from home and a 10 p.m. curfew for hospitality
14 October	Three-tier system of Covid-19 restrictions England.
31 October	PM announces second national lockdown
5 November	Second lockdown begins in England
2 December	Second lockdown in England ends with return to strict three-tier system of lockdown
19 December	Tougher restrictions for London and SE England announced by PM
2021 4 January	PM announces children to return to school after Christmas break
6 January	England enters third national lockdown
8 March	Return to school for children in England (primary and secondary)

Theoretical framework

Strategy as learning

There are many differing understandings of what is meant by online learning, both in secondary education and in higher education. In order to clarify what we mean by the term, we adopt the OECD's definition of it as, 'digital learning' using digital resources in order to effect learning (OECD, 2021). However, we acknowledge the tensions around this term and the arguments for calling it 'emergency remote learning', separating this from the kind of digital learning that is carefully planned and designed (Hodges et al., 2020).

Our previous work supports strategy as a learning activity, (Baxer & Floyd, 2019; Baxter, 2020; Baxter et al., 2021a; 2019b), supporting the idea of strategy as an emergent phenomenon, while also emphasising the sensemaking, practical coping aspects that appear throughout the work of Chia and Holt (2006). It aligns with Mintzberg et al. (2005) in recognising that forming and executing strategy are interlinked activities. In this respect it supports the idea that strategic thinking is part of strategy formulation and implementation, aligning with the strategy as practice approach (Goldman & Casey, 2010). This way of viewing strategy reconciles both planning and strategic thinking and homogenises the literatures of strategy and learning and cognition (Goldman & Casey, 2010, 172). This approach is also supported by the research cited above investigating the ways in which strategic leaders prioritise their own strategic thinking and learning (Davies & Davies, 2006). This involves creating schema or mental frameworks to aid their strategic planning, as summed up by a quote from a head:

I am working on my own model of strategic change. … through a process which
I call awakening, articulation and alignment. (Davies & Davies, 2006, p. 133)

This quote also sums up the metacognitive elements of strategy as learning and supports our previous empirical work in this area (Baxter et al., 2021), which builds on the work of Pintrich (2002), in identifying three variables engendered by a strategy as learning approach: (1) the person variable—the individual acknowledges that strategy is a learning activity for them; (2) the task variable—the individual understands the task and the cognitive load this will place upon them; and (3) the strategy variable—the individual draws on a toolkit of solutions for resolving strategic issues (Baxter & John, 2021).

A four-stage approach

There are many models that examine the pedagogic use of digital technology in schools, for example, Koehler & Mishra (2005), Puntedura (2006) and Sandholz et al. (1997), but our focus relates not only to teacher use of digital technology, although this is part of strategic planning, but rather focuses on digital strategy innovation and implementation. In this sense we also draw on the work of Brent Davis' work on re-thinking strategic leadership in schools, along with the work of international research into leadership for technology integration, (Dexter & Richardson, 2020; Kozloski, 2006; Leonard & Leonard, 2006). In so doing we identify four key stages within a school's planning of digital technology; these are described and illustrated in Figure 2.

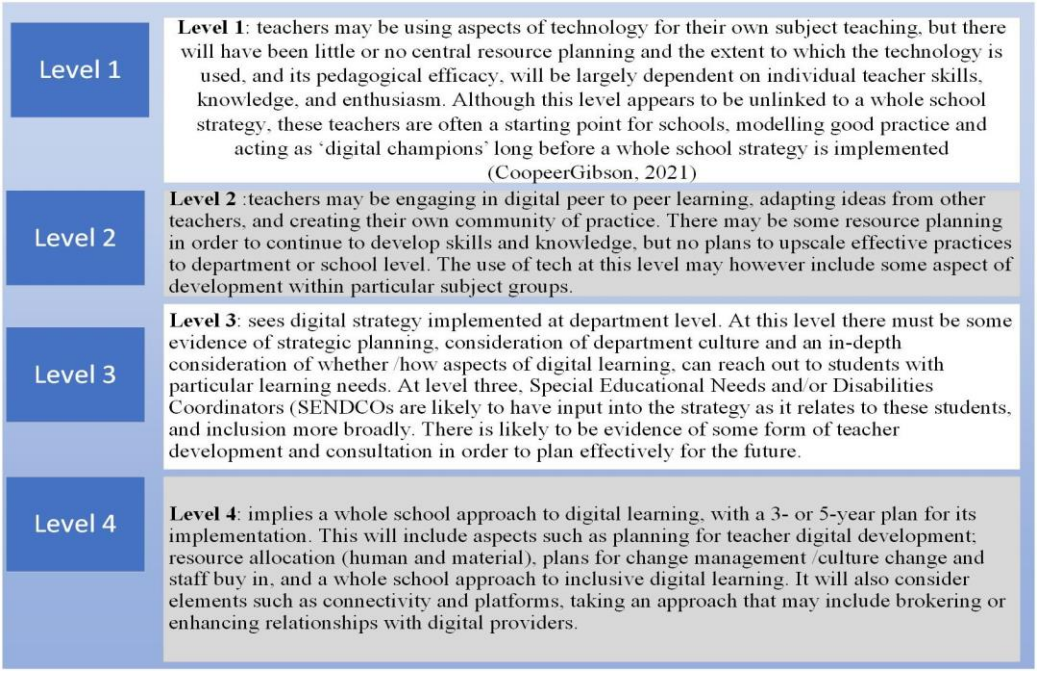
It is important to emphasise that the stages within our framework are not fixed; this aligns with the strategy as learning approach that we have adopted, but for practical reasons, using our data, we categorise organisations as being at a particular level owing to the participants' (headteachers and CEOs) descriptions. We would highlight that this captures strategic intention, but as with any model of classification, risks leaving out more nuanced activity; for example, effective teacher users of technology, within their own subject area, may be having a considerable impact on other teachers' use of technology, through modelling good practices and enthusiastically embracing technology that enhances the student learning experience, but this may not feature in strategic planning. For this reason we offer a more nuanced

Table 21: Type of school digital technology strategy

	School phase		School type	
	Primary	Secondary	Academies	Local authority maintained
Base	272	118	197	193
School-specific	59%	53%	40%	77%
Trust-wide	26%	46%	59%	3%
Local authority	15%	1%	1%	20%

Source: Headteacher survey. Base: all with an EdTech strategy.

F I G U R E 1 Type of school digital technology strategy taken from Gibson (2021, p. 77). [Colour figure can be viewed at wileyonlinelibrary.com]



F I G U R E 2 Stages of digital planning subcoding framework. [Colour figure can be viewed at wileyonlinelibrary.com]

discussion, drawing on qualitative data, in our Findings and Discussion section. se tech for their own student needs. Largely dependent on individual teacher.

METHODS

Sample and design

The data on which this article is based is drawn from a larger, two-stage mixed-methods study exploring headteachers' experiences of leading digital learning and strategy before, during and after Covid-19 restrictions in England. This included an initial online survey in stage one followed by 50 semi-structured in-depth interviews in stage two. The data from stage one will be reported elsewhere.

It should be noted that we refer to *organisations* throughout the paper, when we wish to capture results from individual schools and MATs. The sample for the interviews is illustrated in Table 2.

In order to provide a full picture our interviews draw from 50 schools, 40% of which are located in areas of high SED chosen owing to their above average number of students receiving free school meals. The other 60% of the sample derives from schools with average or below average on the free school meals indicator. This allowed us to examine whether there were any differences between schools based on socioeconomic deprivation. Participants self-selected and were reached through various channels: through our three school support project partners (Schools North East, Derbyshire Teaching Alliance and The Key for

TA B L E 2 Sample

Type of organisation	Role	Number	Number of schools represented	Abbreviation used throughout
Multi-academy trust (MAT)	Chief executive officer	4	31	CEO
Community schools	Headteacher	2	2	CS

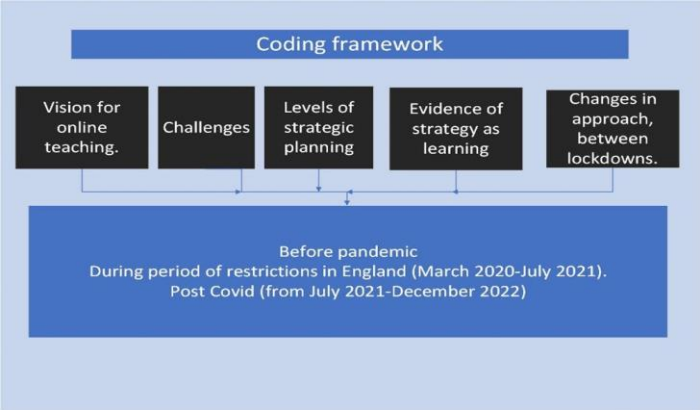
Local authority schools	Headteacher	22	19	LA
Stand-alone academy (SAT)	Headteacher	20	20	SAT
Special schools (SS)	Headteacher	2	2	SS

Abbreviation: MAT, Multi-academy trust.

school leaders), and direct approaches via social media. The interview schedule was developed using themes that emanated from an initial literature review. These were then peer reviewed by our project partners (all senior educational leaders or researchers) and piloted. It was a very difficult time to carry out interviews, and we are grateful to those who gave up their time during this the most challenging of times for schools. A full listing of questions can be found in Appendix C.

Ethics permissions were obtained from all participating universities, in line with BERA (British Educational Research Association) protocols, which included a consent form and information about the project. Online interviews, carried out via Microsoft Teams, were semi-structured, lasted between 1 and 1.5 hours and took place between March and October 2021. The school leaders interviewed included both heads of single schools and CEOs of MATs, (groups of schools with one executive headteacher along with individual school heads). In total there were four CEOs interviewed, representing a total of 31 schools in total, 21 of these in areas of high SED. *We recognise that strategic management is a key role for trustees and governors, but this project did not consider their views owing to time constraints and the difficulties of contacting governors during Covid. In order to correct this, a follow-on project is underway at the time of writing*. A pilot was carried out in January 2021 and a code book derived from the researchers, each coding a sample of three scripts within the pilot. This involved all researchers reading and coding each transcript individually, then discussing, merging and reflecting on these codes to form larger categories and emerging conceptual themes, then further analysing these themes by comparing and contrasting them across datasets and with the study's conceptual framework. The core codes for this study appear in Figure 3. We coded all questions in relation to our model in Figure 2 before, during and post July 2021, (see Appendix C), 'Interview questions', in order to capture the perceptions of school leaders during the three phases. These codes were then picked up in relation to the themes in Figure 3.

Although we coded all sections in the fashion described in the large box (Figure 3),we felt it important to capture the challenges faced by schools in setting a digital strategy post pandemic. For this reason we include a summary of challenges faced in our findings; this also applies to the coding 'Vision'. We coded under 'Strategy as learning', to evaluate whether there was evidence of this approach throughout, and present the findings accordingly. The section on 'changes in approach between lockdowns' is used to support both the Strategy as learning and Vision codes. Our evidence for strategy as learning is taken from our previous work in this area (Baxer & Floyd, 2019; Baxter & Cornforth, 2019; Baxter & John, 2021), and relates to three core activities: (1) the person variable—the individual acknowledges that strategy is a learning activity for them; (2) the task variable—the individual understands the task and the cognitive load this will place upon them; and (3) the strategy variable—the individual draws on a toolkit of solutions for resolving strategic issues (Baxter & John, 2021).



F I G U R E 3 Coding framework. [Colour figure can be viewed at wileyonlinelibrary.com]

FINDINGS AND DISCUSSION

In this section we respond to our research question:

- At what stage of digital strategy planning were English secondary schools before, during and post the Covid-19 period and what insights on this emerged from school leaders?
- Did this differ for schools in areas of high SED and what insights from headteachers emerged which relate to this?

Figure 4 illustrates the levels that schools achieved according to the levels described in Figure 2.

In relation to our question, as to whether there is a difference in progress towards level 4 (L4) of our model, between organisations with high SED and those without, the picture is mixed. There is evidence that more leaders in low SED categories were able to move from L1 to L4, while the picture in relation to L1–L3, L1–L2 and L2–L3 shifts, exhibits an even spread between low and high SED. In relation to this sample, a single organisation began and remains at L2 whilst one regressed from its planning during Covid (L3), to preplanning L2 (HT18). The reasons for this are explored within the following section.

Learning during Covid

As illustrated in Table 1 there were an impressive eight out of 50 organisations that had moved from L1 pre Covid-19 to L4 in the post Covid period. In total there were eight schools who moved from L1 (Figure 1) to L4; only one of these is a MAT located in an area of high SED, which represents five schools and in excess of 4 k pupils on roll. Analysis of the qualitative data on what represents a considerable shift in strategy indicates that the journey was an interesting one with considerable support for the strategy as learning view of strategic planning.

The CEO indicated a substantial change in their vision, a vision mirrored by their senior leadership team, one moving far beyond that of others that had effected lesser shifts (for example, 1–2 or 2–3). However, a number of respondents also mentioned the need for staff and pupil wellbeing, and had concerns about physical and mental health, particularly in relation to new ways of digital learning, or indeed any new innovation that might add to

Strategic planning before and after restrictions lifted (July -October 21)	**N**	**M**	**S**	**TOTAL**	**SED**	**NO SED**
LEVEL 1-4	1	0	7	8	1	7
LEVEL 1-3	7	3	10	20	10	10
LEVEL 1-2	0	5	5	10	5	5
LEVEL 2-3	2	2	4	8	4	4
LEVEL 2-4	1	0	2	3	1	2
LEVEL 3-4	0	0	3	3	2	1
REMAINING AT 4	0	0	1	1	0	1
REMAINING AT 3	0	0	0	0	0	0
REMAINING AT 2	0	0	1	1	1	0
REMAINING AT 1	0	0	0	0	0	0
REGRESSIONS POST JULY 2021 (attaining higher level during covid, then dropping lower level , **but a higher one than before covid**)	0	1	1	1	1	1
REGRESSIONS POST JULY (attaining a higher level than start but dropping back to pre covid level)			2	2		

F I G U R E 4 Strategic planning before, during and post pandemic restrictions (interviews conducted March 2021 to October 2021). SED, organisations with above average socio-economic deprivation; S, south; M, Midlands; N, north (the full table and key can be found in Appendix A). For the purposes of this paper, multi-academy trusts (MATs) appear as one organisation as the focus is strategic leadership, represented by the CEO approach. [Colour figure can be viewed at wileyonlinelibrary.com]

workload and wellbeing. The quotes below illustrate the journey taken by this particular CEO and their schools, and the challenges involved in achieving L4. This MAT is located in area/s of high SED (CEO 4):

Before Covid we were exploring its use but hadn't got as far as developing a strategy. We had homework worksheets online which we also used when youngsters were ill and for accessibility needs. I'd like digital learning to be transformational. I'd like to use it to reimagine personal care and to develop significant agency in the community.

During Covid it's been used as a way for collaborative agency and to support children at risk during lockdown. Looking forward it requires innovation and transformation, but there's been a big emotional impact from 2020, all my staff have been personally impacted. Their wellbeing has been affected and they are exhausted […]. For all I'd like to develop digital learning and not lose the momentum, there's a fine line because staff when they return will look for comfort, they'll want things to go back to how they were because it's a safety net and reassuring. […] Everyone is shattered. I question also if I am I a good enough leader when the appetite for risk taking is low. Do I have the right skills to inspire staff to continue with digital Some worry about online and how it could take their jobs.

Post Covid: What were the key challenges in terms of provision, that you encountered during Covid? And opportunities?

All households deserve access to a device and internet.

Social justice perceptions need addressing. Some ask why would you give kit to certain homes but everyone needs to be treated as an equal. Digital learning needs to be a helpful stimulus for opportunities and underpin values. We need to be ethical on resource allocations. I think digital learning could be liberating, but my workforce feel de-professionalised and as a leader I need to handle this carefully. They do not feel as expert in this new world.

I need to turn this threat into an opportunity. We have the opportunity to reimagine schooling and the professional identity of staff and how they work with digital learning. (CEO4)

One particular challenge emerging from this and other transcripts of participants in this category (L1–L4 shift), is staff feeling de-professionalised and exhausted by the transition to online. This is not unsurprising, as the considerable literature on academic staff moving to digital learning illustrates (Rouleson et al., 2021). This also reflects the concern that individuals may have about online teaching as 'real teaching', which links into both professional identity and the ethics of online teaching and learning (Anderson & Simpson, 2007; Northcote et al., 2015), again, both elements that feature large in the research into online teaching in higher education.

Collaboration and resourcing

Interestingly the idea of collaboration and collaborative agency featured in all organisations that had achieved this substantial shift, the terms 'community' and 'collaboration' occurring most frequently in the period during Covid. This appears to have coloured and conditioned the approaches of those organisations that have effected the shift from L1 to L4. The community and collaboration appears to have extended far outside of the institution as this head explains:

We've utilised all the support we can in the community […] We've had local chefs live streaming cookery classes and setting the pupils challenges. This has supported mental health and helped pupils with anxiety and encouraged pupils to have time away from screens. Staff from the local leisure centre provided us with

sports challenges and online classes and contributed to our wellbeing packs that were delivered to pupils' homes. Local businesses have provided talks and shared career experiences and run question and answer sessions. […] Establishing links with industry has led us to carry out a skills analysis with local businesses and identify where there are gaps in skills, and we will address these in the curriculum. (HT32)

The feelings of leaders lacking in the requisite expertise to effect the shift to both L3 and L4, are found throughout the data, in relation not only to leadership expertise, but also to staff, as this head recounts on being asked what key challenges they encountered during Covid:

Lack of laptops, lack of expertise, lack of funds. We engaged extensively during lockdown 1 to improve pedagogy. We used a practitioner enquiry approach throughout the school. As a result of this, HoDs and teaching staff are developing a better understanding of high-quality teaching, learning and assessment. (HT21)

It should be noted that single schools in areas of high SED predominantly fell into the category of organisations moving from L1 to L3, with another five moving from L1 to L2. One school with high SED moved from L1 to L3 during Covid, but in terms of their post Covid-19 planning, fell back into the L2 category. This is discussed later in the paper.

On close scrutiny of the data, concerns over hardware and connectivity appear throughout the transcript as blocks to developing a whole school approach, both during and post pandemic, in schools in both low SED and high SED categories. This headteacher explains that although hardware was initially an issue during Covid-19, they were largely able to obtain the required kit and connectivity from the second period of lockdown onwards (out of three periods). However, their quote below may go some way to explaining why, since then, the school has regressed to L2 planning.

Challenges have been making sure the learning has been received, and those kids who've got difficulties have managed to share, you can't beat an adult in a room who could help you learn. Why has learning been the way it has been for, I don't know, how long we've been going to school for, hundreds of years? Learning has been led by an adult at the front. […] And there aren't really many substitutes to it for young people until you get older, and I think when you're older you can self-manage your learning. (HT18)

This particular head indicated that while, ‘we can mobilise our curriculum quite quickly, back online, but […] the whole workload agenda needs to be considered in there and understanding staff feelings and emotions around that’. This and the previous quote, illustrate the lack of faith that this head has in wholesale digital learning: the staff attitudes and amount of workload inherent in teaching online present as obstacles that are very likely to get in the way of progression to L4. This is in spite of tremendous creativity and community spirit that they encountered during lockdown periods. Changing culture is, according to most models of change management, one of the greatest challenges to achieving change (Todnem, 2005) and is a key leadership task (Gill, 2002). Throughout the data, staff and leader attitude and workload are key elements in the move to digital learning, and as pointed out earlier, have been the stumbling block to large-scale adoption of digital learning in education across the piece (Reich, 2020). In order to progress to L4, heads/CEOs must have a firm conviction that aspects of digital learning can improve learning outcomes and inclusion—this was evident in all of the data that related to organisations effecting a shift from L1 to L4.

As stated earlier, there is no firm evidence base for this—partly because there are so many elements to consider, and so many definitions of what constitutes ‘successful learning’ and ‘good education’. Yet this research has illustrated that shifts have been made, that school leaders have learned a great deal owing to the pandemic, and that many have seen a potential for digital learning that erstwhile eluded them.

Moving on

As Figure 4 illustrates, very few schools post Covid remained at the level of strategic planning that they were at before the pandemic: no schools remained at L1 post pandemic, and none had regressed to L1 having reached a higher level during Covid19. In addition a substantial number of schools in the sample moved from L1 to L3, indicating a substantial leap in the scale and nature of their planning. Of these schools, as mentioned earlier, 10 out of 20 were in areas of high SED, an indication that these schools believe that digital can be inclusive, albeit to varying degrees.

The area of inclusivity and catering for pupils with SEN (special educational needs), is an interesting one, as this CEO (15) of a MAT with 18 schools and with a shift of L2–L4, explains:

> What we did do, again as an acceleration of the plans … We had planned to look at technology in SEND over three years as being one of the key strategies. So we had certainly considered it and we'd looked at some of the prevailing research which, to be frank, was a little sketchy actually around impact (CEO15).

Meanwhile, this headteacher explains how Covid changed how they use assistive software:

> Although most of our SEND pupils were in school, so they were not impacted and in fact received a higher level of support than during normal times. Covid has opened up our use of assistive software and how this can benefit all our students, for example, using mind mapping software. (HT9)

This headteacher of a school that moved from L1 to L4 explains plans to address culture change in online teaching, whilst also improving accessibility and inclusion:

> We've recognised how useful the use of technology is to support accessibility needs both for digital learning and in and out of the classroom. We're running a coaching programme about digital tools in the classroom, fears in the classroom and overcoming them. A lot of it is for staff to step out of their comfort zone and see how to innovate and take ideas further, working together for support.
> (HT44)

New ways of communication

All 50 interviews, without exception reported on the ways in which the pandemic and lockdowns had brought about new ways of communicating with parents/carers, students and staff, as this headteacher, whose school moved from L2 to L3 before and post pandemic, reports:

> We developed an online platform for online and a parent platform to support strong communication with families[.] We have a curriculum for recovery plan with a focus on engaging pupils not just with learning but also in meta-cognition and wellbeing. We are measuring and tracking everything. (HT45)

Planning for technology to support learning is not the only way in which the pandemic has influenced leaders, but extends to links with local stakeholders and employers, as this headteacher reports:

> Parents will continue to use online for parents evening although we will still run a face-to-face event […] We will continue to engage regularly with parents and families through the online\platform and use online for supporting learning, health, and wellbeing for both staff and pupils. We'll continue to use online to work closely with the community and local businesses and employer links. (HT49)

The data also extend to collaboration with other schools/organisations, and this is particularly significant in the case of MATs, as previous work into MAT governance and leadership reports that inter-MAT collaboration is very rare (Baxter & Cornforth, 2019).

CONCLUSIONS AND RECOMMENDATIONS

This paper set out to examine where are/were schools in terms of their digital planning and strategy before during and post July 2021 and did this differ for schools in areas of high SED. With regard to the first question, the study has shown that many schools have progressed in relation to digital learning, changing their practices in response to the pandemic and what was learned during the crisis. It has also shown that some schools have taken an

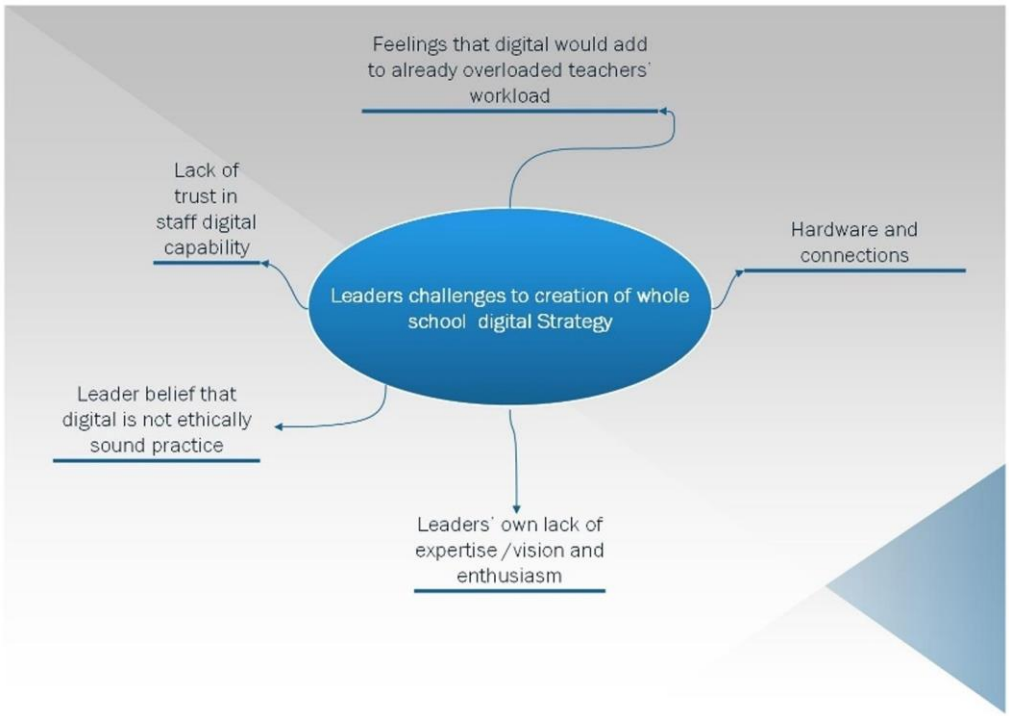
incremental approach to digital learning, building more slowly and moving one or two steps within the model, supporting what Morgan Ames, terms the 'tinkering approach' to technology, an approach that advocates a slow and sustainable change (Ames, 2019, p. 25) rather than the 'charismatic' initiatives that envision sweeping change—such as, for example, the laptops for all initiative (Jones & Cowie, 2011). In relation to strategy as learning, we found ample evidence that this approach was being taken by leaders, with transcripts indicating: (1) the person variable—the leader acknowledges that strategy is a learning activity for them; (2) the task variable—the individual understands the task and the cognitive load this will place upon them; and (3) the strategy variable—the individual draws on a toolkit of solutions for resolving strategic issues (Baxter & John, 2021). However, some leaders proved resistant to employing this learning, post Covid.

Although we did not set out to explore challenges to developing digital strategy, our analysis revealed that in spite of innovation, some schools are clearly experiencing blocks to creating whole school digital strategy. Key challenges for leaders (Figure 5) ranged from a lack of the leader's own expertise and vision to the belief that digital education was in some way unethical, for example, the head that finds myriad reasons for not adopting a whole school strategy because, deep down, they believe in the place-based view of education— the belief that most teaching should be done in school. This, however, combines with concerns for student and teacher welfare and wellbeing and is a very real concern, given the epidemic of mental health issues that have emerged since (Beauchamp et al., 2021; Radwan et al., 2020). It also emerges owing to lack of belief in teachers' expertise and unwillingness to invest further in this, now the restrictions have passed; this is particularly relevant in schools that still lack connectivity/hardware and finance for training and development, at a time when, in real terms, schools are more cash strapped than ever (Adams, 2020). It should be noted that schools that emerged as having regressed since July 21 have only done so between then and October 2021. Therefore this result should be treated tentatively. Any follow-on work that we do will have this insight factored in for further exploration.

The most significant finding in relation to schools in high SED is in relation to organisations that moved from L1 to L4, where only one in eight has a high SED. The reasons for this, as this paper has illustrated, are multifarious and areas of challenge (Figure 5) that emerged from the study tend to apply to all of our sample, regardless of SED status. However, this difference and the fact that one of the schools with high SED slipped back a level post Covid, needs to be interrogated more closely, in relation to particular challenges arising within schools with this demographic.

Implications for practice and further research

The research also revealed that future exploration of this topic needs to capture a more comprehensive picture, as this sample revealed that decisions that inform digital strategy are distributed throughout the school, as well as externally—for example parents have clearly coloured some of the decisions of the leadership, likewise heads of department. Future study (in process) also needs to capture the thoughts of chairs of trustees and governors, whose role it is to co-lead



F I G U R E 5 Summary of challenges for digital strategy. [Colour figure can be viewed at wileyonlinelibrary.com]

on strategy and resource planning, and a sample designed to explore the specific differences between academies and local authority-maintained schools, which was beyond the scope for this project, but highlighted by the Department for Education report cited earlier (DfE, 2021). It would also be fruitful to explore, in time, whether school leaders felt that technology integration during Covid did in fact change their long-term thinking about education.

A framework for investigating digital strategy in schools

What does the data tell us about investigating digital strategy in the future?

Although our coding model provided us with a broad picture of where schools sit on a continuum, it failed to capture certain aspects. In light of this, and our literature review, particularly drawing on the work of Eickelmann (2011), we built on their eight communalities of schools that have succeeded in sustainable digital integration, proposing 12 key areas of focus that emerged within our empirical work. These are illustrated in Figure 6.

The model aims to provide a more comprehensive picture of what factors are holding schools back from the development of digital learning. Each area can also be evaluated quantitatively via a sliding scale, but our research illustrates that it is equally important to probe each area via qualitative interviews, in order to provide more nuanced insights into each area.

Practitioner implications

The research has illustrated that there are a number of elements that must be considered when creating a digital strategy for a school or group of schools, and as with any change

Model for analysis of digital strategic planning and implementation	
Area	Detail
1.Finance	Does the school have access to the financial resource needed to implement whole school digital strategy ?
2.Hardware/software	Does the school have finance/resources to upgrade or install Hardware and /or software ?
3.Interschool collaboration.	Is the school collaborating with external partners to implement digital strategy ?
4.Digital environment (adaptation of physical buildings etc)	Has the school adapted or have plans to adapt the physical buildings in order to maximise their digital strategy and look to a more sustainable future ?
5.Inclusion: how are schools using digital to be fully inclusive ?	Are you using digital methods to aid inclusion ?
6.Competencies	Are there plans to develop staff , parents and students in relation to digital skills ?
7. Pedagogical innovation	Are there plans to include pedagogical digital innovation linked to learning outcomes in your organization?
8.Wellbeing	Have you factored in wellbeing /workload of staff and pupils into your digital strategy ?
9. Staff	To what extent are staff supportive of whole school digital strategy and how do you know?
10.Evaluation	Do you have plans to evaluate digital learning ?
11. Ethics	Do you feel that digital learning is ethically /morally acceptable for your pupils and staff ?
12. Digital Poverty	Will digital poverty hold back your development of a digital strategy ?

F I G U R E 6 Model for analysis of digital strategic planning and implementation. [Colour figure can be viewed at wileyonlinelibrary.com]

management programme, it is important to consider the elements in a holistic fashion, in order to operationalise the strategy effectively. Figure 6 illustrates key areas for consideration by those leading the development of such strategies. It is also vital that leaders are able to draw on research in digital learning. While the phenomenon is relatively new in the secondary sector, there is plentiful research on effective digital pedagogies, internationally, which may be helpful in considering what is best taught online and what must still be taught in a face-to-face environment. There were few schools in our sample that had gone so far as to re-design their buildings in order to complement digital strategy, but much of the literature on sustainable schools indicates that this is key to productive site use, while complementing digital off-site work. As Dixon states, citing Churchill; 'We shape our buildings; thereafter, they shape us' (Dixon, 2022, p. 109). The study supports the work of Eickelmann (2011) and Higgins et al. (2012), in terms of the need for curriculum to be linked to digital innovation and planning, and the need to be able to evaluate its use, in relation to learning outcomes is important. Schools at L4 were implementing this already. In essence, leaders must become 'Tinkerers', who, 'harbour an optimism that tech can be used to improve teaching and learning but they embrace research and critique as a crucial check against utopian thinking' (Reich, 2020, p. 10).

In summary, in order for leaders to progress to a whole school digital strategy, the learning during and post pandemic must be harvested in such a way that it can be used to support digital strategies more effectively, or the creativity and learning that have occurred will be lost in the pell mell of school life.

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CONFLICTS OF INTEREST

The authors declare no conflict of interest.

ETHICS STATEMENT

The research was carried out according to BERA guidelines and approved by The Open University Ethics Committee and the University of Reading Ethics Committee.

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