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PREPARING OUR STUDENTS FOR THE RAPIDLY PROGRESSIVE DIGITAL WORLD THROUGH EFFECTIVE TEACHING AND LEARNING

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Introduction

Since the publication of the 2014 national curriculum for Computing in England, the digital world has undergone a transformation of seismic proportions. In less than a decade, the rise of cloud computing, the explosion of app-based ecosystems, and the mainstream integration of artificial intelligence have reshaped how we live, work, and learn. Virtual assistants, machine learning algorithms, and collaborative digital platforms that were once experimental or niche are now part of everyday life. Meanwhile, the workplace has rapidly digitised, demanding ever-more sophisticated technological fluency from the next generation.

This technological shift was brought into even sharper focus during the COVID-19 pandemic. Practically overnight, schools across the country were thrust into a remote learning environment, relying on digital tools to maintain educational continuity. For many, it exposed a digital skills gap—not only among students, but also among staff—who found themselves navigating unfamiliar platforms, juggling file sharing, virtual classrooms, and online feedback systems. While the experience accelerated digital adoption in some areas, it also revealed the lack of preparedness within the system and highlighted just how far curriculum content and classroom practice lag behind the realities of a connected world.

Yet despite this transformation, the national curriculum has remained largely static. While it was a bold step forward at the time of its release—placing emphasis on computational thinking and programming—it now feels outdated and vague when viewed against the backdrop of current and emerging technologies. Crucially, it offers limited direction on areas such as digital collaboration, data literacy, cybersecurity awareness, and ethical Artificial Intelligence (AI) use—skills that are essential for navigating the modern world. This disconnect is further exacerbated by the widespread adoption of tablets in primary classrooms. While their portability and intuitive design have improved access to learning, they often reduce opportunities for pupils to develop more advanced digital skills. Keyboard proficiency, file organisation, document formatting, and efficient web navigation are often sidelined. As a result, pupils may reach secondary school lacking foundational competencies that underpin both academic success and future employability.
If we are to prepare our students not just to consume technology, but to shape and lead with it, then digital learning must be reimagined with urgency and purpose.

Literature Review

The United Kingdom's (UK) national curriculum for Computing, introduced in 2014, is increasingly unfit for purpose in today's digital landscape. While it marked an early shift toward computational thinking, it offers limited guidance on key areas such as artificial intelligence, data literacy, and collaborative digital tools (Ingoldmells Academy, n.d.).

The COVID-19 pandemic brought these gaps into sharp focus. Schools were forced into remote learning with limited preparation, exposing inequalities in access to technology and highlighting a widespread lack of digital confidence among both students and teachers (Cambridge Assessment, 2021). These challenges underscored the urgency of embedding digital skills more systematically into the curriculum.

Another concern is the dominance of tablet use in primary schools, which—while user-friendly—often limits opportunities for pupils to develop essential skills such as typing, file organisation, and multitasking across applications

(Department for Education, 2022). Without this foundation, students enter secondary education underprepared for increasingly tech-driven expectations.

The digital divide remains a significant issue. Pupils from disadvantaged backgrounds face barriers in accessing devices and consistent internet connectivity, which affects engagement and long-term attainment (Education Policy Institute, 2021). Compounding this is the variability in teacher confidence, with many educators citing a lack of digital training and support (Lenovo, 2020).

Collectively, the literature makes a compelling case for modernising digital education—ensuring all pupils are equipped with the skills, confidence, and tools needed to thrive in a fast-moving, AI-augmented world.

Methods

As a result of this current digital climate, this topic was chosen to investigate how we can significantly improve student's confidence and ability with more advanced digital tools. Through adaptation of the action research model, these parameters can be monitored in real time to assess the impact and identify further areas to support and develop.

Research Questions

1. What tools do students need to adapt to the ever-changing digital world?
2. How can we develop their confidence and ability within lessons?
3. Can we integrate the lesson in an effective cross-curricular way?

In response to the growing disconnect between the national curriculum for Computing and the realities of modern digital life, our school has adopted a more deliberate and structured approach to digital education. For the first time this academic year, Digital Learning has been introduced as a dedicated, standalone subject across upper Key Stage 2 (KS2). This represents a significant shift away from the previous model, where computing skills were embedded more passively within broader curriculum areas.

The rationale behind this change was twofold. Firstly, we aimed to significantly improve students' confidence and proficiency when working with laptops—devices that many pupils had limited experience using due to the predominance of tablet-based learning. Secondly, we sought to give students meaningful, guided exposure to software and digital tools that mirror real-world applications. To that end, the programme has centred on purposeful use of the Microsoft 365 suite—including Word, PowerPoint, Teams and Excel—with a strong emphasis on transferable, work-ready skills such as formatting, saving, presenting and collaborating digitally. Alongside these applications, a key strand of the curriculum has been the introduction of coding as a language for problem solving and creative expression. Using platforms such as Scratch, students have been supported to plan, build and refine their own interactive games, incorporating elements of logic, sequencing, variables and user input.

Although the integration of AI tools into the curriculum remains an emerging and less developed area, early steps have been taken to introduce students to responsible use of generative technologies. This includes class discussions around data privacy and ethics, as well as limited, teacher-guided exploration of AI-assisted features such as predictive text, image generation and editing tools.

This strategic shift—from incidental exposure to structured, skills-based

instruction—has enabled us to provide greater consistency, progression anddepth in digital learning. Lessons are timetabled weekly, with clear objectives, assessment opportunities and cross-curricular links that encourage pupils to apply their skills in meaningful contexts.

Participants
In upper KS2 (Y5 & Y6) we have 287 students on roll and of that group, 91 students were selected in Y6 to complete tasks throughout the academic year to gather data across several different aspects of the research project.

Data Collection
A range of methods were used to collect our data, combining:

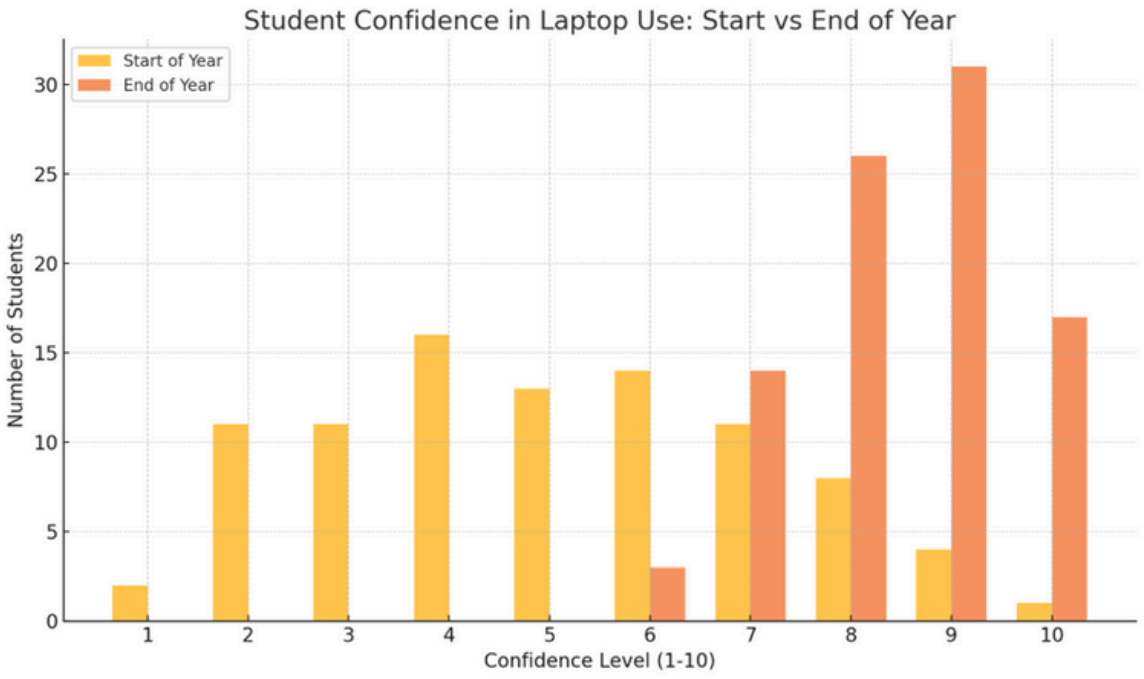
1. Surveys at the beginning and end of the academic year to measure the confidence levels of students.
2. Moderated assessment tasks to measure academic progress.
3. Pupil interviews.

Quantitative data has been analysed to provide statistics and numerical data whereas pupil interviews and teacher judgements provide more qualitative data to ensure we cover all areas of the study in a clear, triangulated approach.

Discussion and Reflections

At the beginning of the academic year, baseline data showed that students' confidence in using a laptop was relatively low, with an average rating of 5.02 out of 10. A significant number of students rated themselves at level 4 or below, indicating limited familiarity and comfort with laptop-based tasks. In contrast, end-of-year results demonstrate a marked improvement, with the average confidence level rising to 8.49 (see **Figure 1**). Over 70% of students now rate their confidence between levels 8 and 10, reflecting the positive impact of the dedicated Digital Learning programme in building competence, independence and assurance in working with laptops. **Figure 1** shows the clear rise in confidence levels as a result of the digital learning sessions.

Figure 1
Student Confidence in Laptop Use



A key strand of our Digital Learning provision this year has focused on developing students' confidence and competence in block-based coding using Scratch. A class in Year 6 was selected to be the focus of this task and the results of their teacher assessment for the objectives within the topic can be seen in **Table 1**.

Table 1
Teacher Assessment of Students Meeting Specific Objectives

Total Count	35								
Name	Class	Cold Task: To create a game in the style of flappy bird on Scratch	To select, create and customise sprites and backgrounds.	To use variables to create rules and commands.	To use looping functions and clones to create obstacles.	To create and code a broadcast message to trigger 'Game Over!'	To evaluate and peer assess their partners 'Flappy Bird' style game.	Average for Topic	
Student Name	Y6 Diamond	2	3	2	3	4	4	3.00	Expected
Student Name	Y6 Diamond	3	4	3	4	5	5	4.00	Expected+
Student Name	Y6 Diamond	2	4	3	4	4	4	3.50	Expected+
Student Name	Y6 Diamond	2	3	3	4	4	3	3.17	Expected
Student Name	Y6 Diamond	3	5	4	5	5	6	4.67	Exceeding
Student Name	Y6 Diamond	2	4	4	5	5	4	4.00	Expected+
Student Name	Y6 Diamond	3	5	5	5	5	6	4.83	Exceeding
Student Name	Y6 Diamond	2	3	2	3	3	4	2.83	Expected
Student Name	Y6 Diamond	2	3	1	2	2	3	2.17	Emerging+
Student Name	Y6 Diamond	2	4	3	4	4	4	3.50	Expected+
Student Name	Y6 Diamond	2	3	2	2	2	2	2.17	Emerging+
Student Name	Y6 Diamond	3	5	4	4	5	5	4.33	Expected+
Student Name	Y6 Diamond	2	4	4	4	3	4	3.50	Expected+
Student Name	Y6 Diamond	2	4	4	4	4	5	3.83	Expected+
Student Name	Y6 Diamond	2	4	3	4	3	5	3.50	Expected+
Student Name	Y6 Diamond	2	4	3	4	4	4	3.50	Expected+
Student Name	Y6 Diamond	3	5	5	5	5	4	4.50	Exceeding
Student Name	Y6 Diamond	2	3	3	4	3	4	3.17	Expected
Student Name	Y6 Diamond	2	3	3	4	3	5	3.33	Expected
Student Name	Y6 Diamond	2	4	4	4	3	5	3.67	Expected+
Student Name	Y6 Diamond	3	4	3	4	3	4	3.50	Expected+
Student Name	Y6 Diamond	2	3	4	4	3	4	3.33	Expected
Student Name	Y6 Diamond	2	4	4	4	4	5	3.83	Expected+

Overall Grade		2024 Number	Beginning of Topic %
Exceeding+	6	0	0.00%
Exceeding	5	0	0.00%
Expected+	4	0	0.00%
Expected	3	6	26.09%
Emerging+	2	17	73.91%
Emerging	1	0	0.00%
Total		23	100.00%
At & Above		6	26.09%
Above		0	0.00%
KHDA Grade		Weak	

Overall Grade		2025 Number	End of Topic %
Exceeding+	6	0	0.00%
Exceeding	5	3	13.04%
Expected+	4	12	52.17%
Expected	3	6	26.09%
Emerging+	2	2	8.70%
Emerging	1	0	0.00%
Total		23	100.00%
At & Above		21	91.30%
Above		15	65.22%
KHDA Grade		Very Good	

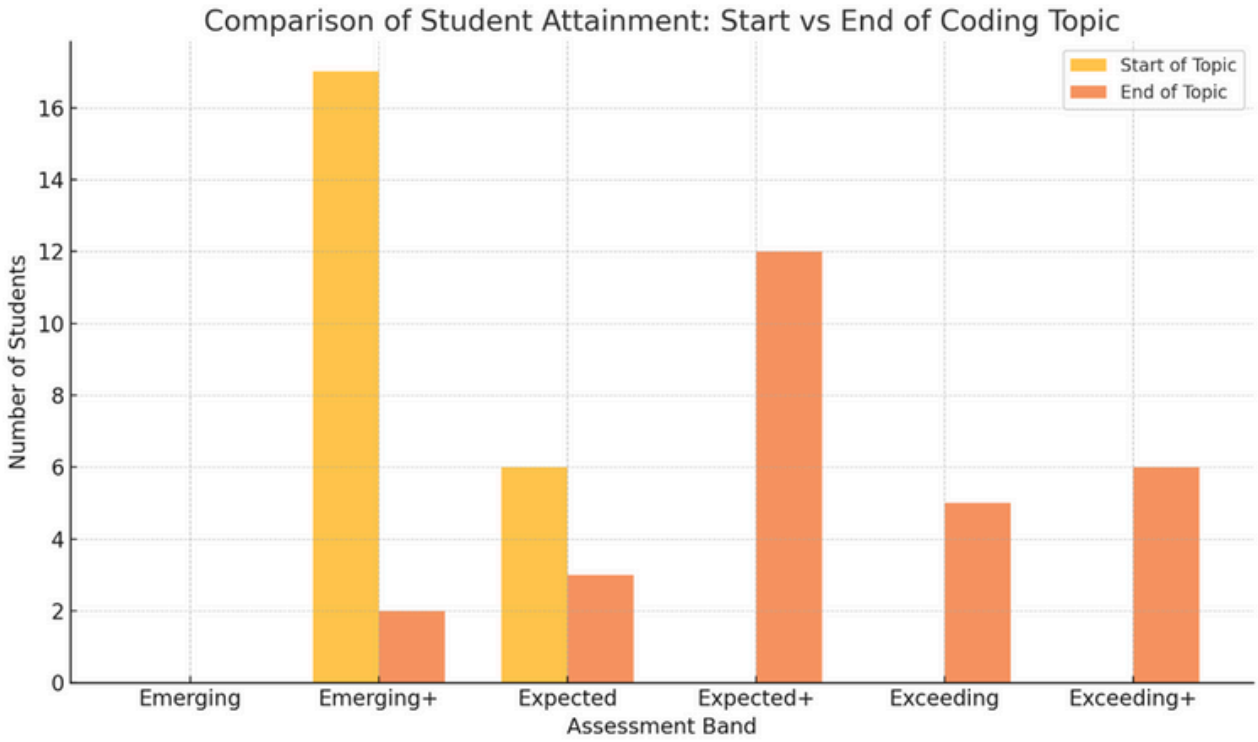
At the outset of the unit, baseline assessments revealed that the majority of students were working below the expected standard, with 73.91% of pupils assessed as Emerging+, and no pupils exceeding age-related expectations. Only 26.09% of students were meeting expectations at the start of the topic.

By the end of the unit, the impact of structured, skills-based teaching was evident. 91.30% of students were working at or above the expected standard, with 26.09% achieving Exceeding+ and a further 13.04% assessed as Exceeding. The number of pupils below expectation reduced significantly, with just two students remaining within the Emerging+ category and none assessed as Emerging (see **Figure 2**).

The learning sequence focused on building foundational programming skills through a game design project inspired by *Flappy Bird*. Pupils progressed through key competencies including sprite customisation, use of variables, application of loops and clones, broadcast messaging, and peer assessment. This structured and practical approach enabled students to embed computational thinking and articulate their ideas through creative design.

Overall, the cohort's KHDA grading improved from 'Weak' at the beginning of the topic to 'Very Good' by the end, clearly reflecting the effectiveness of the standalone Digital Learning curriculum in raising attainment and deepening understanding in coding.

Figure 2
Comparison of Student Attainment: Start vs End of Coding Topic



An analysis of 91 anonymised pupil responses reveals an overwhelmingly positive perception of digital learning. The most frequently cited word was "confident", directly or indirectly expressed by over 25 students, indicating a strong sense of self-assurance in their digital abilities following the programme (see **Figure 3**).

In addition to confidence, many pupils described their experience using uplifting terms such as "amazing", "great", "fun", "excited", and "intelligent". These responses suggest that students not only felt they had developed their skills, but also genuinely enjoyed the process of learning through digital tools.

A small number of responses included humorous or unconventional phrasing, which, while not directly contributing to the sentiment analysis, still reflected an overall sense of enthusiasm and comfort with the subject. Only one response indicated a negative feeling ("anxious"), highlighting the inclusive and supportive nature of the digital learning environment.

Overall, the feedback points to a significant shift not only in competence, but also in student confidence and engagement. The structured, standalone approach to digital learning has clearly contributed to improved attitudes and a positive classroom culture around the use of technology.

Pupil responses to the question "On a scale of 1–10, how prepared do you feel for Secondary with your learning from digital learning sessions?" reflect a strong sense of readiness. The average score across all students was 8.12, with the majority of responses falling between Level 7 and Level 10 (see **Figure 4**). Specifically, 26 students rated themselves at Level 8, 20 at Level 9, and 15 at Level 10—suggesting that over 70% of students feel highly confident in their digital preparedness for the next stage of education. Only a very small number of students (2) rated themselves at Level 5 or below.

Figure 3
Student's Responses to Digital Learning

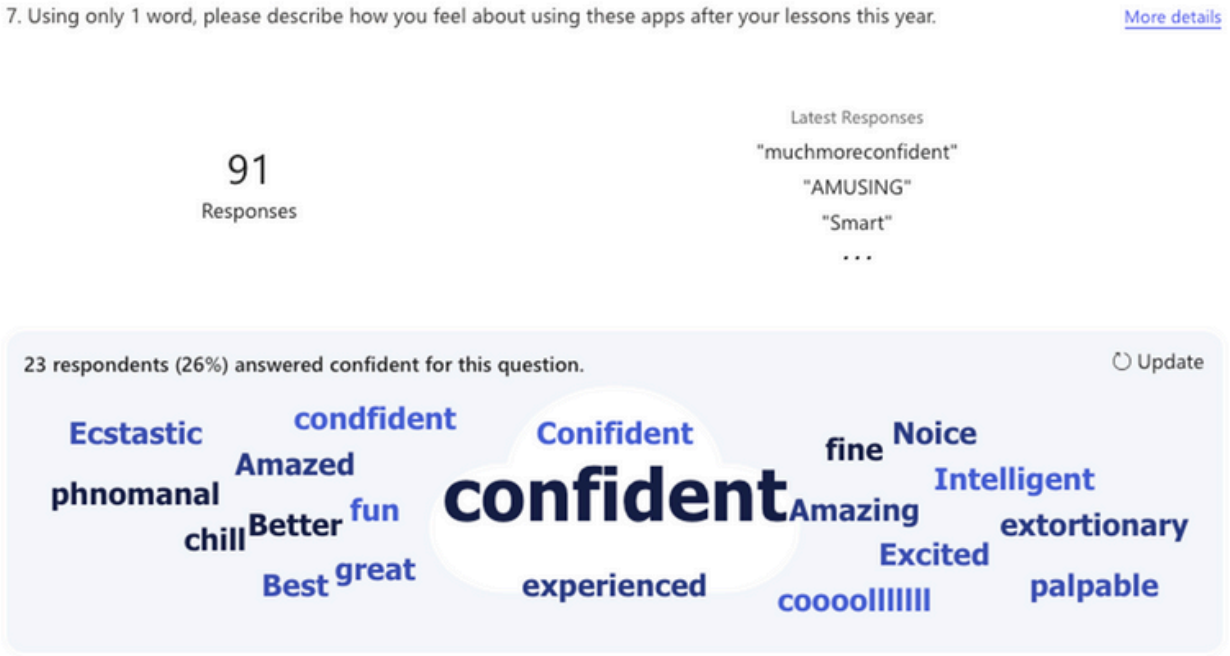
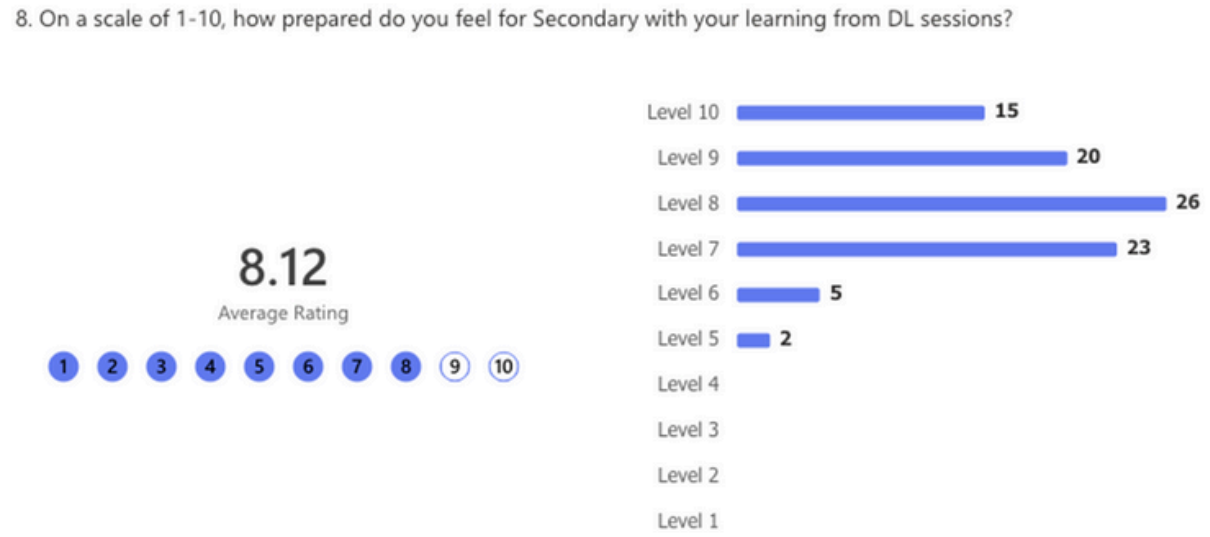


Figure 4
Student's Readiness for Secondary School



This data highlights the significant role digital learning has played in supporting transition readiness. With secondary education placing increasing demands on independent learning, digital organisation, collaboration through platforms like Microsoft Teams, and confident use of applications such as Word and PowerPoint, it is critical that students enter this next phase with not just exposure, but proficiency.

By embedding these skills through structured, progressive teaching, the digital learning curriculum has empowered students to feel equipped and independent—two key traits needed to succeed in a more self-directed, digitally integrated secondary environment.

Conclusion

This study set out to address the growing gap between the digital demands of modern life and the outdated, ambiguous framework provided by the current national curriculum for Computing. By introducing digital learning as a standalone subject, we aimed to create a more structured and impactful pathway to build students' confidence, digital fluency, and readiness for the future.

The results have been compelling. Across the academic year, students demonstrated significant growth in their confidence using laptops, their ability to apply real-world tools such as Microsoft 365, and their understanding of fundamental coding concepts. Quantitative data shows a clear upward trend in both self-reported confidence levels and academic attainment, while qualitative feedback highlights students' increased enjoyment, engagement, and sense of empowerment in digital contexts.

Importantly, the programme has also made a tangible impact on students' readiness for secondary education. With an average self-assessed preparedness rating of 8.12 out of 10, the majority of students now feel equipped with the tools, platforms, and digital mindset required for success in the next stage of their learning journey.

While the integration of artificial intelligence remains in its early stages, this area presents a rich opportunity for further curriculum development. Future work should focus on embedding safe, age-appropriate exposure to AI tools and data ethics, ensuring students are not only competent users of digital technology, but also critical and informed participants in an AI-driven world.

Overall, this research confirms the value of a deliberately structured and skills-focused approach to digital education. As technology continues to evolve, our curriculum and pedagogy must do the same - ensuring that all students are empowered to thrive in the digital age, not just as consumers, but as creators and leaders of the future.

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