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# Five Key Takeaways

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### Pedagogical and Cognitive Theory

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It is vital to root any learning activity in pedagogical theory, just as in any lesson. Having a secure knowledge base to enable students to select/understand relevant information online is crucial (Fullan 2020, Willingham 2006). Beware of split attention; ensure that students are learning and remembering the content that you intended rather than how to use an exciting new app (Christodulu 2019).

Poor implementation is a key reason digital technology fails to meet its potential to improve learning (EEF 2019). Teacher7.1 (rn7K85 (r

## //03

### Technology and Assessment

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There are areas of real potential here: increased accuracy of assessment, data collection speed informing teachers' decision-making, reduced workload, stealth assessment and e-portfolios. Technology is most beneficial if it supplements and is aligned to other forms of feedback (EEF 2019).

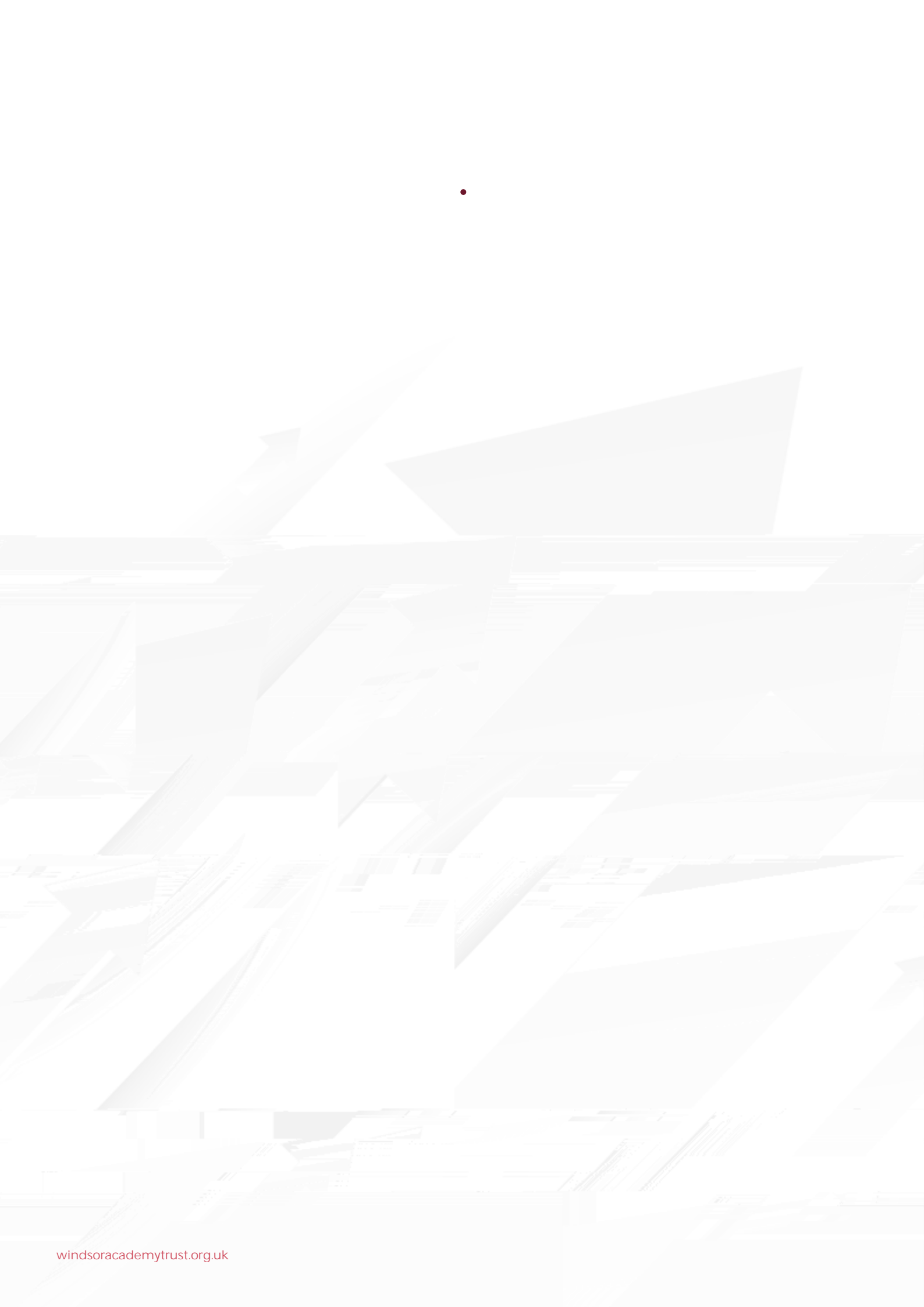
## //04

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Tutoring systems can provide opportunities for students at risk of falling behind or for those who have missed areas of content and provide adaptive content. Effective delivery requires staff oversight and help with student organisation (EEF 2019, Pane 2017).



It integrated blended learning into the whole-school teaching and learning strategy. Their aims were 'to foster independent, creative and resourceful learners, time-shifted and

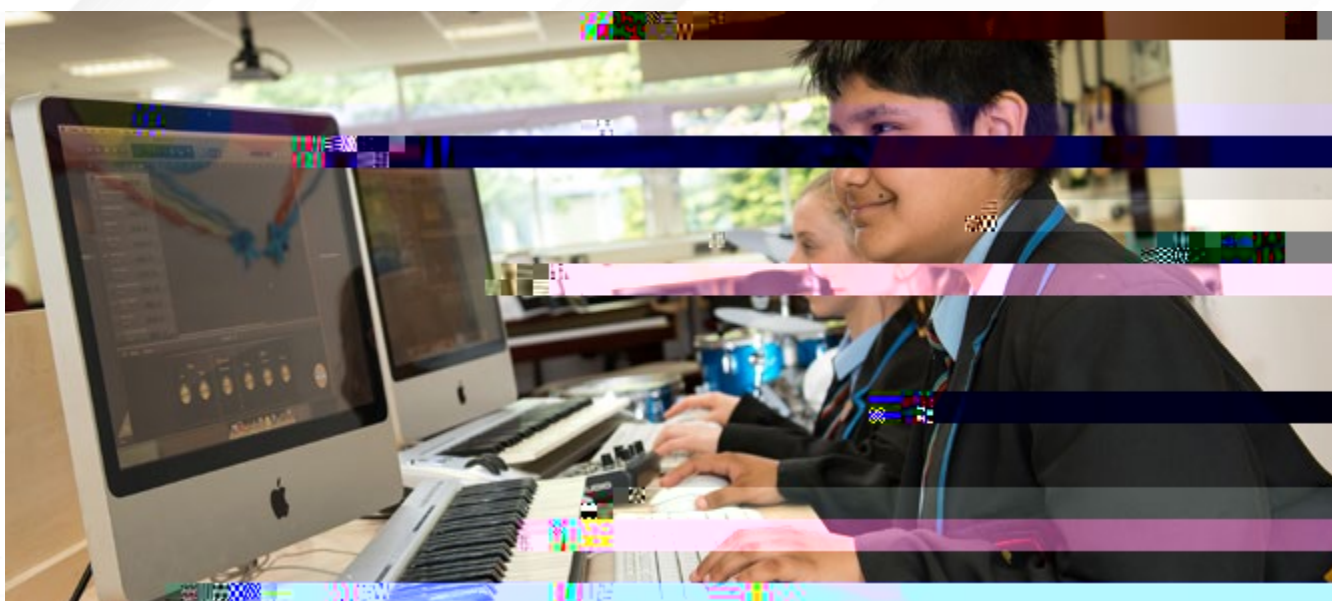




## 4. Implementation - Student Training

Although iPads are intuitive tools, and consequently, students appear to take little time to learn how to use them, they do not necessarily know how to effectively use them for their own learning (Lam et al, 2011 cited in Greer 2017).

Monitoring how technology is being used, including checking that all learners have the skills they need to use it effectively, is likely to reduce the risk that technology becomes a tool that widens the gap between successful learners and their peers (Lewin et al 2019). Training needs should be built into curriculum plans.



## 5. Technology and Assessment

been seen as a significant improvement over



## 8. Technology and Learning Skills

The ability for technology to enhance students' learning skills with the aim of developing 21st Century citizens is explored by Summit Learning, an online learning platform which is funded by the Chan-Zuckerberg Foundation, as praised by Bill Gates. While Michael Fullan's 6 competencies for future citizens (Collaboration, Creativity, Critical Thinking, Citizenship, Character, Communication) are articulated in the 'Deep Thinking for New Pedagogies' project (Fullan 2020).

## 9. Notes of Caution

Even when technology is introduced as an additional strategy outside of the classroom, it is valuable to consider whether it will have an unintended and unhelpful impact on existing activity. For example, the result recommending an online quiz website could lead students to cut back on other forms of revision unless the site was introduced with some guidance about an appropriate mix of revision strategies (Lewin et al 2019).

Monitoring how technology is being used, including checking that all students have the skills they need to use it effectively, is required to reduce the risk that technology becomes a tool that widens the gap between successful learners and their peers (Lewin et al 2019).

It is noteworthy that students attending schools with more computers per student scored lower in the PISA assessment than their peers in schools with fewer computers per student. Across OECD countries, one additional computer per student in a school was associated with a 6-point decline after accounting for socio-economic profiles (OECD 2020), suggesting that it takes more than providing technology to improve learning.

Greenfield warns against multitasking which is promoted by tech devices eg hyper-text within reading, or using several apps simultaneously as a distraction from linear thought and deep thinking. Greenfield also notes that students seem to prefer the medium of print rather than screen for 'effortful learning' (p230 Greenfield 2015; Carr 2006).

In short, in seeking to introduce digital technology, it is vital to plan for and monitor the use of technology carefully during implementation to support effective pedagogy and discover unintended consequences.

Across Windsor Academy Trust, we launched [iPads for Learning](#) in winter 2020. This project introduced iPads as one to one devices for all Year 7 and Year 4 students. Taking learning from the research discussed here, we ensured that our initial staff training focused on employing iPads to support our



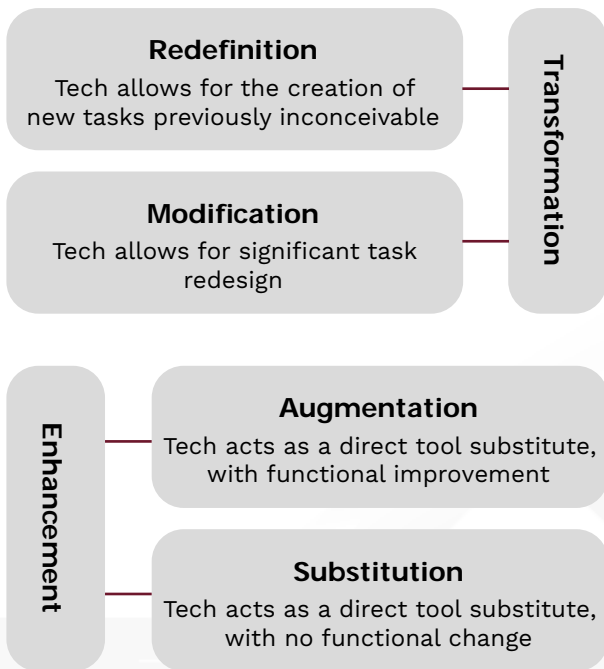
# Appendix 1: Examples of successful technology programmes

The AsTTLE project in New Zealand is a software application that enables educators





# Appendix 2 - The SAMR Model



**Substitution** - At this level, teachers might choose to keep a pupil task the same but change the tool used.

For instance, learning might be presented using PowerPoint, but this is changed to Google Slides. The slides are created and shared in the same way, no additional functionality is utilised, but the tool is changed because of, perhaps, the ease with which it can be used.

**Augmentation** - At this level, we're still exchanging one tool for another but this time, we make use of the added functionality so that new things can be achieved.

For instance, notes are made by a pupil in a notepad and these are photocopied as part of group collaboration.

The notepad is exchanged for Microsoft OneNote and the notes made here can be easily shared with group members at the

click of a button. This substitution provides additional functionality so that weblinks, images, and videos can be added to the notes when required.

**Modification** - At this level, we move beyond technology doing the same task but use it to redesign learning.

For instance, pupils frequently create revision flashcards for exams but don't always make use of them in the most effective ways.

Use of an online flashcard tool means that the teacher can reduce the time taken by individual students in creating their own cards by creating a class set. Evidence-based revision habits can be modelled with the use of the tool and the added functionality means that in-class group quizzes, as well as at-home individual tests, can be generated by the tool to encourage effective revision.

**Redefinition** - At this level, tasks can be redefined to the point they're unrecognisable to anything that could be achieved outside of the use of technology.

For instance, pupils could record one another on tablet devices in a sports class whilst practising a certain aspect of practice.

The video could then be analysed by the individual by comparing it to the same skill being practised by an experienced athlete; tracing the arc of the ball and the swing of the bat with a built-in pen to identify the change that would need to be made in the future. Here, the technology is achieving something not possible in any other way.

