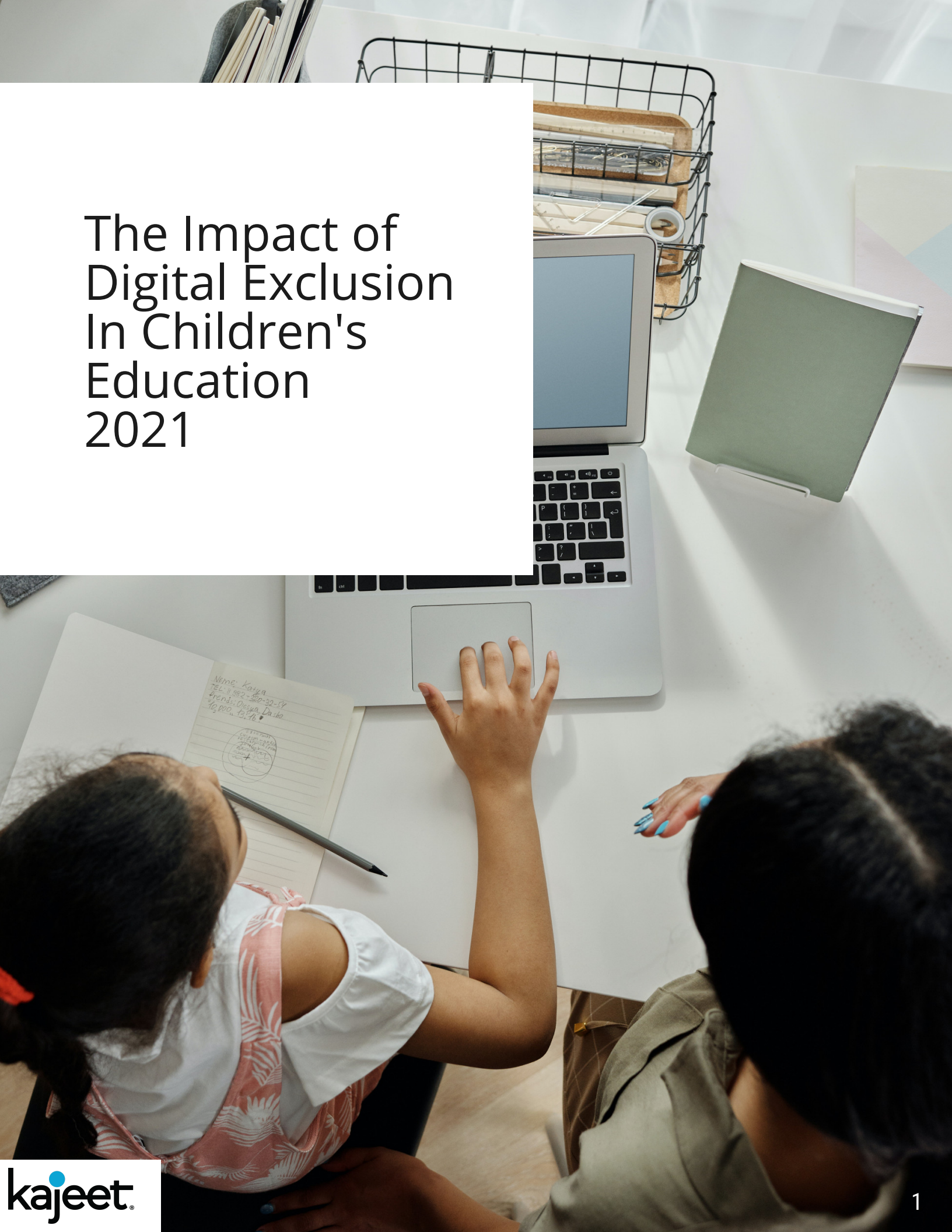
The Impact of Digital Exclusion In Children's Education 2021



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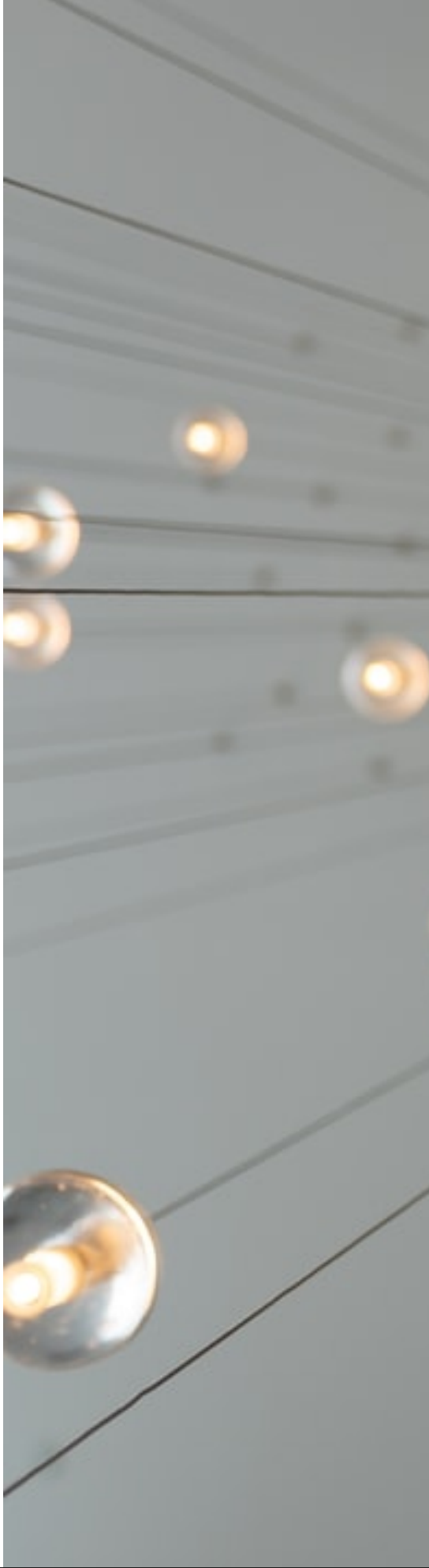


Introduction

Internet connectivity is taken for granted.

For many people, the internet has become ubiquitous, something we do not think about until we do not have it. It is just always with us.

At home all our devices are constantly connected including our TV's and music and when we are out it is the same, our phones are always on. If we need information, we just look it up.

When we connect with people, we use the internet now with WhatsApp, Facetime, Zoom or others. We just cannot live without the internet.

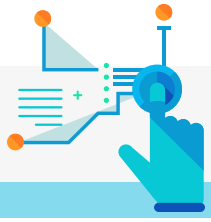
Most of us now take internet access for granted. However, that is not the case for everyone.

In this paper we will look at the effect of not having the internet has on the 9% of digitally excluded UK students and their education. [1]

A BRIEF HISTORY OF EDTECH

1960

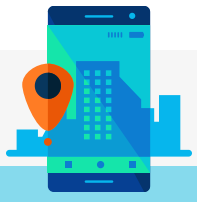
1960 - AT&T introduced the "data phone" and the first known modem at the same time 2,000 computers are in use in the United States. [2]



1980

1980 - National Science Foundation (NSF) funded national supercomputing centres at several universities in the United States and provided interconnectivity. [4]

The first parts of the internet were coming together, and all based around academia.



2000

2005 - There are almost 2 million computers in UK schools.

Nearly all secondary schools (99.9%) had internet connection, but bandwidth was an issue and the technical skill levels of educators were not sufficient to maximise the potential of this innovative technology. [8]

1970

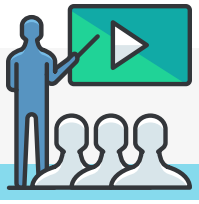
1976- The first Apple computer was released. For the most part society was pretty "green" to the whole concept. [3]

1990

1994 - Computers got introduced to schools [5]

1997 - Tony Blair commissioned the ICT policy in UK Schools' report, which investigated the ways in which computers could be introduced into schools, and how teachers could be trained to use them. [6]

1998 - There were 820,000 computers in UK state schools, and some of those schools had an internet connection. [7]



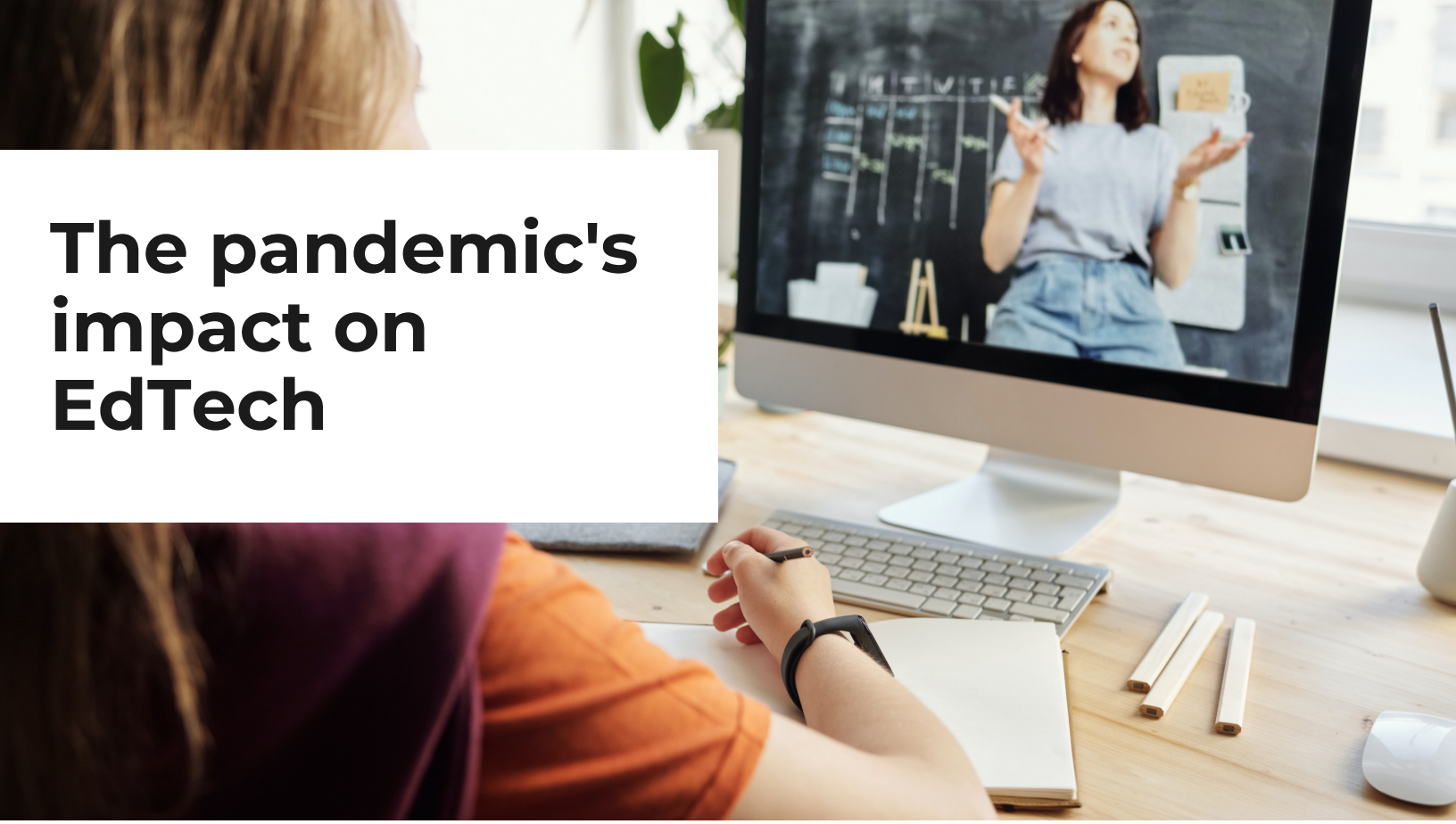
2010

2011 - First large-scale implementation of the Apple iPad in schools

2012 - Interest in the tablet format grew rapidly

2015 - Curriculum included coding with the aim to "ensure that all pupils can understand and apply the fundamental principles and concepts of computer science". [9]

The pandemic's impact on EdTech



And so came.... COVID 19

In 2020 the COVID pandemic changed teaching that has for the last 70 years been largely unchanged.

The curriculum has been linear and standardised, academic performance is prioritised and students are assessed through standardised tests.

However, when the pandemic hit we saw the introduction of virtual learning and schools adapted with incredible speed, agility, and resourcefulness to adapt to remote learning.

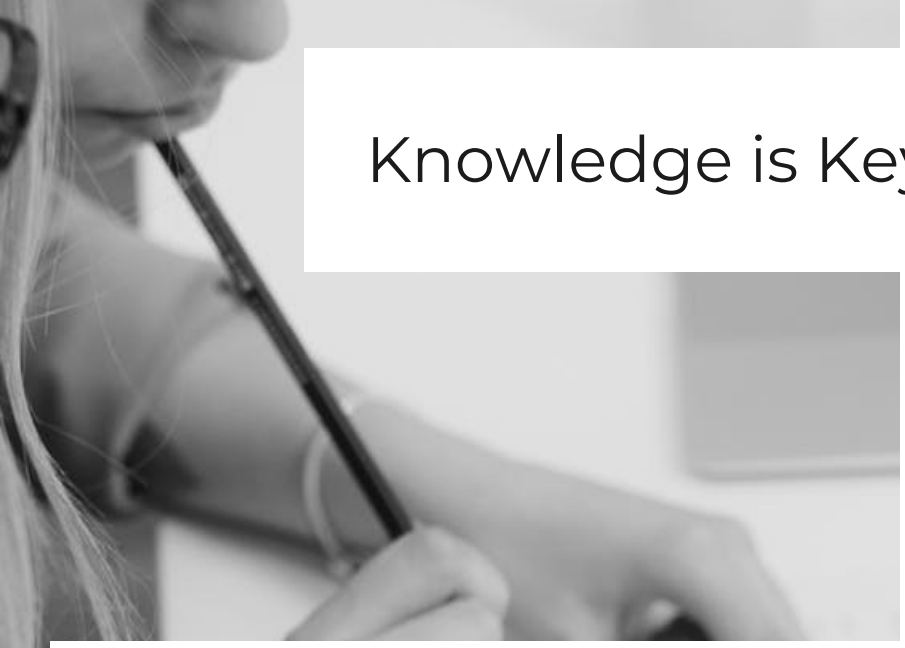
Has COVID changed this way of educating forever?

The OECD [10] suggests

- Students will become participants in their learning and learning processes.
- Responsibilities will be shared among a larger group of stakeholders.
- Student wellbeing will also be valued more in addition to academic performance.

140 Different

EDUCATIONAL TOOLS USED DURING THE PANDEMIC [11]



Knowledge is Key

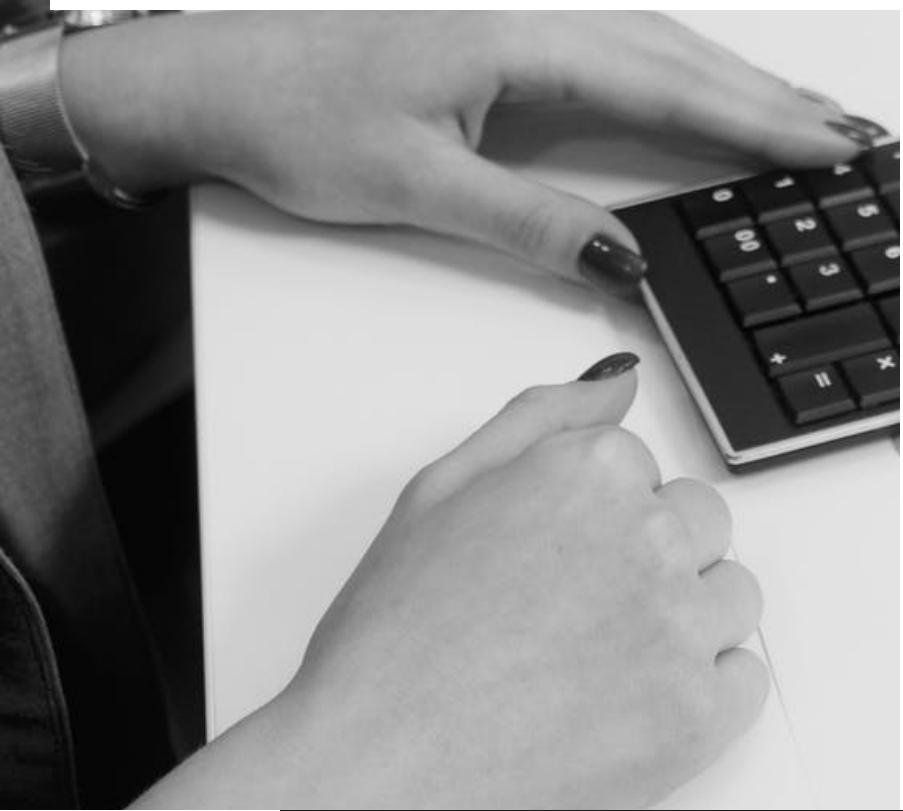
UK Teacher survey 2019 [12]

51% said they know of EdTech
14% have never heard of it.

46% stated that their school's use of technology is too low.

In schools where the technology has been embraced to a greater degree, teachers are able to witness more clearly the benefits that EdTech can bring, thus forming their desire for an even higher use of technology in the future.

By contrast, in schools with a more limited amount of technological integration, teachers are less likely to have an appreciation for the ways in which this can enrich the learning environment.



By recognising teachers who are technology leaders and encouraging them to share best practises, **schools can accelerate their digital transformation.**

Why EdTech?

For Prof John Domingue, director of the Open University's pioneering research and development lab, the "online genie" is out of the bottle and will not go back in. [13]

As schools return to normal, tech-savvy teachers will continue using digital and remote learning tools as an everyday part of education, having found tech is now central to delivering the best education possible.

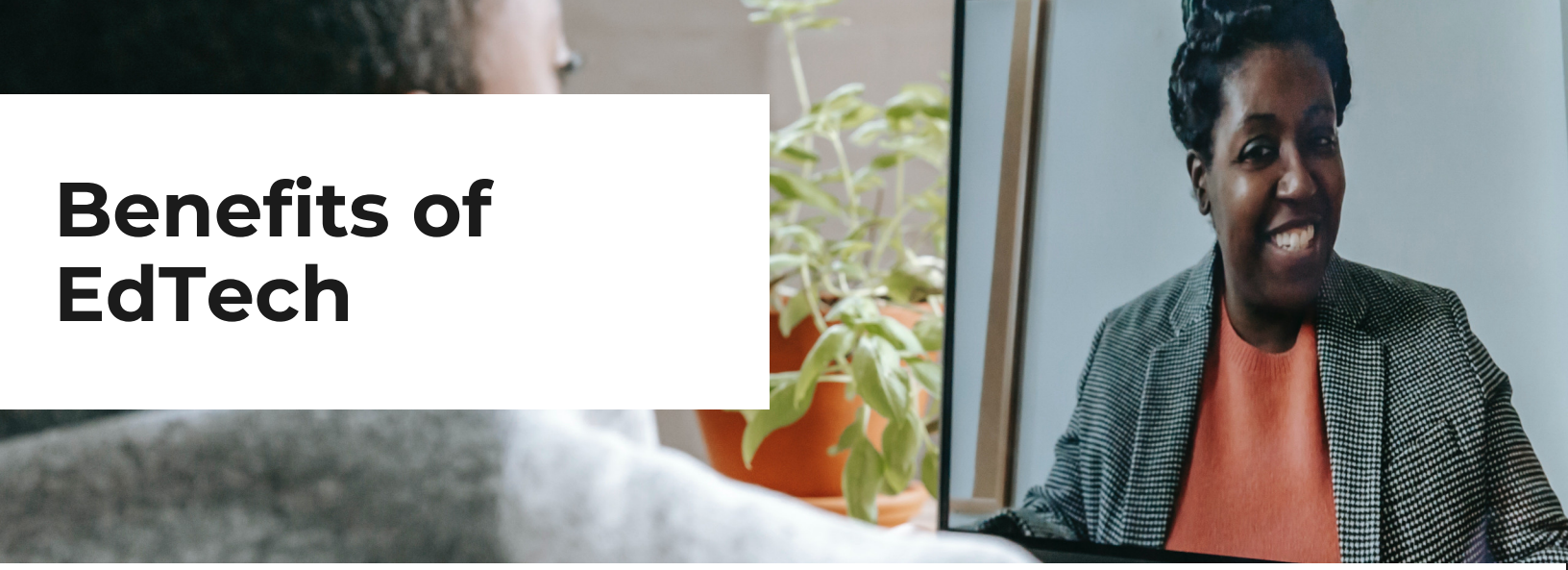
Nick Tuck; Head of Science at Ponteland Highschool has helped transform the online infrastructure at their school.

Due to Tuck's hunger to move things forward, every pupil now has their own online account and access to learning resources at any time, building the digital literacy and independence that will benefit them far beyond the classroom.

The days of pupils heading to "the computer room" should be a thing of the past. Technology needs to be part of everyday lessons and everyday home-working. As a result, when the pandemic reared its head, pupils and staff at Ponteland Highschool were as prepared as possible for home schooling. [14]

"If IT comes to you in a science lesson it becomes a normal part of that lesson, enhancing it."
-Nick Tuck

And one unexpected benefit of IT-integrated lessons, Tuck has found, is that pupils are far less likely to lose or forget about tasks. It turns out the dog cannot "eat your homework" if it is nestled safely online! [15]



Benefits of EdTech

Increased Collaboration & Communication

Educational technology can foster collaboration. Not only can teachers engage with students during lessons, but students can also communicate with each other. Through online lessons and learning games, students get to work together to solve problems.

Curiosity Driven by Engaging Content

Through engaging and educational content, teachers can spark inquisitiveness in children and boost their curiosity, which research says has ties to academic success. Curiosity helps students get a better understanding of math and reading concepts. Creating engaging content can involve the use of AR, videos, or podcasts.

Access to information

Technology provides students with easy-to-access information, accelerated learning, and fun opportunities to practice what they learn. Through the use of technology inside and outside the classroom, students can gain 21st-century technical skills necessary for future occupations.

Personalised Learning Opportunities

Technology can enable tailoring of the learning plans for each student. Teachers can create lessons based on student interests and strengths and tailor individual learning plans for each student. They will also have the ability to get the data to see what the students are struggling with to assist accordingly. An added benefit is that students can learn at their own pace.

Improved Teacher Productivity and Efficiency

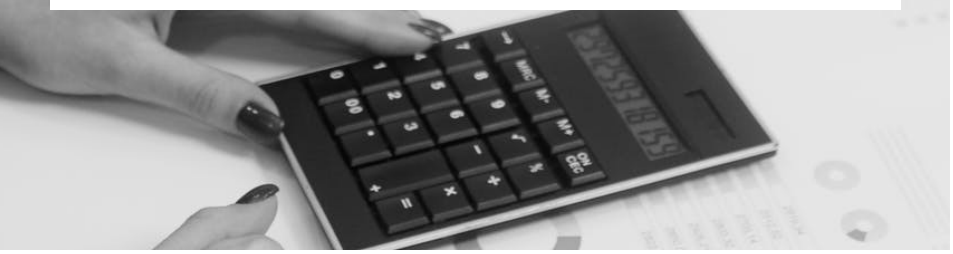
Teachers can leverage technology to achieve new levels of productivity, implement useful digital tools to expand learning opportunities for students, and increase student support and engagement. It also enables teachers to improve their instruction methods and personalise learning. Schools can benefit from technology by reducing the costs of physical instructional materials, enhancing educational program efficiency, and making the best use of teacher time

Is EdTech here to stay?

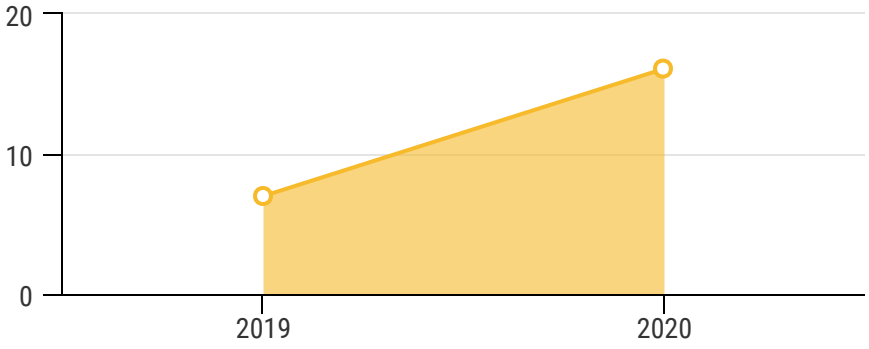
When politicians try to look at children who fall behind, there is a tendency to fixate on those who are poor and those who are bright – the excluded and the Oxbridge candidates. [16]

What they do not do is help the quiet and assiduous kids in the middle of the pack, the ones who would do better if they could just grapple with an idea or two for a bit longer.

For these children, moving online has been a winner.



Global investment of venture capital in EdTech (Billion) [17]



Jon Hutchinson, a teacher at Reach Academy in Feltham, who remarked in an online event that the pupils falling behind during remote learning were not those you might expect. [18]

"We found that our pupils who might struggle in class to understand things have often done well.

At home, they can watch a video two, three, four times if they need to. And they can take 20 minutes for an activity instead of 10. So, they have become more confident"

By accident, we may have hit upon a **solution to one of the achievement gap's biggest causes: children need different amounts of learning time.**

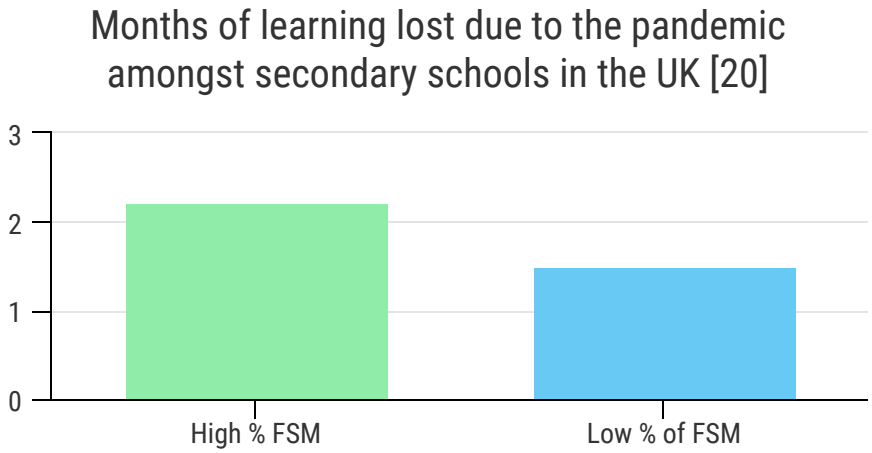
Some students grasp the content of a lesson in a snap. Others take the best part of an hour. Some need things repeated 60 times to have any chance of recall.

Teachers do their best, but no human can realistically tailor every lesson to each child. Enabling easy digital access for student to continue to learn from home after school's return will be key to maximise this new learning.

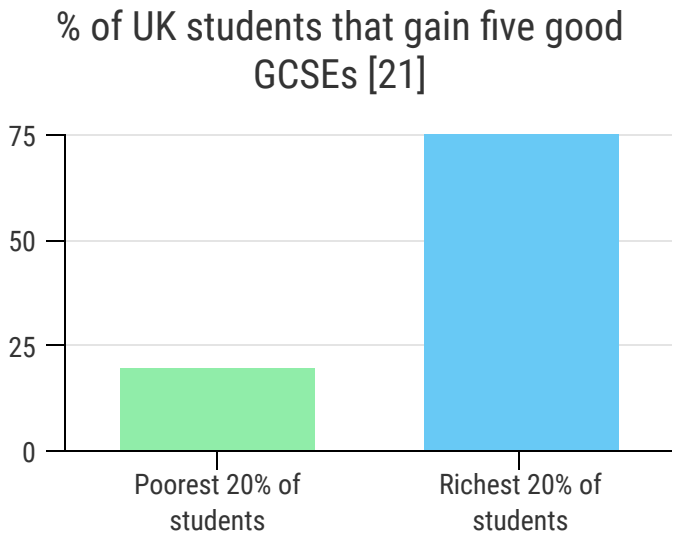
Risks of Digitally Excluded students

All the evidence is that technology is already embedded into learning today and that it's only going to become more prevalent.

What must be considered is that inequality is already rife across society. The ONO report into Child Poverty and Education stated that child poverty in the UK is a growing issue and affects more than 4 million children. [19]



While the gap between the poorest children and children from better-off backgrounds grows less quickly across secondary school than primary, by the time young people take their General Certificates of Secondary Education (GCSEs), the gap between rich and poor is exceptionally large.



For example, only 21% of the poorest 1/5 of students (measured by parental socioeconomic position; SEP) manage to gain five good GCSEs (grades A*–C, including English and maths), compared to 75% of the top quintile – an astonishing gap of 54 percentage points. [21]

That means, poorer student are over three time less likely to leave high school with good grades.

With this already massive inequality gap what impact will the introduction of additional technology have on a clear flaw in the current educational structure of the UK?

What impact does this have on students?

"In fact, the difference between those who have fast access and those who have no access, is about half a letter grade. Let us say the difference between a B minus and a B." [22]

70% of American Teachers assigns homework that requires an internet connection to complete [23]

30% of households making below 30K/year lack internet access [24]

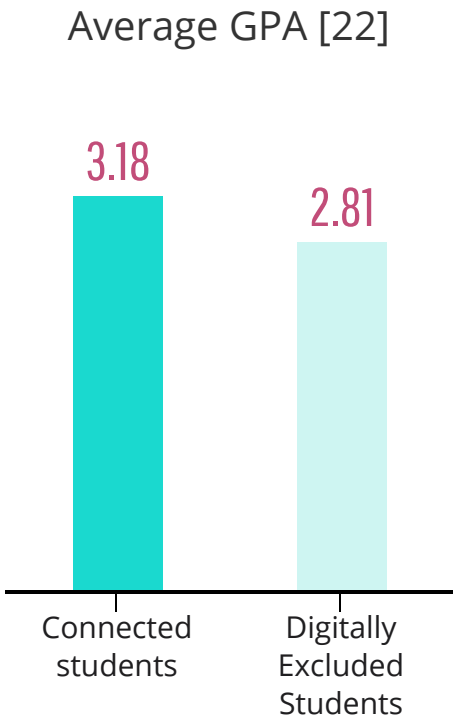
Research clearly shows that students with fast internet access have clearly higher-grade point averages. The difference between those who have fast access and those who have no access, is about half a letter grade. Let us say the difference between a B minus and a B

Not getting this extra points many cases could disqualify you from getting a scholarship, for example, to continuing education.

Digitally excluded students are also less likely to intend on completing a college or university degree.

A deficit in digital skills compounds many of the inequalities in access and contributes to students performing lower on standardised test scores, such as the SAT, and being less interested in careers related to science, technology, engineering, and math.

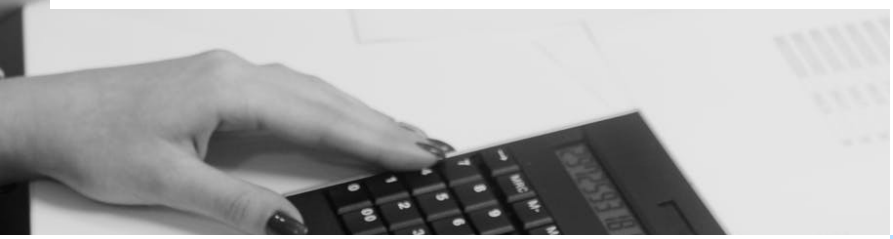
On average, students with fast home Internet access report an overall grade point average (GPA) of 3.18. This is significantly higher than the average 2.81 GPA for digitally excluded students.



Digital inequality amongst UK students

"Kids sitting in the school car parks with school laptops they had borrowed late into the evening, trying to peck away at homework because that was the only place they could get online.

This means they miss extra curricula activities or even a normal social life just to maintain parity with their classmates."
-Emma Gerch [25]



Children are ingenuous and often will find ways to get internet access but at what other costs?

The first step is being aware that there is huge and growing digital inequality in the UK and identifying who it effects.

The second thing to do is act on that before it is too late.
Would it not be a false economy to ignore this problem to save school expenditure but then watch disadvantaged students fall behind and impact the overall performance of the school?

Habits are learned at an early age.

Students who become accustomed to performing tasks such as homework without digital tools may never adapt, while the DfE produces guidance on this issue the problem is starting to grow.

The questions to ask are **children already being left behind, and if so, what damage is being done, is it reservable and at what cost in the future?**

We need to keep working towards digital equality and a level playing field for all.
With more schools moving towards a blended learning methodology, we need to provide all students with the same chances to excel.

'British teachers are world leaders in the use of educational technology so it is of great concern that pupils are being denied access to innovative and effective digital learning because of poor internet connectivity.

"The education system has moved to a new, pragmatic understanding of ways in which technology serves education and not the other way round.

There will be more advances of which we, here in 2021, can only dream. But the message is that teachers and students will be ready and willing to embrace them."
-Caroline Wright, BESA Director [26]

What can be done to bridge the digital divide amongst students?

This is an issue that cannot be ignored, are you ready to embrace new teaching methods driven by technology?

Can you afford to play catch up later with either additional teaching recourses or greater technological investment?

Enabling internet access is not difficult or complicated, the Kajeet solution comes ready out of the box with all the filtering preconfigured, access and protection are ready to go.

Kajeet Smartspot - How it works

1. Give a Smartspot to a student
2. The Smartspot will connect automatically
3. Students are able to study online
4. Schools control content access

Steps for a school to bridge the digital divide

Step #1

Review, how big is this problem at your school?
Speak to all involved stakeholders to see the need.

Step #2

Ensure there are procedures in place when a teacher discovers a student does not have access to remote learning.

Step #3

Review in detail your IT plan and inventory to ensure it meets the needs of your most vulnerable students.

Step #4

Share the strategic plan with all stakeholders.
The plan needs to be easy, streamlined and quick to activate.

Links

[1] https://www.childrenscommissioner.gov.uk/2020/08/18/children-without-internet-access-during-lockdown/
[2] https://en.wikipedia.org/wiki/History_of_the_Internet
[3] https://www.thoughtco.com/the-history-of-apple-computers-1991454#:~:text=On%20April%201%2C%201976%2C%20they,introduced%20about%20a%20year%20later.
[4] https://en.wikipedia.org/wiki/History_of_the_Internet
[5] https://www.wesleyan.co.uk/news-and-insight/ict-usage-in-schools-a-history
[6] https://www.information-age.com/30-years-technology-education-besa-report-advises-government-lessons-learned-123458887/
[7] https://www.wesleyan.co.uk/news-and-insight/ict-usage-in-schools-a-history
[8] https://www.wesleyan.co.uk/news-and-insight/ict-usage-in-schools-a-history
[9] https://www.apple.com/ca/education/docs/ipad-in-education-results.pdf 17
[10] http://www.oecd.org/general/searchresults/?q=future%20of%20education&cx=012432601748511391518:xzeadub0b0a&cof=FORID:11&ie=UTF-8
[11] https://edtechnology.co.uk/schools/uk-schools-used-140-different-remote-learning-tools-and-providers-last-term/
[12] https://uk.rs-online.com/web/generalDisplay.html?id=did-you-know/the-edtech-report
[13] https://www.theguardian.com/education/2021/feb/16/the-future-of-online-learning-the-long-term-trends-accelerated-by-covid-19
[14] https://www.theguardian.com/100-teachers/2021/mar/16/the-dog-couldnt-eat-the-homework-three-tech-savvy-teachers-making-digital-learning-rock
[15] https://www.theguardian.com/100-teachers/2021/mar/16/the-dog-couldnt-eat-the-homework-three-tech-savvy-teachers-making-digital-learning-rock
[16] https://www.theguardian.com/education/2021/mar/13/lockdown-shown-english-schools-secret-of-closing-achievement-gap
[17] https://www.theguardian.com/education/2021/jan/23/after-covid-will-digital-learning-be-the-new-normal
[18] https://www.theguardian.com/education/2021/mar/13/lockdown-shown-english-schools-secret-of-closing-achievement-gap
[19]https://www.ons.gov.uk/economy/nationalaccounts/uksectoraccounts/compendium/economicreview/february2020/childpovertyandeducationoutcomesbyethnicity
[20]https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/962330/Learning_Loss_Report_1A_-_FINAL.pdf
[21] https://www.jrf.org.uk/sites/default/files/jrf/migrated/files/poorer-children-education-full.pdf
[22] https://etisoftware.com/resources/blog/the-impact-of-broadband-access-on-student-school-performance/
[23] https://schoolonwheels.org/the-impact-of-the-digital-homework-gap-on-our-students/#:~:text=Computer%20and%20internet%20access%20is,must%20do%20online%20homework%20daily.
[24] https://www.pewresearch.org/fact-tank/2019/05/07/digital-divide-persists-even-as-lower-income-americans-make-gains-in-tech-adoption/
[25] https://schoolonwheels.org/the-impact-of-the-digital-homework-gap-on-our-students/
[26] https://www.global-edtech.com/wp-content/uploads/2021/02/The-Future-of-EdTech-Global-EdTech.pdf