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HOW TO AVOID

# 10 CRITICAL MISTAKES

SCHOOLS MAKE WHEN DEPLOYING  
CLASSROOM TECHNOLOGY





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# INTRODUCTION:

Firstly, thank you for taking the time to read this report, which is the result of a six-month collaboration with six of the most knowledgeable and inspiring people working in education today.

I want to be honest with you. I've created this report because, at a time when there has never been more pressure on school budgets, the amount of money that is essentially wasted every year on new classroom technology is terrifying. Not because the technology isn't great, or doesn't have the power to transform teaching and learning, but because if its deployment isn't underpinned by a strategic plan then its potential will never be realised (in fact, it might have the opposite impact).

The good news, though, is that it doesn't have to be like that. Deploying classroom technology successfully (by which I mean on schedule, on budget, with buy-in from all stakeholders, and delivering a tangible benefit to teaching and learning) isn't a magic trick. There is a robust and repeatable plan for any successful ICT project that anyone can follow in order to ensure their investment delivers on its potential; that plan is what I'm going to share with you in this report.

I hope you and your colleagues find it useful.



*Kristian*

**Kristian Taylor**  
Toucan Computing





# ABOUT THE REPORT AUTHORS:

**Tim Lings** is the Director of ICT at Heronsgate Primary School, an Ofsted Outstanding school that has three times been awarded the Naace ICT Mark award.



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**Paul Jackson** is the inspirational Head Teacher who took Manorfield Primary School in Tower Hamlets from Inadequate to Outstanding in the space of just 5 years.

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**Andrew Scott** is the Business Manager at a London primary school and is experienced in HR, business development, budgeting, finance modelling, contract negotiation and change management.



# #1: VISIT A SCHOOL THAT HAS ROLLED OUT A SIMILAR ICT PROJECT SUCCESSFULLY

**Author: Julian Coultas**

Networking is crucial to the lifeblood of a school and visiting schools that are using technology effectively is a key part of a successful roll out. Obviously, choosing a school with a similar profile is important, but not always possible. Looking at a school's provision in terms of the model they are using is crucial; is it 1-1, shared iPad, or class sets?

Discovering how the school has integrated the technology with learning is best seen from within the classroom, so ideally try and observe some lessons. Looking at how the teacher manages the learning is important. Basic things such as being able to mirror both the teacher's and student's screen is critical to student engagement. Some schools will use Apple TV, others Airplay-based screens and even software solutions like Airserver.

Listen to teachers' experiences, especially in terms of how they found the transition to using the new technology and what they felt the impact has been. In Primary Schools look carefully at how the technology is being deployed in EYFS and higher up in school as it will be very different in most cases.

On a practical level, exploring how devices are managed on a daily basis in terms of student access and charging at the end of the day is useful. Some schools use charging trolleys and/or cabinets, while others use large USB chargers and charge them centrally in a tech office.

It's useful to find out what the school's internet speed and bandwidth is in relation to the number of devices that are being used. One of the most common challenges that schools face is the squeeze felt on the WIFI network when additional sets of devices are rolled out. Hearing about the school's Mobile Device Management (MDM) solution and how it has helped or hindered the process is also helpful.

Contact the team at Toucan who can setup a visit to a great local reference site, including an Apple Distinguished School, recognised as a centre of leadership and educational excellence.

## #2: ENSURE INFRASTRUCTURE IS FUTURE-PROOFED FOR INCREASED CAPACITY

Author: Tim Lings

WIFI is a bit like electricity; in the same way you wouldn't dream of installing an ICT suite of computers and not give thought to how you would power the computers, modern mobile computers (whether it's iPads or Chromebooks) need a decent and reliable wireless Internet connection in order to be useful.

When considering upgrading your network, you need to think about the number of devices you're likely to need and where they're going to be used. In a school, you need to plan for coverage (so you can get a WIFI signal everywhere you might need it) and for density (so that it can cope with 30+ devices in a classroom), as well as thinking about bandwidth (that your 'pipe' is large enough so that everyone can download data at the same time without the connection slowing down).

It's worth getting an expert eye to make your school network work at its best, but don't forget that there are excellent cost-effective options out there.

Once your network is in place, you need to think about how you're going to charge and store the devices. For older students, some schools allow the devices to be taken home, which shifts the problem onto students. For everyone else, it's important to find a way to charge, store, and possibly transport a class set of devices. We discovered some charging furniture that has shelves for each iPad, a secure door and then power strips inside to make use of the iPads' own chargers. They look pretty inconspicuous in the classroom too!

In terms of managing all of the data and learning that might be produced on an iPad, the first issue to think about is how you might recover a student's data if the device is broken or needs replacing. With iPads, this problem is easily solved using iCloud. With Apple School Manager (an online portal accessible via [school.apple.com](https://school.apple.com)), you can create Managed Apple IDs for each of your students, which gives each individual 200GB of free online cloud storage for iPad backups, documents, and photos. If you make use of Apple's Shared iPad mode, it's possible to set up a set of iPads so that multiple users can log in and out and all of their documents, data, and settings will be just where they left it before.

The second problem is to do with how other interested individuals (e.g. teachers, SLT, Ofsted, parents etc.) are going to easily see the learning that's happened on an iPad. There are lots of solutions out there, which all have pros and cons. Here are a few that can work successfully:



### **Seesaw**

This has free and paid options and is great for creating a student journal of the learning in class. A particularly useful feature is how students can log into their accounts using a class QR code, making managing shared iPads really simple. The paid option allows for more institutional oversight and the ability for journals to be kept year on year. All uploads are limited to photos, videos and PDFs and there are many annotation tools built in.



### **Showbie**

This allows teachers to create digital classes for students where work can be handed out, taken in and then feedback given using annotation and voice-note tools. The 'pro' functionality does require an annual subscription, but you can use a basic free account to start with. The 'pro' version also includes parental access, allowing parents to securely see all the learning that happens in class. It supports Google authentication and works with any file types.



### **Apple Schoolwork**

This is Apple's latest offering and leverages Managed Apple IDs to allow for easy sharing of documents between your class, including the ability to collaborate in iWork (Pages/Numbers/Keynote) documents, either between the teacher and each individual or between the teacher and the class.



### **Google Classroom**

If you're using Google's collaborative tools and have student logins already set up, this offers a way of organising and managing the learning in a classroom. There is an iPad app and it works in a web browser too.

# #3: CREATE A STRATEGY FOR MEASURING AND REPORTING IMPACT

**Author: Abdul Chohan**

For any technology programme in education to be successful, it is necessary to understand the impact that it will have on the core purpose of the organisation. In the case of education, this is teaching and learning. Successful programmes always take into consideration how the technology will amplify teaching and learning, and various associated pedagogies. In order to reach the right decision in terms of the technology that should be used, it is necessary to conduct simplified impact studies that are measurable and aren't always focused on the wow factor.

Consider how the technology will allow you to achieve your objective in a manner that was simply not possible in the past. Once a pilot study shows a positive impact, it will be important for senior leaders to decide if this should be a non-negotiable across the school. It is not always necessary to have non-negotiables, however the problem with not having any at all usually means that the novelty of technology can simply wear off.

In order to have consistently good learning experiences in a school, it is important that we harness the power of technology to save time and costs, and develop the workforce by ensuring frequent and relevant professional development is included as part of the implementation. This will need to develop and grow, and opportunities for sharing best practice will need to be created. This is not always possible in a face-to-face fashion, however a number of platforms are available where teachers can share best practice with colleagues.

The programme needs to be sustainable. An on-going professional development programme that allows for the sharing of best practices in innovative ways can mean the difference between a successful programme and one that is not.

The effective use of technology is analogous to plumbing. Water is seen to come out of a tap, however this is only possible due to a bespoke design of pipes and bends that deliver the water to the user. Taps alone cannot deliver the goods. In the same way, a successful iPad programme requires a bespoke pedagogical design that is fit for purpose in delivering a great learning experience. Technology alone cannot deliver the goods.



# #4: REALISE JUST WHAT'S POSSIBLE NOW IN TERMS OF MOBILE DEVICE MANAGEMENT

**Author: Julian Coultas**

Mobile Device Management (MDM) is the web-based software toolset that schools use to manage their iPads. MDM tools are a subscription based service. They vary in price based on how many devices are being managed, so understanding what you are getting for your money is important.

MDMs work in conjunction with Apple School Manager (ASM), another web-based tool. The great thing about this combination is that the days of physically plugging iPads into computers to set them up is over. With MDM and ASM, a brand-new iPad can be unboxed and all the school settings appear to be pre-installed along with appropriate apps. This can be used to manage individual teacher iPads, 1-1 set ups, and class sets of iPads. Accounts set up with ASM will automatically have 200GB of back up storage, and as a result, all staff and student work is safely backed up to the cloud. Existing devices, once they are in the MDM system can be remotely wiped and reset for new roles and users saving time for the school's tech team.

The division of labour tends to be as follows:

Apple School Manager (ASM) is used for buying apps and content, as well as creating managed Apple IDs for staff and students. It is also useful in terms of organising classes of iPads and linking a teacher iPad to a class, so that the Apple Classroom app can be used by the classroom teacher to control devices and mirror them effortlessly.





The MDM solution is used to deploy all the necessary internet access, filtering, and security settings. The MDM is also used to wirelessly push out the apps and ebook content to devices. It can also be used to configure home screens, apps that appear on the dock, and wallpaper. It can hide/show apps as well as move apps and licenses around device sets, providing updates to OS and apps.

MDMs will also enable the school to track the location of misplaced devices and provide the tech team with information about the usage in terms of data, how recently the device has been used, and the battery charge status without having to physically look at the device.

Some neat functions of MDM include the ability to set overnight schedules for updates. This is especially useful for slower and busy school networks that would struggle with multiple devices updating during the school day.

One powerful development with MDM and ASM has been the ability to set up “Shared iPad”. This approach enables multiple students to log in and out of the same iPad. Schools can then provide a 1-1 experience, but on shared devices. Each student’s photos, videos, and other app work is safely stored and backed up on the device and to the cloud. Shared iPad is a good starting point for schools that want the 1-1 experience but either don’t have the budget or the confidence to roll out a full 1-1 model.



# #5: PLAN A FINANCE SOLUTION THAT IS SUSTAINABLE

Author: Andrew Scott

With school budgets under so much pressure, any ICT purchase over a particular threshold is likely to be well thought through and scrutinised at a number of levels, by senior leadership and possibly by governors. Sadly, it's common for this scrutiny to focus too heavily on the initial investment and not enough on the ongoing costs of ensuring that the project is sustainable.

It's common for schools to use built up reserves, or save funds over a period of time in order to make larger capital ICT purchases. Sadly, too often, these projects which have required a significant initial financial outlay are not adequately funded in the long term.

Examples of this include kitting out an ICT suite for 30 children, without an adequate future maintenance/repair/replacement budget. Classes then planning to use the ICT suite find that several pieces of equipment are not functioning properly, which then presents a huge barrier to the children's learning.



A school's ICT strategy should allow for this. To ensure there is regular maintenance, a system for reporting items broken and not working, a budget for the replacement of broken items and, ultimately, a plan for future replacement of out-of-date equipment is critical. A one-year strategy is not adequate for this; it must be a multi-year strategy, but one which is subject to regular, possibly annual reviews to allow for the inclusion of newly released and updated technology.

A challenge in this area is often the desire to purchase identical items to service a whole school, department, or ICT suite. Purchasing items at the same time is likely to result in them all needing repairing, but certainly replacing at the same time. A more sustainable approach would be to adopt a multi-year purchasing strategy, so the replacement is also ongoing, rather than all at once. This approach also gives the opportunity to 'pilot' particular ICT purchases and the chance to trial items before they are purchased in more of a bulk.

This of course presents an interesting debate around value for money, and whether bulk purchasing presents greater financial savings, or whether this is actually a false economy in the long term.

A multi-year strategy presents the opportunity to identify the source of any future funding needs and will help determine the extent of and timing of any school fundraising to be undertaken to support future purchases.

Any future financial plan cannot sit in isolation and must be considered alongside a school's other future budget plans. Consideration should also be given to different forms of finance such as leasing, subscription, and parental contribution. Find a solution that fits your school rather than always purchasing outright.

Ensuring the school budgets for licence renewals and software upgrades is also essential. A balance is required between the cheapest deals and length of commitment a school is comfortable making, as technology requirements change rapidly and unexpectedly.

# #6: ENSURE YOUR SCHOOL'S CULTURE IS ALIGNED WITH THE AIMS OF THE PROJECT

Author: Julian Coultas

Whether you are rolling out new tech, or a new iteration, school leaders need to be seen to be actively involved and supporting it by using it.

For example, the Head Teacher that historically would have used their laptop for the assembly now uses their iPad and Airplay, because this is what they expect their teachers to do every day in class. Likewise, the management of the school should be communicating, organising digitally, and not carrying around folders of papers.

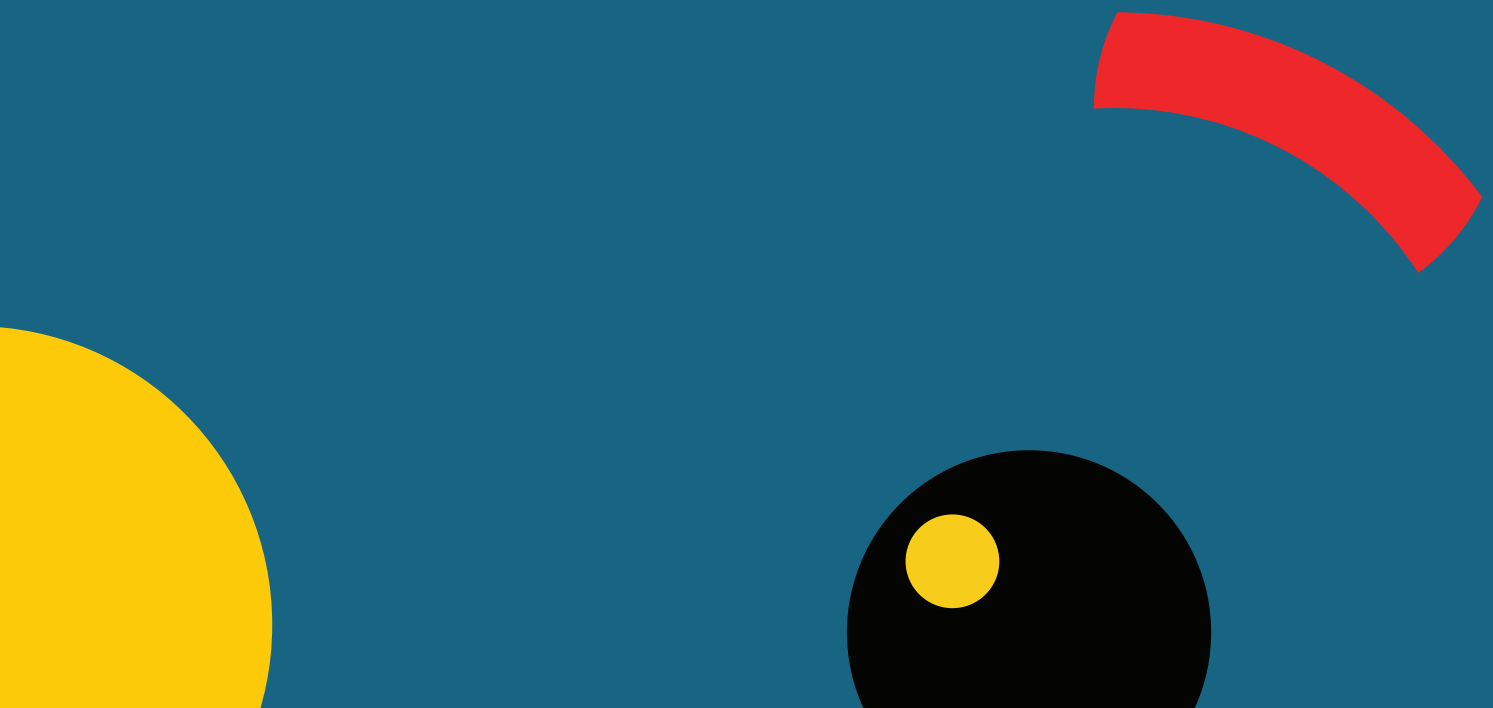
Schools with a “growth mindset” approach also tend to be confident with ICT, but schools that struggle with change less so. The iPad, for example, has often been described as disruptive technology and has challenged existing approaches to technology in schools. This can be seen in the disappearance of ICT suites in primary schools. Teachers don't always have time anymore to take thirty children out of class and spend ages logging into a suite of computers. Now, the tech comes to them in the classroom and is “instantly on”. If technology is flexibly integrated into the classroom it should be easier to integrate it pedagogically.



Exploring how that shiny new tech can improve ways of working and reduce workload should involve everyone. In recent years, the shift from email to real-time instant group messaging, for example, services like Slack, have transformed internal school communication, improved the sharing of good practice and saved valuable time. Using Google Meet as a means of having face-to-face video conferences with partner schools without having to leave the campus are examples of saving time and working smarter.

Having an agreed whole-school approach and a core set of skills firmly embedded into everyday teaching practice helps teachers understand what is required of them. Leaders should have a clear idea about digital expectations of their staff as teachers. This might include how they deliver lessons using a screen and stylus, or use an App like Apple Classroom to control the children's devices in class. Leaders also need to be clear on the value of digital outcomes. If "book look/scrutinise" only focuses on paper outcomes this will quickly have a detrimental effect on the perceived value of learning with technology.

One of the best ways to value the use of technology in school is to celebrate it. This can be managed easily by constantly updating the school website and its social media platforms with examples of children's work and internally by using digital signage. Trilby TV digital signage enables all the teachers in school to add photos, videos, and presentations to a playlist that then plays on the large screen in the school foyer/entrance. Not only does this give visitors a glimpse of the learning in school, it provides an audience for the children's work and raises the value of these outcomes for staff.



# #7: TRAIN STAFF SO THEY FEEL CONFIDENT IN USING THE TECHNOLOGY TO ITS POTENTIAL

**Author: Tim Lings**

The importance of this cannot be overemphasised! Technology is not a 'magic bullet' in the classroom, automatically and instantaneously transforming teaching and learning. Rather, it requires teachers who know their subject, who understand how children learn, and who have a good grasp of just what is possible with technology.

Hopefully, subject knowledge and pedagogy are already being taught and developed in your school, so it's the understanding of technology that is the missing link, and how that interacts with the subjects being taught and how the students are learning.

In a sense, the best thing to have in a school are motivated individuals who know how to use technology for learning and can then share it with the rest of the staff team. This might be through coaching with individual teachers or through running whole-staff training during a staff meeting or INSET day. This needs to be tailored to the needs of teachers of the school and part of a regular programme of staff development. Technology is always changing, as are the members of a staff team over the years, so professional learning with technology is an ongoing task.

There are many resources out there to help as well. One of them is Apple Teacher, an online training programme on the essentials of using iPad and Mac in the classroom. This can be accessed via [www.apple.com/uk/education/apple-teacher/](http://www.apple.com/uk/education/apple-teacher/) and completed at your own pace. You get to choose to go down the iPad or Mac route and then there is a quiz to earn a badge for each of the core Apple apps (iMovie, GarageBand, Pages, Numbers and Keynote) and then for core skills ('Introduction to iPad', 'Fostering Creativity with iPad' and 'Enhancing Productivity'). Once you earn all eight badges, you are officially an Apple Teacher! If you encourage all staff to try and earn their Apple Teacher status, this means there is a baseline of understanding about educational technology.

There are also networks of Apple Regional Training Centres across the UK and Ireland. These are schools and colleges that offer free iPad and Mac training for educators. Details of these can be found at [rtceducationevents.com](http://rtceducationevents.com). You can also follow the hashtag #AppleRTC on Twitter to see what's been happening near you.

There are also a network of Apple Professional Learning Specialists across the UK and Ireland who can design and deliver bespoke training of how to utilise Apple technology in the classroom. Once teachers are shown meaningful ways of use the technology for learning, they can then start to integrate it effectively into the classroom.



# #8: TRAIN AND UTILISE STUDENTS IN THE PROCESS

Author: Paul Jackson

***“A bad workman always blames his tools.”***

The resources purchased are only ever going to be as good as the end user's ability to use them. It is therefore vital that for any investment in ICT, the students are involved as much as possible.

Staff training has been mentioned in point 7 above. In addition to this, fully involving students and their skills will greatly enhance any investment, ensuring even better value for money.

The children and young people we work with will often have excellent knowledge and experience of new technology before we do as school staff. Taking age-appropriateness into consideration, involving students in developing a school's vision for ICT, turning this vision into a strategy, and then involving them with the actual purchasing of any equipment will allow them to take ownership of the equipment, growing a long-term respect for and investment in the resources of the school.

One of the best things about introducing new technology to pupils is that their inquisitive nature means they learn how to use it very quickly, meaning we just need to steer their focus so they are able to make the most of the technology to best aid their learning. This can be achieved by keeping them involved in the planning stages and providing training post implementation.



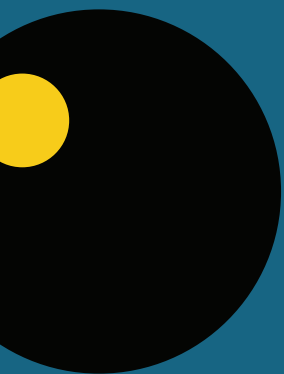


Early investment in training for students (possibly as part of their induction to a school, subject, or year group) and teaching them the basics of any new resource will enable them to access it at a greater depth, enabling their learning to be greatly enhanced.

Students who display a particular knowledge and skill in this area should be valued as 'digital leaders', and effectively trained and empowered to train and support others. They will then act as highly effective role models to other students, allowing any ICT resource the greatest chance of success.

The digital leaders should be partners, who would accompany school staff on any visits to other schools (see point 1 of this report), having prepared the questions they would like to ask prior to the visit, potentially building a network with like-minded students from other schools and educational settings.

Having these 'digital leaders' in your school will provide invaluable support for teaching staff who may feel nervous or apprehensive about utilising new classroom technology. I've witnessed, on numerous occasions, students go to the aid of a teacher struggling with technology, and the benefits both in terms of maximising teaching time and nurturing leadership skills in pupils are numerous and far-reaching.



# #9: PUT ONLINE SAFEGUARDING AT THE HEART OF EVERY STAGE OF YOUR PROJECT

Author: Dave Smith

It is crucial to consider the provision that you have in place to keep all stakeholders safe online and reflect the latest Keeping Children Safe in Education guidance. **Kent County Council's 'The Education People'** has a summary to assist when reviewing the requirements here which you may find useful to refer to.

It is imperative to have the correct policies in place before accessing IT equipment. Make sure that you have an up-to-date Online Safety policy in place and that all stakeholders, pupils, staff, governors, visitors, and contractors have signed an Acceptable Use Policy – and, very importantly, clearly understand what they are signing.

An excellent source of help here is the **London Grid for Learning's (LGfL/Trust.net) Online Safety** resource centre – a one-stop shop, including up-to-date policies and guidance to assist education providers in getting online safety provision right. One such document referenced on the LGfL/Trust.net site is **'UKCIS Online safety in schools and colleges: Questions from the Governing Board'** which provides useful questions for governors to review online safety policies, procedures, and education.

When selecting broadband provision, choose wisely. It is tempting to look for an alternative 'cheaper' broadband provision, but does it have the safeguards you would expect? **NEN - The Education Network** is a collaboration of UK Regional Broadband Consortia (RBC), providing broadband connectivity for schools. Users can also access the wider internet through NEN's secure gateways, with access policies managed by the local RBC.

NEN ensures that all schools, colleges, and universities are connected through a single backbone, enabling a high-quality learning experience in a safe and secure networked environment. The systems undergo rigorous testing and come with built-in content filtering systems and a wealth of educationally-focused content. NEN have developed a number of useful guides to assist when procuring and considering options, including **'Selecting Broadband Connectivity For Your School'**, **'Differentiated Filtering For Schools'** and **'Managed Monitoring & Reporting Solutions'**.

Are you going to allow student/staff devices onto your school network? If so, why not use NEN's **'School E-Security Checklist'** which sets out 20 e-security controls that, if implemented effectively, will help to ensure that school networks are kept secure and

protected from internal and external threats. NEN have also produced a document outlining **'10 Steps To Protect Your School's Network: A Guide For School Leaders'**.

Individual usernames and passwords should be in place and updated on a regular basis. Ensure that devices have auto logouts. Avoid generic passwords and remember that if you leave a device logged in, then whoever you hand the device over to is you by proxy. Are you happy to take that risk?

Make use of the **360 degree** safe tool to audit online safety provision in your setting, making use of the focus on 'Infrastructure' and the sub-sections of 'Passwords' and 'Services'. The recently updated **Naace Self-review Framework** has a section devoted to 'Digital Safeguarding'.

Are all of your software applications and data handling processes GDPR compliant? LGfL/Trust.net has an excellent **GDPR section** to assist with the management of GDPR procedures, including a useful **'E-Security Policy'**.

How about disposal of legacy IT equipment? The Waste Electrical and Electronic Equipment Directive (WEEE Directive) aims to reduce the amount of electrical and electronic equipment being produced and to encourage everyone to reuse, recycle, and recover it. Whether you decide to use a specialist asset disposal service provider or take ICT equipment to the local authority recycling centre, you are responsible for ensuring that all personal data is deleted. LGfL/Trust.net has another document that can assist **here too**.



# #10: PLAN YOUR SCHOOL'S DAY-TO-DAY APPROACH TO ONLINE SAFEGUARDING

**Author: Paul Jackson**

Online safety must never be an afterthought and must be key to planning, purchasing, rolling out and the ongoing use of any investment in school ICT.

Any purchase should be in line with a school's ICT strategy, part of which should also be a plan to review the related ICT policies. If it is not part of the plan, a planned ICT purchase is an ideal time to undertake a review of your school eSafety / online safety policy and how any teaching of e-safety is covered in the school's curriculum.

There is no fixed frequency of reviewing a school's policy and approach to e-safety, but reviewing every three years, or as new-technology arrives is an approach that many schools take.

Section 1 of this report mentions visiting another school who has rolled out a similar ICT project successfully. Discussing online safety as part of this visit will provide an insight into any elements that might be difficult to foresee prior to one's own rollout.



It would be irresponsible for schools to give children and young people in their care unlimited and 'unregulated' access to ICT. Consideration must therefore be given to the selection and deployment of a content filter to accompany any new ICT purchase. An existing filter may well be adequate, but as with the policies mentioned above, a new purchase is an ideal time to review this aspect too.

It is important to remember though, that it would be equally irresponsible for children to be 'overprotected' in their school setting, as many children will still have unlimited, unregulated, and unfiltered access to ICT and the internet outside of school.

Schools take different approaches to content filtering. One approach is not to filter out all undesirable words/sites, but to monitor closely in order to recognise when undesirable words are used and sites visited, using this as an opportunity to teach children the dangers of particular sites, and raise awareness of e-safety in a live context.

When introducing a new piece of technology or a new practice, a risk assessment should be undertaken involving ICT coordinators and relevant teachers. Regular updates should be scheduled for all staff to be made aware of current practices around online safety in schools as part of the annual Inset training timetable.

Ensuring that your Data Protection Officer is aware of your ICT policies is essential in particular in regards to disposal of equipment, use of personal data to be GDPR compliant, and online safety protocols for staff and pupils.

There are many useful sites which offer free online safety guidance to schools, including:

<https://learning.nspcc.org.uk/research-resources/schools/e-safety-for-schools/>

<https://www.gov.uk/government/groups/uk-council-for-child-internet-safety-ukccis>



# WHAT NEXT?

I hope you enjoyed reading this report. I recognise that there is a lot of information here and it may feel slightly overwhelming, so if you do want to pick up the phone and have a chat with me about any of these issues, please do not hesitate to do so.

Beyond that, on behalf of Toucan Computing, I visit schools on a weekly basis to carry out free half-day Planning Essentials Workshops. This is where I come to your school and spend a half day meticulously planning your upcoming ICT project with you and your colleagues in order to ensure that nothing is overlooked. For more details, just contact me on the details below.

Thank you.



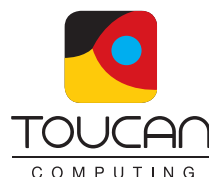
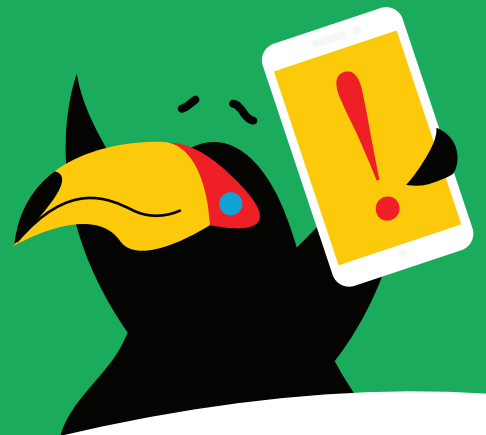
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