Tablets and Apps

How to ensure impact on teaching and learning

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The purpose of this report

The purpose of this report is to provide practical support and guidance for school leadership teams who are considering the purchase of tablet devices. It tackles some of the common questions: How do you use a tablet in the classroom? Are tablets the right technology for you and what will they cost? What types of tablets are available? What are apps?

Just like with any technology, it is important when buying tablet devices to consider what it is you want them to improve, what impact you expect them to have and how they represent value for money. This report has been written to help school leadership teams think about the wider role of ICT in education and how tablet computing can help raise standards by improving learning and teaching through the use of technology. We will consider the core principles of what makes learning exciting for children, and consider some of the policies and procedures that need to be thought about and put in place before any large scale tablet deployments.

This report can also be used to support and guide school leaders who have already purchased tablets, and help get school leaders and ICT co-ordinators thinking about how the devices are being used in their classrooms and what improvements can be made.
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Tim is currently Director of the School House Partnership (SHP), a school improvement and learning consultancy established in 1999, which specialises in the role of technology in learning. The bulk of Tim’s work in the SHP has been the provision of strategic support and guidance for school leaders, local authorities and NGOs. Tim has been an Assistant Head in a secondary school, an Ofsted Registered Inspector and was for many years a Local Authority adviser and inspector. Tim has been the Chair of the Naace executive Board of Management and remains very active within Naace as a Fellow, a Third Millennium Learning Guide and a Leader for TOTAL, the Naace development programme for school leaders.

TERMINOLOGY

In this report you may come across some terms which you are not familiar with. We have created a Jargon Buster in our Tablets and Apps Advice Centre to cover all the terms you’ll need to know surrounding the subject of tablets and apps.

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In many countries across the world we will move to ubiquitous 1:1 (one computer per child) learning environments within the next 5-10 years and it is highly likely that tablet technology will be at the heart of these deployments.

However, the technology itself will not be enough to drive the whole school transformation that is needed within many schools. Infrastructure, good pedagogical practice, school leadership and teacher professional learning are all key ingredients for success.

For the schools that get this right, good technology integration through the use of tablets has the potential to unlock the wonders of an education future that we are only just starting to imagine.

The place of ICT in schools

In the UK during the first part of the 21st century there was a real focus on ICT in schools. In England, ICT has been a statutory subject since before 2000. Many of the ICT lessons that were taught in both primary and secondary schools focused around office based administrative and productivity skills. In doing this, schools fulfilled their statutory requirement to teach ICT to young people but this was often at the detriment of children learning real computing skills. The result was a whole decade of children who were unable to code, build and create things digitally. The extent of this problem for the UK is well documented in two reports: the Next Gen Review, researched and written by Ian Livingston and Alex Hope and the Royal Society report Shut down or Restart. Both reports found that the teaching of computing in English schools was highly unsatisfactory, based upon evidence provided by a wide range of stakeholders.

The political response to this emerging problem in many countries (including the UK) has been very interesting. Almost overnight schools have been instructed to teach ‘real’ computing again. There is also another area of ICT in education, which is arguably even more important. This third area is the use of ICT to support learning and teaching in all areas of the curriculum and not just the domain of the computer suite. It is the use of ICT to make learning real, relevant and exciting for young people. It is the use of ICT as a methodology and a pedagogical approach to raising standards. The schools exemplified in this report (pages 14-19) are already doing this well through the use of tablet technology.

ICT and school inspection

Although specific support was lost as part of substantial cost savings, the current government sees ICT as an important curriculum subject, a tool in support of learning, and as preparation for life. To improve the current position of ICT in schools, the Programme of Study has been retracted, and future study of ICT will also include substantial elements of Computer Science. The aim is to provide schools with more freedom to develop the use of technology for learning, and to make taught ICT more relevant.

An ongoing issue is how schools create and manage filtering polices that protect children from inappropriate and illegal content without blocking powerful tools for learning.

In schools where the National Curriculum remains statutory, inspectors look to see that there is appropriate use of technology, as required by their Programmes of Study, which remain in force. This includes ICT, even though it has no Programme of Study. Inspectors are aware that the use of technology in lessons can add significant value to
the learning process, and it is becoming more difficult to demonstrate good and outstanding teaching without some use of technology. For Ofsted we need to know our pupils very well.

In addition, the need to demonstrate that every pupil makes progress in lessons over periods of time, and the identification of pupils qualifying for the Pupil Premium are two examples of where very good recording systems are required. These are only effectively delivered through the use of good information systems.

**ICT as a subject**

School leaders will know that schools, unless they are academies, are required by law to deliver the National Curriculum. Many will also know that the ICT Programme of Study was disapproved after consultation. However this does not mean, as commonly believed, that schools do not have to teach the subject of ICT any more. ICT remains a National Curriculum subject, and therefore must be taught: the retraction simply removes the need to follow the Programme of Study which defined what ICT is. Schools should still provide an ICT curriculum which is broad, balanced, relevant and progressive. One way to do this is to consider what the outcome of such a curriculum would be, and that is ICT-Capable pupils. ICT-Capable pupils will be able to complete a piece of work or solve a problem by safely using their own choices of tools and processes.

**ICT in support of learning and teaching**

There is an expectation from both government and Ofsted that technology will be used in learning and teaching to raise standards, and to make learning more relevant and exciting. ICT in support of teaching should be considered separately from ICT in support of learning. Although ICT in the hands of a teacher may directly improve learning, it is more likely that the learning gain is indirect. An example relating to the use of tablets is for a teacher to use a tablet to record a wider range of evidence, including still images and recorded sounds for assessment purposesvi.

A convenient way to separate these two aspects is to note that it is only when pupils are actually using technology that we can say ICT is supporting learning.

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**What the research tells us**

Research over many years has largely established the connection between the use of technology and improved learning outcomes in a wide range of contexts. In England and Wales there have been two reviews, which provide further evidence of the relationship between the uses of technology and the impact on learning:

*Becta (2007) The Impact of ICT in Schools – a Landscape Reviewvii* found that there was some direct impact on attainment, and greater impact upon intermediate outcomes such as motivation and independence in learning.

*Nesta (2012) Decoding Learning – The Proof, Promise and Potential of Digital Education* showed that technology can have an impact on learning outcomes if it is used to support learning through making, learning through inquiry and learning from assessment.

There have also been a number of other research projects that demonstrate the potential of technology to transform education. Of particular note is the recent *Innovative Teaching and Learning* (ITL) research sponsored by Microsoft Partners in Learning⁸:

“*Innovative teaching that leverages ICT happens more where students have access to technology in their classrooms.*

On a smaller scale, research carried out by the University of Strathclyde on Future of Schools⁹ includes a case study of Cedars Schools of Excellence in Scotland (which was the world’s first 1:1 iPad school). Amongst the many things that the report highlights, perhaps the most revealing is the following statement from the school’s head of Computing and ICT:

“*This is a device we bought, but it’s not just a textbook or an instrument, or a set of art tools – it’s all of those things and more.*”

It is clear from emerging research and case studies that now populate the web that tablet technology has a vital role to play in the development of ICT in schools and the transformation of our education systems.

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**ACTION POINTS**

1. Show Ofsted that your school has addressed all aspects of e-safety.
2. Present evidence that ICT is used to support learning in other subject areas.
3. Show Ofsted lessons where ICT is taught well as a subject.
4. Provide Ofsted with evidence that purchased technology is actually being used.
What are tablets and apps?

Tablet computers have been on the market since 2002. However, tablet computing has become more popular in recent years. This ‘tablet revolution’ is partly due to the success of the Apple iPad which was first launched in 2010. The iPad is currently one of the most popular tablets on the market and its success has spawned a variety of competing devices that run different operating systems, such as Google’s Android and Microsoft’s Windows 8. Some of these devices and their operating systems are discussed in more detail on pages 10–11.

**Tablets**

A tablet is a mobile computer that usually has a touchscreen or a pen enabled interface (or both). A tablet computer does not usually have a built in physical keyboard which means that text input is normally carried out using an on-screen touchscreen keyboard. Physical keyboards are often available for tablets as peripheral items. Some of these keyboards, such as the one available for Microsoft’s Surface, also double up as a protective cover.

Tablet computers tend to be less powerful and have less physical storage space than traditional desktops and laptops. They also tend to have a very fast boot up time. Most tablet devices are Wi-Fi enabled and increasingly there is also capacity to connect to the Internet via 3G or 4G cellular services.

As well as their operating system, tablet computers also often run apps.

**Tablets vs other portable devices**

Tablets are great but they are not the only portable device available on the market. Other portable devices include:

- **Laptop computers** are portable computers that can be used with or without the Internet (e.g. *Apple MacBook Pro*).
- **Netbook computers** are portable computers that gain most of their functionality through the Internet (e.g. *Google Chromebook*).
- **Smartphones** continue to blur the lines between being phones and being powerful Internet enabled devices that link to the Internet through Wi-Fi but also cellular networks such as 3G and 4G (e.g. *iOS, Windows Mobile, Android, Blackberry, etc.*).
- **Tablet computers** fall somewhere in between laptop-like computers and large smartphones. All are Wi-Fi enabled but some also allow for 3G and 4G connectivity (e.g. *Microsoft Surface, iPad, Android Tablet, etc.*).
- **eBook readers** in their purest sense are designed for people to engage with text, although many also allow you to check email (e.g. *Kindle, Kobo, etc.*).

**Audio and Video Mp3/Mp4 players**

let you play pre-installed content but may also allow you to connect to the Internet (e.g. *iPod Touch*).

**The power of tablets in teaching and learning**

Tablet technology allows teachers access to a wide variety of resources through the Internet and/or their school VLE. Ubiquitous access to this type of technology helps teachers collaborate with other professionals from both within and outside their own school. This can help with the sharing of ideas, increases professional dialogue and can facilitate collaborative lesson planning. Although other technology may also facilitate the above, it is the portability, long battery life, quick boot up time and user experience that make tablet technology so unique and powerful.

Tablet technology also has the potential to develop more personalised learning opportunities for children, where they use their devices to pursue (sometimes with support) their own personal interests and passions.

**More about Netbooks**

A netbook can be the same size as any normal laptop or smaller. The key difference between a netbook and a traditional laptop is that a netbooks gets most of its functionality through the Internet. The term ‘Netbook’ comes from Internet – this means that they are likely to have less physical storage, run less proprietary software and have lower processing power than a normal laptop. A Chromebook is the best example because it is literally just a browser in a laptop shell.
Tablet technology can also be used to assist with the personal regulation of learning through a variety of built-in productivity tools, such as the calendar, electronic mail and tasks. It can also support learners to self-reflect, track and think about of their own learning journey.

Apps

‘App’ is short for ‘application’, which is another name for a computer program. Apps aren’t exclusive to tablets. You can also get apps for smartphones and more traditional PCs. Apps are simply computer programs that you download from the Internet from sites called app Stores or Marketplaces.

Apps let your tablet do almost anything that the programmers can imagine, within the technical limitations of the device. Apps often make use of the hardware features of the tablet that they are running off, for example the camera and GPS.

Apps can range in price from being free to around £50 for some specialist programmes. Most apps tend to cost between £1 - £3. Most app stores will allow you to browse specifically for free apps, and many of these have some relevance in education. You should check licensing arrangements if you want to install an app on a large number of devices.

The post-PC era

The post-PC era is a term coined by Apple Inc. to describe a trend in the consumer electronics industry, where the use of a personal computer (PC) as the primary form of technology is declining in favour of other devices such as smartphones and tablet computers. The popularity of smartphones and tablets has influenced the economy of the computer industry; sales of traditional PCs (in particular desktops) have steadily fallen since the surge in popularity of post-PC devices that began when the introduction of the iPad was launched in 2010.
It is also important that teachers and school leaders have thought about what this new type of pedagogy might look like within a tablet environment before any large scale deployment. If you have not done this then the technology is more likely to become a distraction to learning rather than have the transformational impact that it deserves.

Tablets, teaching and learning

When we consider what teaching and learning might look like in a tablet environment it is important that we focus on what makes learning good and how technology can improve the learning and teaching process.

The concept of **Exciting Learning** from Microsoft captures some of the components that make learning engaging for young people.

There is no doubt that good technology integration has the potential to be transformational. This is particularly the case if you decide to go down the route of 1:1, where there is one Internet enabled device for each child in your class/school. It is important to note that technology integration of this scale and teaching with tablets will have an impact on models of learning and teaching.

For learning to be successful it needs to be:

- Culturally relevant
- Include **real-time** interaction
- Provide different learning **pathways**
- Showcase learning achievements through authentic **audiences**
- Accessible to all

The table below provides some further background on each of these principles and outlines what they might look like in the classroom in a tablet environment. A major factor with Exciting Learning is that, because pupils are highly motivated, you get more learning. This idea is important to further justify the investment.

**EXCITING LEARNING PRINCIPLES**

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>CULTURALLY RELEVANT</th>
<th>INCLUDE REAL-TIME INTERACTION</th>
<th>PROVIDE DIFFERENT LEARNING PATHWAYS</th>
</tr>
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<tbody>
<tr>
<td>Learners learn best when they can see the point of what they are learning and how it relates to them. We can also help them engage with their learning more by using tools that they like to use.</td>
<td>Learners like it when teachers use information that is current and up-to-date. They also like to engage with real people either face-to-face or via video conference.</td>
<td>Learners like to have a choice of output. Sometimes this choice of output can be incredibly motivating as it gives a more focused and personalised end point for children to aim towards.</td>
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<tr>
<td>Luckily technology is highly culturally relevant at the moment and learning with tablets is likely to motivate your pupils. In particular, Wi-Fi enabled tablets offer opportunities for using technology in interesting and engaging ways such as social media, computer games and web based creation tools (such as digital video editing, sound and image manipulation).</td>
<td>Tablet computers give learners opportunities to connect individually with experts in real-time using web based video conferencing technology such as Skype in the classroom or Microsoft Lync (which is free to schools as part of Microsoft Office 365 for Education). Universal access to the Internet also gives learners an opportunity to individually explore and manipulate a wide variety of up-to-date data and news information.</td>
<td>In a KS2 writing task, tablet technology provides learners opportunities to individually present their work in a number of different ways. So instead of a handwritten writing task, learners could choose to present their writing as a video production, a podcast, a presentation, a newspaper report or a digital poster – through the use of the creation tools built into many tablets.</td>
<td></td>
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Assessment

Good pupil assessment should use a combination of both summative and formative techniques. Tablet technology integrated in the right way offers opportunities for both.

For example, summative tests can be administered to learners individually through the use of multiple-choice tests and other assessment generators such as Quizlet, Google Forms (part of Google Apps for Education) and SharePoint 2010 (part of Microsoft 365 for Education).

However the real power of tablet technology is the opportunity to build on current formative assessment practices and to provide learners with digital feedback on their work and progress.

For example, tablet technology, particularly in 1:1 environments, allows learners to quickly comment on other pupils’ digital work (such as using Google Docs, which are part of Google Apps for Education). It also allows pupils to quickly be able to record their achievements through digital learning logs and e-portfolio solutions (such as SharePoint Blogs, which are part of Microsoft 365 for Education).

Showcase Learning Achievements Through Authentic Audience

Learners like to have the work that they are proud of showcased to people who care about them.

Authentic audience is an important aspect of motivation.

Internet enabled tablet devices make it very easy for learners to publish their work for others to see and to provide feedback on.

Using cloud based education platforms it is possible to do this in a safe and secure way where learners can choose who does or does not have access to their work. The world wide web becomes the world wide wall display.

Accessible to All

Learners need to be able to learn in a variety of places at a variety of times.

This includes in school, at home and everywhere in between. Technology can also make learning accessible for learners who have additional support needs.

Tablet technology helps blend the learning experience between home and school. It is highly portable and helps learners understand the connections between formal and informal learning.

Students with additional support needs can also be supported via a range of accessible apps and software packages.

Action Points

1. Tablets, teaching and learning
   - How can you use technology to make learning more culturally relevant to your learners?
   - How can you use technology to include more real-time interaction in your classroom?
   - How can you use technology to provide different pathways for pupil’s work and motivate learners though choice?
   - How can you use technology to share with a web based audience and provide authentic feedback to pupil’s work?
   - How can you use technology to improve accessibility for learning?

2. Assessment
   - How might you use tablet technology to improve summative assessment? (e.g. children complete multiple choice quiz electronically.)
   - How might you use tablet technology to improve your approach to formative assessment? (e.g. children use their tablet devices to leave formative comments on other children’s work).
   - What apps do you know about already (perhaps from your use of a tablet at home?) that could be used to develop your electronic assessment practice within your school?
Choosing and using tablets

Tablet technology moves very rapidly. Before considering the current range of devices available, you will need some general principles for choosing and using tablets. Moving to the use of tablets is a development which requires the same sort of thinking as any other development. So, a consideration of what you want to achieve, where you are now, what it will cost, and how you will know it has worked, within some sort of shared and agreed development plan, is a good idea. For tablets, you will need to consider all the following questions.

What will be the focus of use?

There are two main areas to think about here: whether the tablets are to be tools for teacher use, to help them improve teaching or make management and administration processes more effective, or whether they are for use by pupils, to improve learning processes. In practice it is possible to do both, but for effective planning it is essential to separate these out, because they have different implementation requirements. For example, if you were only to use a set of tablets for teachers to move to a paperless environment, you would be less concerned about the quality of your internet access.

What sort of learning are we looking for?

The case studies show that, while there are significant benefits in developing teacher use, the real impact comes from a well implemented approach to pupil use. Therefore, for pupil use, what sort of learning gains are we looking for? Exciting learning, described earlier, is exactly the sort of learning which is possible with tablets. At the same time, there are other ways to achieve learning gains. Do you want learning to take place, where it was not happening before, or not happening very much? Do you want to engage parents through increasing learning at home and outside formal settings? Or do you want to change the nature of some or all of the learning? This is where Exciting Learning comes in.

What sort of development would we like? Is it top-down, or bottom-up?

There are many instances of schools buying a small number of devices, not just tablets ‘to find out what they can do’, with the implication that if it looks as though they might be useful, more will be bought. This is, of course, an example of bottom-up, or piloting. An example of a top-down development might be the decision to do without an ICT suite and replace with tablets. Bottom-up approaches have the advantage that they are less costly. Top-down approaches have the advantage of immediacy and equality. In both cases, we need to learn from other schools’ experiences, and after reading the case studies, this is the fastest way to find out what they can do. Experience shows that, once a development has started, a mixture of both top-down and bottom-up approaches start to surface. The beauty of tablets is that there is a very wide range of uses which deliver different types of benefit.

Are we clear about the costs versus the benefits of tablets?

At the same time, there needs to be a consistent way of judging benefit. A good method is simply to ask, ‘How much more learning do we get? Is the learning better?’ The commonest reasons for the adoption of top-down approaches to tablets are that they improve motivation, and they increase parental engagement. In both of these, the underlying reason is more and better learning. More learning can be achieved in very simple ways. For example, the fact that tablets start up immediately removes delays from the learning process, and thus progress in lessons is improved at once. After the learning gains have been chosen it is time to ask, is the learning worth the cost? For a rapidly growing number of schools, the answer is a resounding yes.

What is the impact on infrastructure?

Some things are essential for effective use of tablets. The first is high quality broadband, with a robust high quality wireless infrastructure, which all tablets can access seamlessly from anywhere learning takes place. Specialist advice is recommended to review current provision. It is also very important to consider display options for tablet devices. They can be made to connect up to existing projectors, but often it is advantageous to consider display specific to the device, such as Apple TV. This has the benefit of being a local wireless connection for any Apple type device in the classroom. Intel’s classmate PC offers a similar projection solution through its pre-installed software. Thereafter, there are three main areas which require ongoing management. The first is the installation and use of apps. Here, management issues are the same as for all software. All apps need educational licences. It is important to check the cost of installing an app on many devices. Schools will also want to control the number and types of app available on tablets. The second is e-safety. The filtering of websites is an issue schools already need to consider, but which also impacts specifically upon tablets in a variety of ways. For example, tablets synchronise with other devices, meaning that all information including any pupil information can be copied onto devices not under the school’s control. It is essential that schools have an up-to-date e-safety policy (see page 12). Thirdly, there is the storage of pupil work. Tablets are designed as devices for individuals,
whereas the work pupils produce needs to be shared for a whole range of purposes; particularly for assessment including marking and other feedback, and celebration through publishing. Typically this has been done on PC based local area networks by having shared local folders where all work is stored. There can be shared folders for tablets but these are not local and carry with them security and copyright issues. Current solutions are essentially work rounds involving pupils emailing work as attachments to teachers or the use of a cloud based storage system such as Google Drive or Microsoft Skydrive.

Have we considered the total cost of ownership of tablets?

Schools are very familiar with the ideas of capital (start-up) and revenue (running) costs, and these are easily identifiable from the above. Don't forget to include energy costs in calculations, particularly if you plan to deploy a lot more devices in schools. One cost which can be often neglected is the cost of professional development (see page 12). There are three forms of cost, purchase, maintenance, and the time spent to use tablets correctly.

How are we going to procure?

There will be a need not just to procure the devices, but also a review of infrastructure in general, and possibly wireless connectivity upgrades and a management service or tool for control over apps. This depends upon the nature of the project and the availability of funding. It is tempting, when running a pilot with a small number of devices simply to buy the devices. This leaves the school open to all sorts of risk. Another option is for pupils to bring their own devices (BYOD) which carries equal risk and also brings into question an entitlement to learning for all. In the following case studies the devices start off as being owned by the school, but pass into the property of the parents after an agreed length of time. The two commonest routes taken by schools are outright purchase, and leasing arrangements, whereby the devices remain the property of the school, but parents pay a monthly sum until purchase after a period of time for a nominal amount.

What device are we going to procure?

There is a large range of devices to choose from, but there are only a small number of operating systems used. These are Android, iOS and Windows. The iOS operating system is used on Apple devices. A wide range of manufacturers use the Android operating system to produce tablets of all sizes and functionality. The vast majority of primary schools working with tablets are using the iOS devices, and there are very good reasons for this: the huge and growing range of apps available, covering practically all the ways both pupils and teachers might wish to use the devices; the fact that the look and feel of the device is the same for all of them; their comparative robustness; the growing number of specialist support companies who understand the particular needs of schools; the national network of consultants (Apple Distinguished Educators) available to help with professional development; and the wealth of practical experience available from schools and others. There are reasons for choosing devices with other operating systems: Android devices tend to be cheaper, and Windows 8 offers the opportunity of better integration with any existing PC based infrastructure. There is a bewildering choice of Android based devices, and schools need to spend the time comparing features and cost.

More about ‘cloud storage’

There are many services offering to store files ‘in the cloud’, which use remote storage through the web. Some of them are generic and some are for specific files, such as photos. While there are many advantages to using these services, all of them have different arrangements regarding copyright and security, and many have other constraints, such as the age of those using them. School leaders intending to use one of these services are recommended to investigate thoroughly before committing pupil information and files to them.

ACTION POINTS

1. Use the ‘Key things to consider’ as a checklist.
2. Look through the case studies and identify how these schools approached all these questions.
However you decide to integrate tablet technology into your school you will have a number of policy considerations to take into account to ensure consistent whole school practice.

Responsible Use
Your school should already have a policy on acceptable and responsible ICT use. However, with the introduction of tablets it is very likely that you will need to update or adapt your policy. You need to be clear about what is and what is not acceptable on a school’s network, along with any sanctions that you will use if the rules are broken.

As well as formal procedures it is also useful to work directly with children so that they can create their own rules around tablet and ICT use. Teachers who have worked with children to co-create ICT rules have found that they are more likely to be adhered to in the long term.

The important thing to remember is that there is absolutely no right or wrong way to write such a policy. Your policy needs to reflect your school, who you wish to communicate with and what you feel comfortable doing. Responsible use policies should be dynamic and regularly reviewed.

As well as including your proposed use of tablets in your school’s ICT policy, you should also make sure that this is covered in your Learning and Teaching policy.

Equality of Access
Equality of access is important in any school but it is particularly important if you choose this is covered a 1:1 learning deployment. Equality becomes even more important if you choose to develop a model where pupils are expected to bring in their own device (BYOD). Although this is not yet common in state primary schools, it is a growing trend.

In this situation you need to make sure that you have put systems in place to ensure pupils and families who do not have their own device can be provided with one or are provided with some capital funding make a purchase. It is important that you have clear guidance to ensure that children are not deprived of their digital entitlement, and that the model you are proposing for your school is financially sustainable in the long term.

Network access policy
Most primary schools have some sort of network and network support service, whether it is an external company or an expert in school (ICT Service Manager, ICT Co-ordinator). The role is often not full time.

You will need to speak to your network support service to make sure that the type of tablet devices you decide to purchase have the correct security certificates to be able to connect to your school network – this will often depend on how your school network is built as well as the type of device that you choose to adopt.

Check if your school has Wi-Fi or traditional Ethernet ports (this may limit the types of device you can actually buy and will certainly limit their portability).

Finally, if you are considering a large tablet deployment (such as a 1:1 deployment) you need to be realistic as to how this will impact on your bandwidth usage within your school. This will particularly be the case if you plan to use a lot of browser based cloud applications.

Put simply, you could have the best tablets in the world but if you don’t have the network and infrastructure to support them they will be limited in their functionality.

Teacher and school leader professional development
Appropriate professional development is often overlooked during many tablet projects, but it is the most important aspect of any large technology deployment. By creating a policy related to this professional development you will formalise the need for training within your staff team.

Professional development should include both technical and pedagogical training. Schools should also consider a blend of face-to-face (expert and/or peer led) and online learning which is cost effective, and can occur at the learner’s choice of time and place. Staff should be given as many opportunities as possible to share ideas and learn from each other’s practice. It is also important that staff understand the decisions that you have had to make in order to choose your technology solution. In particular, emphasis should be placed on why you think tablet technology will improve teaching and learning (e.g. culturally relevant, fast boot up time, availability of apps, highly accessible, etc.).
**ACTION POINTS**

1. **Responsible use**
   - Who will write your responsible use policy?
   - How will you ensure that all members of staff and all learners understand your responsible use policy?
   - What is the role of parent and pupil councils in writing your responsible use policy?

2. **Equality of access**
   Make sure that your work with tablet computers is inclusive.

3. **Network access policy**
   - What are your projected tablet requirements per pupil/staff?
   - What is your current wireless capacity and configuration? What is the number of supported users per access point? Can you manage your network centrally?
   - What will your network look like in the long term?
   - What models will your school or school authority use for recharging personally owned devices?

4. **Teacher and School Leader Professional Development**
   How will you ensure that staff are provided with adequate technical and pedagogical training to make your tablet deployment a success?
Case Study: Waltham Leas Primary Academy

Background
Waltham Leas Academy is a two form entry primary school. Sally Critchley is an Apple Distinguished Educator (ADE) and responsible for the development of learning technology in the academy. Sally originally became interested in tablet devices as low cost alternatives to laptops, which gave Internet access, and she undertook a small research project at a former school with the University of Hull. The research showed that pupil engagement and motivation for learning supported by the iPod touch was greatly increased, and also that easy personal access to the internet was key to an improvement in independent learning. The project also showed that the small size of the iPod was no barrier to use. This case study is an example of a top-down approach to developing independent learning.

Aims and actions
The overall aims are to improve pupil progress through more independent learning, and to increase parental engagement. The impact on parental engagement resulting simply from a pupil taking a photo in school and showing it to parents has already been observed – the ability to provide children with authentic audience is a key principle of exciting learning (described on pages 8 and 9). Sally works with teachers to develop the use of the iPod touch to support independent learning.

Infrastructure
Waltham Leas Academy has 64 iPads purchased by the school, shared by the whole school. Every pupil in Year 5 and 6 also has an iPod touch and it is intended that this will be extended to every child in Key Stage 2. The iPod touch devices are leased at £8 per month, paid for by parents, and at the end of the lease period, the iPod touch can be purchased for a nominal cost.

Managing pupil work
Typical PC based local area networks have a shared drive, and pupils always have a folder for their work. This single point of storage has many advantages, not least that it provides easy access for a number of audiences to strong evidence of progress, attainment and quality, complementary to the work in schoolbooks. Children can’t store their work on to the network when using iPods and tablets, as they cannot remotely connect. However, this problem is solved by pupils emailing their work to the class teacher for storage and Sally also has access to this storage.

Key considerations: Ofsted
As a minimum Ofsted will look for:
- Evidence that a school has addressed all aspects of e-safety
- Lessons where ICT is taught well as a subject
- Evidence that ICT is used to support learning in other lessons
- Evidence that purchased technology is actually being used

“Every turned off device is potentially a turned off child.”
Professor Stephen Heppell, University of Bournemouth
Case Study: New North Academy, Islington

Background

New North Academy is a multi-cultural, multi-faith academy caring for and educating children from 3 years of age up to 11 years. This case study is an example of a managed bottom-up approach to improving motivation and engagement.

At New North Academy, the approach to ICT is to have dedicated ICT lessons for all pupils, with opportunities for pupils to exploit their growing competences as digital leaders, who provide support for other pupils and teachers, photographers, press club, technicians, prefects and designers. The school has been recognised for its ICT through achievement of the ICT Mark, a national quality mark from Naace (National Association of ICT), shortlisted for the ICT Excellence Award in Leadership & Management from Becta, and an Exemplary Student Digital Leaders Award from the Independent Academies Association.

Aims and actions

How is value added to a highly successful ICT curriculum? Teachers will be provided with the opportunity to pilot exciting and innovative projects. One of these uses iPads to create ‘augmented reality’, when the iPad is pointed at objects in the school, they come alive with further information, photos, commentaries and videos. Pupils are deciding what and where to augment. One of the first places they will start is by augmenting their work as displayed in classrooms with their own commentaries, so that when parents visit they can be given an iPad and ‘browse the room’. Using technology that is culturally relevant to children such as augmented reality is an important aspect of Exciting Learning (pages 8 and 9).

Another pilot is the use of the iPads to provide the functionality of visualisers. Key activities are assessment for learning, including sharing pupil work with the whole class/school, demonstrating processes, and annotating work, which can be done using the iPad camera.

Infrastructure

Twenty iPads have been purchased. Apple TV has been installed in all classrooms as well as both halls. Apple TV allows the screen of any iPad to be projected.

Managing pupil work

How is work created on tablets saved, so that it can be marked by teachers, and improved? How can creative outcomes like augmented reality displays be preserved and celebrated? The academy believes that tablets must be properly integrated into the current infrastructure, and they are close to achieving this through automatic synchronisation with a pupil folder on the school’s local area network. This would be an important achievement. The IT Manager stresses, however, that this synchronisation is only a partial solution at best. ‘We have looked at the current range of apps and found over 200 with potential. But most apps will not synchronise. We’ve got to think clearly about whether we want our children to use apps if there is no way their work can be saved. Perhaps this is an important criterion for choosing which apps to use.’

More about augmented reality

Augmented reality (AR) is a live view of a real-world environment captured by your tablets video camera and viewed in real-time on the devices screen. It is possible to superimpose digital data over the real-world as viewed through your tablet, including sounds, video, graphics, games and information.

“Augmented reality is not a gimmick. “In Times Two we’re planning to have some sort of augmented reality feature every week.””

Emma Tucker, Editor, The Times T2.
Case Study: Spring Cottage Primary School

Background
Spring Cottage is a Group 3 community primary school catering for approximately 500 pupils. At its last Ofsted inspection, Spring Cottage was judged to be outstanding. This case study is an example of a top-down systematic approach to targeted school improvement through the use of tablets.

Aims and actions
The development and use of tablets is formalised in the school improvement plan, and there are three key priorities: more effective feedback for pupils, increased involvement for parents, and, more opportunities for independent learning across the curriculum.

These priorities were chosen based upon the findings of the Sutton Trust toolkit which compares impact with expenditure for a range of strategies to improve learning. Standards in writing at the end of Key Stage 2 are a key indicator of success.

This is achieved through the use of blogs by teachers and pupils. A blog was used to support the Year 6 residential, generating automatic tweets which had a great impact on parental engagement.

Infrastructure
There are 16 iPads available for class use in Key Stage 1 and 16 more in Key Stage 2. Every teacher has an iPad, and in Year 6 every child has their own iPod Touch. Every classroom has Apple TV. In addition, the school has high quality, robust wireless access. Even the ICT Coordinator has a blog with examples of pupil work and tips on how to get started. The whole infrastructure is supported by a specialist company.

Managing pupil work
This is provided by the use of the blogs. Year 6 pupils share a blog space where the blogging rules can be found, and a wide range of topics is available. A particularly interesting development is the opportunity for pupil work to be guest marked. It is important to stress that the widespread use of blogs in no sense replaces writing in books and constructive feedback through marking.

Because the blogs are accessible on the web, anyone can see them. This has been highly motivating for the pupils; in effect, are publishing to a global audience and they are aware of this. Providing an authentic audience is a key aspect of Exciting Learning described on page 9. When combined with the effect of guest marking, there is a powerful incentive to consider and improve all aspects. Parents can read their child’s blog, and indeed many comment, thus increasing direct engagement with a pupil’s day to day work. The blog complements evidence in books for progress and standards.

Key considerations: school improvement
When considering the use and deployment of tablets, there are three key school improvements considerations at Spring Cottage.
• More effective feedback for pupils
• Increased involvement for parents
• More opportunities for independent learning across the curriculum.
ENDNOTES

1 http://www.the-learning-crowd.com
2 http://www.nesta.org.uk/thirdmillenniumlearningaward
4 http://www.ofsted.gov.uk/resources/safe-use-of-new-technologies
5 http://www.nesta.org.uk/events/assets/features/next_generation/computing_in_schools_report/
6 http://richtambert.edublogs.org/2012/02/07/evernote-the-definitive-post/
7 http://webarchive.nationalarchives.gov.uk/20101102103654/publications.becta.org.uk/download.cfm?resID=38211
9 http://www.thesearch.com
11 http://www.slideshare.net/Microsofteduk/microsoft-exciting-learning-ebook
13 IT Manager, New North Academy, Islington
14 http://year6scps.posterous.com/
Tablets and Apps
How to ensure impact on teaching and learning

Available to download at www.oxfordprimary.co.uk

For further support please call our customer care line on 01536 452610.

Oxford University Press is grateful to the headteachers and staff of those schools referenced in the case studies.

Please note: The photographs of children in this report are for illustration purposes only. They do not show children from the schools featured.

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