



Technical Strategy Guidance Note 5:

Bring Your Own Device (BYOD)

April 2013

What does “bring your own device” mean?

Bring your own device (often shortened to BYOD) is the term used to describe the connection of a personally-owned device (such as a laptop, smartphone or tablet) to a wi-fi network provided by a company or other organisation such as a public library, university or school.

The increasing personal ownership of smartphones, tablets and other wi-fi enabled devices means more and more public spaces are seeking to make wi-fi connectivity available. Sometimes the rationale for doing so is primarily commercial. For example, in restaurants and cafés, free wi-fi access can drive increased footfall and revenues as a result. In other instance, the main driver is the public interest, for example in libraries and museums, where providing Internet access to the public is now a priority, with BYOD one means to help facilitate equitable access to online services and resources. Many companies now recognise the importance and opportunity of BYOD to increase productivity and raise employee satisfaction, allowing staff to connect their own devices to corporate networks in a safe, secure way.

Thus there is currently a move away from prohibiting the use of personal devices in managed network environments. However a the successful implementation of BYOD is dependent upon policies, infrastructure and training to ensure that networks are not compromised, data is kept secure and that users are protected as far as possible.

This Guidance Note describes the benefits BYOD offers to schools and provides an introduction to the range of issues schools should consider when starting to think about BYOD, and signposts further sources of advice and guidance.

BYOD benefits for schools

- BYOD offers the potential for increased access, approaching or meeting 1:1 pupil: device ratios in schools;
- Provides personalisation opportunities, encourages flexibility & self-directed learning, provides a bridge between formal and informal learning;
- Extends and augments learning inside and outside the classroom (the “flipped classroom” – from Wikipedia¹: “any use of technology to leverage the learning in a classroom, so a teacher can spend more time interacting with students instead of lecturing”);
- Offers potential for increased learner & parental engagement (device portability makes for easy transfer between home and school);
- Productivity and efficiency benefits for staff;

¹ http://en.wikipedia.org/wiki/Flip_teaching

- Meets learner and staff expectations – libraries, cafés and other public places provide free wi-fi access – why shouldn't schools do the same?
- New types of device offer new benefits: the battery life of an iPad or Android tablet is typically sufficient to last a school day without re-charging;
- BYOD provides synergy with the move towards cloud-based services, where online services are hosted outside the school to ensure ease of access from the home and elsewhere.

NB: While it is attractive to consider reduced expenditure on devices as a key benefit of BYOD, it is important to remember that the increased network management costs and overheads involved in implementing BYOD properly are likely to counterbalance or outweigh any savings in this regard. Thus reducing institutional expenditure on devices should not be the primary driver for considering BYOD.

BYOD issues and risks to consider

- Potential security risks from allowing personal, unmanaged devices to connect to a managed network;
- Safety issues (theft in or on the way to/from school), breakages and insurances need to be considered;
- Financial considerations and equity issues – how to support learners without a device?
- Balancing pedagogical benefits versus potential classroom distractions – supporting teaching staff and encouraging responsible learner behaviours (avoiding “bring your own distraction”)
- Device choice – different types of device have very different capabilities; it is important to consider best value rather than lowest cost;
- Local area network (wireless) and broadband capacity considerations – multiple devices and applications all being used simultaneously are likely to place a significant load on both institutional networks and broadband connections, in terms of both upload and download requirements;
- Power management and re-charging considerations – increased reliance on devices increases the importance of sufficient power provision;
- Devices with 3G/4G capability can bypass school networks and services (such as filtering) altogether if network coverage is available in the school – given these devices also have wi-fi capability, providing managed access via a BYOD strategy can mitigate this. Requiring that 3G/4G capabilities are turned off when such devices are used in school is one potential approach but may be difficult to enforce;
- Provisioning costs, network management overheads – total cost of ownership (TCO) considerations

Implementing BYOD – policies, procedures and technology options

- Acceptable usage, terms and conditions – a BYOD strategy will require substantial additions and amendments to existing school IT acceptable use policies (AUPs);
- Technical support considerations – to what extent can a range of different devices be supported? It is important to define learner/parent/staff responsibilities as clearly as possible;

- Outline specifications for devices for use in school, setting minimum requirements, can form the basis of helpful purchasing advice for parents and can help to standardize the range of devices;
- Purchasing options need to be considered, including support schemes such as those provided by the e-learning Foundation²;
- The level of access afforded to personal devices needs to be considered and planned carefully (Internet, network services and resources, device management); staff-owned and learner-owned devices will require different levels of access;
- Technology approaches need to be evaluated and resourced appropriately e.g. managed wireless, guest access, virtual local area networks (VLANs) and network separation/segregation, network access control (NAC), network access protection (NAP), mobile device management (MDM), IP addressing.
- Broadband performance and capacity need to be assessed in the light of BYOD strategies; an increase in the number of connected devices can place significant additional demands on school networks and broadband connections;
- Staff and learner training will be needed, on BYOD policies, procedures and infrastructure requirements.
- Specialist activities (e.g. graphic design, CAD) will still require specific hardware to run and cannot yet be accommodated via BYOD.

Guidance Notes explain concisely a particular aspect of the broadband services required by schools to deliver education. The Education Network cannot accept responsibility for the application of these ideas to individual schools and local expert advice should be sought.

Audience: Bursars, Network Managers, Technical Support Staff.

Schools may re-use this material, providing that The Education Network is acknowledged.

For further information and updates, see <http://www.nen.gov.uk>

² <http://www.e-learningfoundation.com/>

Sources of further advice and guidance:

Yorkshire & Humberside Grid for Learning: Bring your own device

<http://www.yhgfl.net/Priorities/BYOD>

Alberta Education: Bring your own device: a guide for schools

<http://education.alberta.ca/admin/technology.aspx>

Booker T. Washington High School, USA: Bring Your Own Device

http://www.btwash.org/BYOD_Report.pdf

Otago Girls' High School, New Zealand: Considerations for BYOD (Bring your own device to school)

<http://www.otagogirls.school.nz/files/downloads/BYODConsiderations.pdf>

SecEd: BYOD in 10 steps

<http://www.sec-ed.co.uk/best-practice/byod-in-10-steps>

YOTS: Your Own Technology Survey

<http://www.yots.org.uk/>

Hanover Public School District: BYOD

<http://byod.hanoverpublic.org/>

Online Colleges: Going BYOD (infographic)

<http://www.onlinecolleges.net/2012/08/06/going-byod/>

Supplier information:

CDW-G: Bring Your Own Device: Preparing for the influx of mobile computing devices in schools

<http://www.edtechmagazine.com/k12/sites/edtechmagazine.com.k12/files/111331-wp-k12-byod-df.pdf>

CDW-G: Bring Your Own Device: Adapting to the flood of personal mobile computing devices accessing campus networks

<http://www.edtechmagazine.com/higher/sites/edtechmagazine.com.higher/files/108532-wp-hied-byod-df.pdf>

Cisco: BYOD in education

http://www.cisco.com/web/strategy/docs/education/46096_byod_ed_aag.pdf

Cisco: Schools Plug Into BYOD: Mobile Devices Transform Learning at Katy Independent School District, USA

http://www.cisco.com/web/strategy/docs/education/ciscoedukaty_sd_cs.pdf

Cisco: BYOD Security Challenges in Education: Protect the Network, Information, and Students

http://www.cisco.com/web/strategy/docs/gov/security_challenges.pdf

Dell/Microsoft: BYOD in Education: A report for Australia and New Zealand

http://i.dell.com/sites/doccontent/business/solutions/brochures/en/Documents/2012-nine-conversations-byod-education_au.pdf

HP: Bring your own mobile devices to school (registration required)

<http://www.infoworld.com/d/wp/bring-your-own-mobile-devices-school-hp-white-paper-213088>

Microsoft: Bring your own device to school

<http://blogs.msdn.com/b/education/archive/2012/08/15/microsoft-bring-your-own-device-in-schools-whitepaper.aspx>

Meru Networks/Samsung: One-to-One 2.0: Building on the "Bring Your Own Device" (BYOD) Revolution

http://www.samsung.com/us/it_solutions/innovation-center/downloads/education/white_papers/One-to-One_2.0_-_Handbook.pdf

RM: Bring your own device

http://www.rm.com/RMVirtual/Media/Downloads/Bring_your_own_device.pdf

NB: the above links are provided for information only; the inclusion of a link in this list does not imply endorsement by the NEN, nor does exclusion imply the reverse.