



Department of

**Education**

[www.education-ni.gov.uk](http://www.education-ni.gov.uk)

**Subject:**

**EFFECTIVE EDUCATIONAL USES OF MOBILE DIGITAL DEVICES**

**Circular Number:**

2016/26

**Date of Issue:**

01 December 2016

**Target Audience:**

- Principals and Boards of Governors of all grant-aided Schools;
- Education Authority;
- Council for Catholic Maintained Schools;
- Northern Ireland Council for Integrated Education; and
- Comhairle na Gaelscolaíochta
- Governing Bodies Association
- General Teaching Council for Northern Ireland
- Teachers' Unions

**Summary of Contents:**

This Circular provides brief guidance to be considered by school leaders who wish to ensure that when mobile digital devices are being introduced into the classroom they are used in the most appropriate and effective ways to support education.

**Enquiries:**

Any enquiries about the contents of this circular should be addressed to:

Curriculum Team  
Department of Education  
Rathgael House  
Rathgill  
Balloo Road  
BANGOR  
BT19 7PR

Email: [curriculum.supportteam@education-ni.gov.uk](mailto:curriculum.supportteam@education-ni.gov.uk)

**Governor Awareness:**

Essential

**Status of Contents:**

Advice

**Related Documents:**

DE Circular 2011/22

DE Circular 2013/25

DE Circular 2016/27

**Superseded Documents:**

Not Applicable

**Expiry Date:**

Not applicable

**DE Website:**

<http://www.education-ni.gov.uk>

**Additional copies:**

Tel 028 9127 9543

## **EFFECTIVE EDUCATIONAL USES OF MOBILE DIGITAL DEVICES**

### **INTRODUCTION**

1. The pervasiveness of mobile digital devices (such as tablet computers and smart phones) in schools provides both educational opportunities (for learners and teachers alike) as well as management challenges which are different from those afforded by desktop and laptop computers.
2. Research and advice indicates that, provided that those affordances are well understood by teachers and school leaders, and the deliberate use of digital tools, social communication environments and online resources which are easily accessed by mobile devices, is well prepared and planned, it can benefit learning and teaching inside and beyond the classroom. Similarly, there can be advantages for teachers' own professional learning from the use of mobile learning devices and for management and administration.
3. Online safety, in all cases in schools and elsewhere, remains a paramount concern. It is essential not only that pupils and adults are kept safe online whilst in school and on school-organised activities, but that schools are energetic in teaching pupils how to act responsibly and keep themselves safe in the digital world.
4. Circular 2016/27 should be considered carefully in association with this Circular, as its important guidance on online safety is not duplicated here.

### **PLANNING TO USE MOBILE DEVICES**

5. Before a school introduces a plan to invest in and/or introduce the use of mobile devices, or to permit access to them in the school, it should carefully consider, consult and agree on the educational reasons for doing so: whether for learning and teaching, and/or management and administration and/or teacher professional learning purposes.
6. The rationale and purpose should be set out within the appropriate management, curriculum, teaching and learning, literacy/numeracy, assessment and other relevant policies, together with evaluation indicators which will enable the school to judge the extent to which any investment provides a return, over time, in terms of standards and school improvement.
7. Integrating mobile learning policy and plans into existing school policies is to be preferred to creating a separate ICT or Mobile Learning policy, just as integrating policy and procedures about online safety into existing safeguarding, behaviour, code of practice, anti-bullying policies is preferable to writing a stand-alone ICT safety policy.

### **MAKING CHOICES**

8. Informed choices need to be made, if a school is investing, or encouraging parents and carers to invest in mobile devices, about:

- costs and the total cost of ownership (including protection, accessories, printing, storing and charging overheads);
- standardising on a choice of device (whether iOS, Android, Chrome OS, Windows or Kindle devices for example);
- longer-term scalability as technology is updated, taking into account the average lifetime of the devices;
- wireless infrastructure and effective forms of online filtering;
- linkage of devices into C2k networks and accessing already-licensed software; storage and file-sharing; purchase of apps and volume licensing; and
- the projection technologies for classrooms and larger spaces.

## **PREPARING THE GROUND**

9. Extra training and time out of teaching will almost certainly be required at the beginning of any mobile device rollout. Continued investment in associated professional learning will be required to share best practice, to evaluate the benefits and for long-term success.
10. All teachers, and especially those with existing curriculum or management coordination roles, will need time to research, learn from others and/or share their experience of how learning can be enhanced. Teachers and support staff will need time to create, prepare and share the learning and teaching activities which may make a difference to achievement and attainment. The pupils should also be included in discussions, drawing on their experience as technology users, when the school is drawing up its plans – this is in line with DE Circular 2014/14 on pupil participation.<sup>1</sup> If the school benefits from technical support staff, upgrading their specialist skills may also need to be considered.
11. As important, will be preparatory information sessions for parents on issues arising and to address any concerns they may have about the educational advantages of mobile devices, the risks of distraction from school work and keeping safe online.

## **OWNERSHIP AND DEPLOYMENT**

12. An important part of consultation with pupils, staff, governors and parents will be to decide on the ownership model (whether it is to be a personal ownership model, a school ownership model or a layered ownership model), especially if the school is seeking parental contributions to costs. Consideration also needs

---

<sup>1</sup> [DE Circular 2014/14 - Pupil Participation](#)

to given to both proper procurement procedures and how to ensure equity of access for all pupils in different circumstances.

13. When it comes to the deployment of mobile devices a school will have a number of choices: whether it wants to start with a small-scale pilot and if so how best to do this; whether it wants to begin the process involving just the teachers to build their experience and confidence first; whether it wants to provide opportunities for teachers and pupils to bring and use their own devices; the level of provision to be made available to pupils be it sharing classroom sets of devices or one-to-one ownership.

## **ADVICE AND GUIDANCE**

14. More detailed advice on all of the issues summarised above can be found in 'Future Classrooms'.<sup>2</sup> Staff in the C2k and in the Creative Learning Centres in Armagh, Belfast and Londonderry can provide personal advice and regularly provide training and development courses and conferences.

## **INTEGRATING MOBILE LEARNING INTO THE NORTHERN IRELAND CURRICULUM**

15. The Northern Ireland curriculum sets out requirements for Thinking Skills, Personal Capability, Literacy, Numeracy and ICT skills as essential to learning. Digital and online resources, appropriately planned, accessed and used effectively, may considerably enhance the learners' development and application of the skills of managing information, being creative, thinking and problem-solving, decision-making, working with others and self-management as well as those of communicating, calculating, modelling and coding, in any area of the curriculum, at any stage of learning. The opportunities for assessing the progressive development of the learners' capabilities across the curriculum are set out at each key stage in CCEA's definitions of Using ICT (UICT), and the support available for assessing and accrediting UICT cross-curricular skills<sup>3</sup>.

## **ENHANCING AND TRANSFORMING LEARNING AND TEACHING**

16. It is essential that teachers are aware of the affordances of mobile devices for learning and teaching and are not merely digitising an existing activity or exercise in a way that does not add any significant value.
17. The following are four categories, based on research experience, of ways in which mobile learning may be integrated significantly to enhance and transform aspects of learning to real advantage:

---

<sup>2</sup> **Future Classrooms: Managing Mobile Technology: A revised handbook for all schools in Northern Ireland.**  
Published by the Creative Learning Centres, 2015

<sup>3</sup> [cea.org.uk](http://cea.org.uk)

- ***capturing and collecting*** information and experiences across a variety of settings, through photos, audio and video recordings, numerical and text entry;
- ***communicating and collaborating*** with others via phone, text, email and social networks;
- ***consuming and critiquing*** media including music, photos, videos, games and text documents;
- ***constructing and creating*** personal forms of representation and expression through edited photos and videos, sketches, podcasts, blogs and so forth<sup>4</sup>.

18. The following are a sample of some specific learning activities which mobile learning can valuably enable<sup>5</sup>:

- ***review and reflect***: pupils capture audio, imagery and video during lessons, use these in plenary sessions to reflect on what has been covered, consider the key elements learned, how these fit into wider subject or topic pictures and how ideas might be used or taken further outside the classroom. This focus on reflection is highlighted as important for learning by, for example, Schön (1983);
- ***think forward***: pupils access future topic material via the Internet and capture relevant thoughts or ideas to contribute to discussions or presentations in class or through on-line discussions. Pupils can be encouraged to use the handheld devices at home to research topics for themselves. The importance of understanding how to tackle learning, identifying future end points and sources of support, for example, is highlighted by Vygotsky (1978);
- ***listen to my explanations***: pupils record audio when they are completing homework assignments and these verbal explanations are listened to and marked by teachers. Verbal explanations are important for many learners, highlighted by, for example, Gardner (1991);
- ***snap and show***: pupils capture imagery, which is downloaded to a server and accessed through a computer or interactive whiteboard screen, for wider pupil discussion, perhaps made accessible to parents so that they can see and discuss events that have happened in school. The importance and influence of imagery for learning is highlighted by, for example, Arnheim (1969);

---

<sup>4</sup> White, T., Booker, A., Ching, C. C., and Martin, L. (2011). Integrating Digital and Mathematical Practices across Contexts: A Manifesto for Mobile Learning. *International Journal of Learning*, 3(3), 7-13.

<sup>5</sup> Passey, D. (2010). Mobile learning in school contexts: can teachers alone make it happen? *IEEE Transactions on Learning Technologies: Special Issue on Mobile and Ubiquitous Technologies for Learning*, 3(1), 68-81

- ***this is what I've done and how I've done it***: pupils create presentations of how they have used mobile technologies to tackle particular activities, which are recorded and made accessible on appropriate websites for teachers and parents to see. Observing other pupils' stories and reports, pupils can include sound recordings of their own voice as well as text and pictures to form multi-modal 'texts'. The critical importance of discussion and explanation for learning is highlighted, for example, by Alexander (2008);
- ***tell me how I could improve this***: pupils can share their work in multimedia formats with peers, mentors, teachers or trusted adults to seek comments, evaluative feedback, assessments of their work and ideas to improve their work. Formative feedback for learning is highlighted as having key impacts upon outcomes, for example, by Wiliam (2010).

19. Mobile devices can support 'anytime anywhere' learning. (Farley et al., 2015).

20. Teachers have also used mobile devices to support in-class electronic voting practices (Brown et al., 2014; Khogali et al., 2014; Kobus et al., 2013) and resource dissemination (Davies et al., 2012)

## ASSESSING AND EVALUATING THE BENEFITS

21. Findings from research studies show that greater accessibility to information and provision of information in context are key benefits associated with mobile learning, for example:

- Enhancement of independent learning, of customised learning and a reduction in limitations of time and place of learning have all been identified by teachers and learners as benefits arising from use (Passey and Zozimo, 2016).
- Mobility, face-to-face social interactions, uses of authentic teaching and learning materials, constant alertness, a focus gained from mobile "learning moments", and learning and time convenience are important features associated with activities in different contexts (Economides and Nikolaou, 2008).
- Informality and ownership have been identified as factors that positively influence uses of mobile technologies (Kukulaska-Hulme and Traxler, 2005; Wu and Zhang, 2010).
- Benefits of uses of handheld devices have included alertness, choice of student preferences, saving time, broadening assessment tasks, supporting special educational needs and supporting language learning, all enhancing pedagogical value (Economides and Nikolaou, 2008; Wu and Zhang, 2010).

22. It is essential too that schools plan to use assessment information about learning outcomes to evaluate the investment and to focus further developments to maximise the return.

23. Evidence for improvement may be gained from a variety of sources, such as: attendance levels; engagement in tasks; literacy and numeracy outcomes; proficiency in digital literacy and ICT skills; external assessments such as GCSE performance; the use made of collaboration in learning; the extent of independent learning; teacher, learner and parent feedback on using mobile technology for learning.

## SOURCES

24. The guidance in this Circular is based, with acknowledgement and thanks, mainly on:

- i. **Future Classrooms: Managing Mobile Technology: A revised handbook for all schools in Northern Ireland.** Published by the Creative Learning Centres, 2015.

<http://futureclassrooms.org/resources/>  
<http://futureclassrooms.org/wp-content/uploads/2013/03/Future%20Classrooms%20print%202015.pdf>

- ii. advice, examples and guidance provided by the CCEA on integrating ICT in the Northern Ireland curriculum and its assessment through Using ICT (UICIT).

[http://www.nicurriculum.org.uk/curriculum\\_microsite/uicit\\_ks1\\_and\\_ks2/what\\_is\\_UICIT/using\\_ict.asp](http://www.nicurriculum.org.uk/curriculum_microsite/uicit_ks1_and_ks2/what_is_UICIT/using_ict.asp)

[http://ccea.org.uk/curriculum/key\\_stage\\_3/skills\\_and\\_capabilities/cross\\_curricular\\_skills/using\\_ict\\_microsite](http://ccea.org.uk/curriculum/key_stage_3/skills_and_capabilities/cross_curricular_skills/using_ict_microsite)

- iii. research into effective learning using mobile devices - all references to research are listed in Annex A.

## REFERENCES

- Alexander, R.J. (2008). *Towards Dialogic Teaching: Rethinking Classroom Talk*, 4th ed., Dialogos, New York.
- Arnheim, R. (1969). *Visual Thinking*. Faber and Faber, London.
- Brown, E.A., Thomas, N.J., and Thomas, L.Y. (2014). Students' willingness to use response and engagement technology in the classroom. *Journal of Hospitality, Leisure, Sport and Tourism Education*, 15, 80–85.
- Davies, B.S., Rafique, J., Vincent, T.R., Fairclough, J., Packer, M.H., Vincent, R., and Haq, I. (2012). Mobile Medical Education (MoMEd) - how mobile information resources contribute to learning for undergraduate clinical students - a mixed methods study. *BMC Medical Education*, 12, 1. doi:10.1186/1472-6920-12-1
- Economides, A.A. and Nikolaou, N. (2008). Evaluation of handheld devices for mobile learning. *International Journal of Engineering Education*, 24(1), 3-13.
- Farley, H., Murphy, A., Johnson, C., Carter, B., Lane, M., Midgley, W., Hafeez-Baig, A., Dekeyser, S., and Koronios, A. (2015). How Do Students Use Their Mobile Devices to Support Learning? A Case Study from an Australian Regional University. *Journal of Interactive Media Education*. doi:10.5334/jime.ar
- Gardner, H. (1991). *The Unschooled Mind: How Children Think, How Schools Should Teach*. Basic Books, New York, NY.
- Khogali, S., Smithies, A., Gray, A., Manca, A., and Lafferty, N. (2014). Team-Based Learning in a UK Medical School: Using Mobile-Friendly Technology to Support the In-class Individual Readiness Assurance Test. *Academic Conferences International Limited, Kidmore End*, 273–280.
- Kobus, M.B.W., Rietveld, P., and van Ommeren, J.N. (2013). Ownership versus on-campus use of mobile IT devices by university students. *Computers & Education*, 68, 29–41.
- Kukulska-Hulme, A. and Traxler, J. (2005). *Mobile Learning: A Handbook for Educators and Trainers*. Routledge, London.
- Naismith, L., Lonsdale, P., Vavoula, G. and Sharples, M. (2004). *Literature Review on Mobile Technologies and Learning (Report No. 11)*. Futurelab, Bristol.
- Passey, D. (2010). Mobile learning in school contexts: can teachers alone make it happen? *IEEE Transactions on Learning Technologies: Special Issue on Mobile and Ubiquitous Technologies for Learning*, 3(1), 68-81.

- Passey, D. (2013). Inclusive technology enhanced learning: Overcoming Cognitive, Physical, Emotional and Geographic Challenges. Routledge: New York, NY.
- Passey, D. and Zozimo, J. (2014). Mobile Learning and Information and Communication Technology Teacher Training in MLEARN Partner Countries: Research Report – Work Package 4. Lancaster University, Lancaster.
- Passey, D., and Zozimo, J. (2016). Developing mobile learning practices through teacher education. *Interactive Technology and Smart Education*, 13(1), 36 – 51
- Schön, D.A. (1983). *The Reflective Practitioner: How Professionals Think in Action*. Basic Books, New York, NY.
- Traxler, J. (2010). Will Student Devices Deliver Innovation, Inclusion, and Transformation? *Journal of Research in Educational Technology*, 6, 3–15.
- Vygotsky, L.S. (1978). *Mind in Society: The Development of the Higher Psychological Processes*. The Harvard University Press, Cambridge, MA.
- White, T., Booker, A., Ching, C. C., and Martin, L. (2011). Integrating Digital and Mathematical Practices across Contexts: A Manifesto for Mobile Learning. *International Journal of Learning*, 3(3), 7-13.
- Wiliam, D. (2010). The role of formative assessment in effective learning environments. In OECD (Ed.), *The Nature of Learning: Using Research to Inspire Practice*. Available at: [www.keepeek.com/Digital-Asset-Management/oecd/education/the-nature-of-learning/the-roleof-formative-assessment-in-effective-learning-environments\\_9789264086487-8-en](http://www.keepeek.com/Digital-Asset-Management/oecd/education/the-nature-of-learning/the-roleof-formative-assessment-in-effective-learning-environments_9789264086487-8-en)
- Wu, J. and Zhang, Y. (2010). Examining potentialities of handheld technology in students' academic attainments. *Educational Media International*, 47(1), 57-67.
- Zhang, X., Gao, Y., Yan, X., de Pablos, P. O., Sun, Y., and Cao, X. (2015). From e-learning to social-learning: mapping development of studies on social media-supported knowledge management. *Computers in Human Behavior*, 51(B), 803-811.
- Zhang, X., Wang, W., de Pablos, P. O., Tang, J., and Yan, X. (2015). Mapping development of social media research through different disciplines: Collaborative learning in management and computer science. *Computers in Human Behavior*.