



...children, their world, their education

Cambridge Primary Review Trust
Research Briefing 7
(new series)

THE DIGITAL AGE AND ITS IMPLICATIONS FOR LEARNING AND TEACHING IN THE PRIMARY SCHOOL

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This briefing draws on the report *The Digital Age and its Implications for Learning and Teaching in the Primary School* commissioned from Cathy Burnett by the Cambridge Primary Review Trust.

The report provides a substantial but necessarily selective survey of research related to children's lives in the digital age within and beyond school. It begins by drawing on studies of everyday uses of digital technologies, including those by children, to identify challenges and opportunities facing primary education. Next it explores how research is shaping possible responses to these challenges and opportunities. Arguing that technology use, in schools as elsewhere, is never neutral, the review considers research from five broad traditions that represent different perspectives and priorities. It discusses how schools might work across these traditions in developing curriculum and pedagogy and in their wider role in supporting children's emotional, social and civic lives. It proposes that such considerations should be weighed in relation to broader debates about the purpose of schooling and about how schools relate to their wider social, political, economic and commercial contexts.

Implications of the digital age for children's current and future lives

Digital technologies are now deeply engrained in our institutions and infrastructures, in commerce, politics, manufacturing and administration. They are central to how many people form and sustain relationships, communicate ideas, and generate, share and distribute knowledge. They have implications for our relationships, interests and passions, our participation in civic and political life, and for the urban and natural environment. Uses of digital technologies are linked to economic, political, personal, social and cultural factors. They may be empowering and enabling, or oppressive, intrusive and dangerous, and they may work to intensify as well as challenge inequalities.

For many children, digital devices and the possibilities they enable are embedded in everyday life from their earliest days and many are using digital technologies in their play with agency and creativity. Screen-based play may be highly social and provide rich opportunities for learning about digital environments. However, ownership, access and use are uneven. More research is needed to explore relationships between children's technology use, their safety, wellbeing, and physical, social, emotional and cognitive development.

Evidence on five traditions

The five identified traditions yield different recommendations for curriculum and pedagogy in a digital age. In developing policy and practice related to digital technologies in the curriculum, schools might work across all of these traditions. For example, a focus on dimensions associated with New Literacies (e.g. design, criticality) can usefully inform creative projects associated with the national curriculum computing programmes of study.

- **Technology across the curriculum.** Digital technologies can be used in multiple ways to support inclusive education. They offer different kinds of potential for supporting learning and are of varying quality. Their contribution is influenced by what children and teachers do with and around them (e.g. quality of dialogue), and how they are used alongside other resources. More radical shifts in pedagogy

have tended to emerge when technology use is associated with physical changes to learning spaces and a more general commitment to pedagogical innovation.

- **21st century skills.** There have been multiple attempts to define 21st century skills, that is - in this case - the aptitudes and attitudes needed for economic and social success in a world viewed as increasingly digitised and globalised. Lists of 21st century skills combine some familiar aspects of schooling ('basic skills', collaboration, problem-solving) with those related to technology and associated practices. Frameworks for 21st century skills have been criticised as being rather vague and lacking in firm research foundations.
- **Computing.** Computing may: develop skills useful for future employability; nurture cognitive and attitudinal benefits; engage and empower. Programming can be learned through motivating projects that involve design and production. Projects involving programming may draw on a range of skills, knowledge and attitudes from across the curriculum.
- **Participation, learning and digital media.** 'Participatory practices' use digital media to facilitate collaboration and the making and sharing of ideas, creations and perspectives. They are often linked to social, civic and political participation. These practices typically involve: support for creating and sharing; mentorship; a sense of audience and community. Engaging in digitally mediated participatory practices requires not just technical skills but a culture that supports creativity, criticality and collaboration.
- **New literacies.** Literacy is changing and the ability to use digital media competently, creatively and critically is increasingly essential for learning and for life. Researchers have argued for re-working the literacy curriculum to reflect the varied and changing nature of literacy, e.g. by including a focus on multimodality and on using diverse digital media. A number of existing models provide support for building upon children's out-of-school experiences, for creative, critical engagement, and for generating purposeful activities through which children collaborate and gain feedback (on and off-screen), reach different audiences, and experiment and reflect on uses of digital media.

This CPRT survey supports arguments for ensuring that all children can draw on the potential of digital technologies in ways that are personally fulfilling and economically, socially and politically empowering. This involves supporting diverse, creative and critical uses. It also emphasises a need to review how digital technology use relates to values underpinning schools' wider vision for children's learning, and in so doing to consider not just curriculum and pedagogy but broader aspects of school life and infrastructure, for example the use of digitised data.

Implications for policymakers and educational leaders

1. Responding to the digital age raises fundamental questions about the role of schools and the nature of learning and teaching. For example, it involves considering how integration of digital technologies, within and beyond the curriculum, relates to school priorities linked to social justice, relationships, creativity and community.
2. Provision for the digital age should relate to children's current and future lives. There is a need to build on children's experiences and nurture the attitudes and practices associated with effective participation in social, civic, economic and political life.
3. Our education system needs to be flexible enough to respond to the possibilities and barriers digital technologies present for learners, intended and unintended.
4. There is a need to review how different subjects, and relationships between subjects, are understood in the light of developments in digital technologies. In particular the English curriculum needs to reflect the changing nature of literacy.
5. The curriculum needs to support children's flexible, creative and critical use of digital technologies. Multiple dimensions of technology use need to be addressed, including cultural, social, creative, ethical, civic and critical dimensions, and those related to safety, skills, knowledge and design. The five traditions outlined in the report contribute differently to these dimensions.

6. There is a need to review the focus and nature of assessment, e.g. assessments in English do not currently reflect new literacies. The current high stakes culture of accountability may not be conducive to the experimentation, collaborative production and risk-taking associated with creative applications of digital technologies.
7. Adequate funding is needed to ensure schools have reliable, up-to-date equipment and dependable networks.
8. Teachers require ongoing and significant support to address integration of digital technologies and to be resourced and empowered to act as professionals as they explore, experiment, and think critically about the local and wider context for their practice.

Recommendations for teachers

1. Plan opportunities for children to work creatively with digital technologies in motivating projects that integrate digital technologies alongside other activities.
2. Facilitate collaboration on and off-screen, including collaboration across classes, schools and generations.
3. Encourage and support children to explore ideas using a range of digital media. This will help provide inclusive opportunities for all children to explore concepts, ideas and responses.
4. Plan to use digital technologies alongside other resources, digital and non-digital. Where available, support opportunities for mobile technologies to be integrated within learning in and beyond the classroom.
5. Capitalise on opportunities for children to share what they are doing with audiences outside the classroom - e.g. using blogs, Twitter, and online platforms - and invite and support commentary and review.
6. Encourage children to draw on their prior experiences and expertise of using digital technologies outside school, to share their expertise and mentor others.
7. Vary the focus of teaching related to technology use, for example, addressing technical skills, design aesthetics, ethical dimensions, or collaborative working.
8. Encourage children to review critically when digital technology use is advantageous to them and to others, and when it may not be.
9. Balance positive experiences of being online with guidance for children and parents on managing risk and raising awareness of tools and strategies to use when faced with bullying, unpleasant or inappropriate content and/or and contact from unknown others.
10. Collaborate with parents to explore which devices and apps are most supportive to children's learning, play and creativity.
11. Provide opportunities for teachers to develop and share digital skills, but also to critique opportunities for further integration of digital technologies, and explore how to draw on their experiences of using digital technologies in their everyday lives.
12. Ensure a safe supportive atmosphere in which experimentation is encouraged by teachers and children.

FURTHER INFORMATION

The report on which this briefing is based: Burnett, C. (2016) *The Digital Age and its Implications for Learning and Teaching in the Primary School* (CPRT Research Survey 7). York: Cambridge Primary Review Trust. ISBN 978-0-9931032-7-8.

The report is available at www.cprtrust.org.uk. The website also contains information about other surveys in this series, and those related to the Cambridge Primary Review.

Cambridge Primary Review Trust was established in December 2012 with the aim of consolidating and building on Cambridge Primary Review's evidence, findings and principles. Supported by Pearson Education, it is based at the University of York and led by Professor Robin Alexander.

The Trust has eight priorities (equity, voice, community, sustainability, aims, curriculum, pedagogy and assessment) and four programmes (policy, research, schools, professional networking and development). This study relates mainly to priorities 5, 6 and 7 (aims, curriculum and pedagogy).

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