

Chapter 1: Overview of Chapters [CH]

Introduction [A]

Discussing technologies in relation to early childhood (birth to 5 years of age) education can provoke a wide range of passionate responses from sceptics to enthusiasts. The book will detail and discuss the issues in a neutral and research-informed manner. The aspirations for the book are to help early years professionals: confidently unpick complex issues; understand the scope of technology available; explore the interplay between learning and specific technologies; and create a vision for a technology-enabled learning environment that is child-centred, playful, creative and interactive.

Throughout the book there will be a strong emphasis on the children themselves selecting, exploring and using technologies in an enabling and empowering way across indoor and outdoor learning spaces. The book's approach goes beyond where 'technology' is typically referred to within the confines of 'understanding of the world' and challenges professionals to consider *if* and *when* technologies may make a wider contribution. The suggestions for selecting and deploying technologies will embrace the characteristics of effective learning as detailed in the Early Years Foundation Stage framework. The approaches suggested within the book always have the child centre stage; recognising their natural curiosity, desire to explore and play. It is argued that these factors should be the driver in determining the choice and availability of technology in settings and not vice versa.

Who will benefit from reading this book? [B]

The book is written to appeal and be relevant to a range of educators working in the early years. You may be in training or an experienced professional wishing to explore your use of technology and undertake continued professional development. The book acknowledges that you may fall under a number of professional titles including; early years practitioner, someone with Early Years Teacher Status or a graduate with Qualified Teacher Status working in early years (3-7) in a school setting; typically in reception or attached Kindergarten. This book is also appropriate for both undergraduate and postgraduate students on Education, Early Childhood and Initial Teacher Training courses in the UK and internationally. The text may also appeal to allied professionals (e.g. Health visitors) and

interested parents who want to make informed decisions about their children's use of technology at home.

Chapter features [B]

Technologies evolve constantly, become more portable, less expensive with higher levels of functionality and this can be daunting for new and experienced professionals. You will be introduced to familiar and newer technologies that can be deployed purposefully to enhance learning. Examples of devices and applications are suggested throughout. However, rather than providing an exhaustive list of the latest 'must have app', you are prompted to think critically and analytically about the interrelationship between pedagogy and functionality. This level of criticality will help inspire you to explore and discover other technologies and applications over time. This approach will help to foster confidence in those educators nervous about using technology and motivate confident technology users to think outside the box and innovate.

Each chapter begins with a section outlining the contents and identifying the professional links in relation to statutory guidance. Care is taken to explore how the areas of learning and specific Early Learning Goals can be interpreted to include technology. You are encouraged to embrace your existing pedagogical and experiential knowledge rather than abandon it because it doesn't explicitly make reference to technology. The authors will guide you to make the links as to how technology can enhance learning within these theoretical models and principles of effective practice. Embedded within each chapter are carefully selected 'critical questions'. These questions are intended to give you the opportunity to pause and reflect, make links to your current practice and robustly consider your current beliefs and ideas about technology enhanced learning. Different readers may come to slightly different conclusions in response to the questions; it is your unique journey with technology and that is fine.

Additionally you will encounter illustrative case studies detailing examples from across the age range. Each case study is followed by a 'commentary' which unpicks pedagogical points and analyses how the technology is scaffolding learning. These are intended to help you both visualise potential activities or consider how you could re-interpret similar scenarios

you may have encountered. Where appropriate, sections are included exploring 'international perspectives'; exploring practices and initiatives across the globe and encouraging you to consider the position of your culturally-situated practices with technology. Finally, each chapter will suggest some recommended reading should you wish to explore a particular topic in more depth.

Chapter 2: What is Technology Enhanced Learning? [A]

This chapter explores a holistic definition of what can be considered 'technology' and what is meant by 'technology enhanced learning'. Is it the same as learning with technology? You will be asked to be critical and focus on 'how' and 'when' the technology is bringing about enhancement. Time is spent deconstructing the facets and implications of the phrase 'technology enhanced learning'. Although these constructs really apply across all phases of learning (even Higher Education) care is taken to explore them in relation to early years education. This deepened understanding will enable you to consider the extent to which functionality is exploited to its full potential and to consider 'who' typically has control of these technologies- the children or the adult? In your setting who gets to choose *what*, *when* and *how* children play and explore with technology? Further, how does this contradict or complement the children's learning using technology at home?

Chapter 3: Key Debates and Research Evidence [A]

A range of people will pick up this book; you will be somewhere along the spectrum in your attitude and disposition to technology based on your prior experiences. Some of you may be very resistant to technology and believe it shouldn't really have a place in early childhood education. Others might feel they lack confidence and capability but ought to learn about this topic. And there will also be those of you who may already be educational technology evangelists who want more ideas! It is acknowledged that not all technology solutions are effective or deployed well and a critical stance is maintained in discussion. Developing this criticality is the essence of this chapter - 'where is the evidence' should become your mantra.

As a early years educators you often have to face a baffling array of fact and fiction claims about both the benefits and dangers of technology use with young children. The deliberate

approach taken in this chapter is to articulate these common beliefs, fear and/or claims. You will probably have encountered headlines and parenting guides suggesting technology use can harm children's physical and mental well-being; or that technology leads to childhood obesity from hours sat staring at a screen; that technology causes anti-social behaviour and isolation etc. The underlying factors of these claims will be exposed and you are guided through some of the emerging research to reinforce or debunk these populist statements about technology. Often, all technologies are packaged together as 'technology' and the full account as to whether they are passive or interactive, self-selected and initiated or adult-directed is ignored. A picture of digital childhoods will be examined and notions of 'digital natives' challenged, i.e. that today's young learners do not need to be 'taught' how to use technology.

Chapter 4: Understanding the World- Technology [A]

When first glancing at this book you probably wondered whether the entire book was going to be about this sub-area of 'Understanding the World: technology'. Hopefully you have realised already that it goes much wider than that. This area of learning is discussed early on in the book as it also gives a holistic sense of why technology enhanced learning is so relevant in today's world. The EYFS framework statement; *'children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes'* begins to suggest the possibilities that this chapter explores at length. Here the components of this strand are categorised into the three themes adopted in the National Curriculum Computing programmes of study: 'Computer Science', 'Digital Literacy' and 'Information Technology' (DfE 2014). The chapter is not about primary computing but the analysis given explores how the seeds of these concepts, attitudes and capabilities are evident in early years practice. Many of the practices you employ to foster problem solving and thinking critically, resonate with aspects developed later in relation to 'computational thinking'. The characteristics of effective learning are explored through the lens of approaches needed for computational thinking; 'tinkering', 'creating', 'debugging' (fixing mistakes), 'persevering' and 'collaborating'. The chapter highlights how these approaches manifest in common early years practice and it is argued that these kindergarten, playful pedagogic approaches should also be adopted further on in education.

Global trends are reflected upon and we review the educational/toy manufacturers innovative responses to introducing young children to coding (programming).

The chapter dedicates an important section to discussing digital childhood and what growing up as a digital citizen might entail. Importantly you are encouraged to explore a stance that embodies scaffolding children to understand and empower themselves in a digital world; i.e. to become digitally literate.

Chapter 5: Communication and Language [A]

The chapter will review the exemplification of the area of learning and development - 'Communication and Language'; specifically 'listening and attention', 'understanding' and 'speaking' (DfE 2014). You will explore how technologies can be utilised for developing children's speaking and listening skills. Audio record and playback functionality can empower young children to give detailed verbal accounts of their unique perspective. Young children have the opportunity to hear back the sounds and language they are using. Multimodal and interactive texts can naturally support attentive listening in individual or group contexts. The chapter will show how you can scaffold experiences for children by recording simple instructions (with talking boxes, or recordable clipboards) that children can play back at their own pace, repeating when necessary, to foster independence.

Chapter 6: Physical Development [A]

This chapter asks you to consider the potential role of technology in relation to the area of learning - *physical development* (DfE 2014 p.7); encompassing both fine- and gross-motor skills and physical exercise. The EYFS framework states that children must have the opportunity to learn how to '*handle equipment and tools effectively*' and this chapter will ask you to consider what this means within the wider notion of object affordances (DfE 2014 p.10). iPads and tablet devices are revisited and the notion of 'digit skill development' considered. The chapter ends by looking into the future and what advances in technology might mean for psychomotor capability. 'Exergaming' and 'gamification' are considered in terms of motivation, enjoyment and tracking accomplishments and activity levels.

Chapter 7: Personal, Social and Emotional Development [A]

This chapter examines technology enhanced learning in relation to the 'prime area of personal, social and emotional development' (DfE 2014 p.7). Pertinent questions from Chapter 3 are revisited in relation to technology and social interaction. Prompted by the popular Mosaic Approach, you are encouraged to consider how simple technologies can be used to empower children to articulate and express their unique voices. Technologies can provide opportunities for young learners to gain a sense of themselves by exploring their 'image', 'motion' and 'sound' via photos, video, and audio. These can contribute developmentally to their sense of 'self' from 'internal' and 'external' perspectives. When this is extended to include digital artefacts of friends and family, positive relationships can be reinforced. How can digital technology contribute to active learning through play? Hughes' (2002) taxonomy of play types, '*socio dramatic, imaginative, fantasy and role play*' are explored e.g. children acting out scenarios with a microwave oven or swiping card cash register in the role play area set up as a cafe.

Chapter 8: Literacy [A]

The EYFS framework defines the development of Literacy as involving; '*encouraging children to link sounds and letters and to begin to read and write*' (DfE 2014 p.8). Therefore, this chapter will explore how technologies can support early mark making, letter recognition and introduce synthetic phonics. Also, '*children must be given access to a wide range of reading materials (books, poems, and other written materials) to ignite their interest*' (DfE 2014 p.8). The chapter will illustrate how technology can play an important role in the reading and writing process even when the product may be in a traditional form; for example in relation to planning and sequencing. A range of multimodal tools are available to foster enjoyment and scaffolding of children's narrative or recount. Multimodal texts, including e-books, combine aural, visual and textual modes and provide inclusive and stimulating opportunities for young children to express ideas. The chapter will consider the potential of technology to enhance children's learning in literacy e.g. digital reading and writing. It will exemplify characteristics of effective learning through technology by evaluating strategies for enabling children to enjoy their favourite stories, poems and songs, for linking sounds and letters, for writing during role-play and for book making.

Savage and Barnett (2015) asked whether the nature of literacy has changed now that a great deal of information and content is digitised and characterised by cultural nuances (e.g. an emoticon/emoji) (p.7). This chapter will respond further to this topic by tackling the controversial question of what it means to become 'literate' in the modern world. Facer (2009) recognised that the '*process of writing is inevitably changing with technological developments*' and children today engage in extensive on-screen reading and writing (p.101). If your definition of literacy is about being able to access information and communicate, then these non-traditional forms should not be disregarded but viewed as an extension of genres which reflect an acute awareness of purpose and audience.

Chapter 9: Mathematics [A]

This chapter begins by highlighting challenges related to maths teaching and use of digital technology. You're asked to reflect on your own feelings about maths teaching and the value of cultivating a growth mindset. Bruner's stages of cognitive representation are referred to in the context of digital technology. This is followed by a focus on child development and mathematical knowledge related to the early learning goals. Autonomy, capability, creativity, quality and scope are exemplified through control technology, iPad apps, open ended digital technology and exemplars.

Chapter 10: Expressive Arts and Design [A]

This chapter considers how technologies can be utilised to empower young children to express themselves and create a unique voice in their chosen medium; which can include digital mediums. Again, technology use is explored both in the *process* and/or *product* of creative expression. You will be guided through digital tools and approaches to foster '*being imaginative*' and '*exploring and using media and materials*' (DfE 2014 p.12). The question is posed as to whether children should be *producers*, as well as *consumers*, of digital content (games, music, audio, graphics, animations, films etc). Time is spent exploring the affordances of technology in relation to the creative process. Does the power of the 'undo' (e.g. provisionality affordance) button encourage risk-taking and experimentation? To give an international perspective similarities are explored between the Reggio approach of

creating *ateliers* (workshops) and the 'MakerMovement'. Examples of current research in the Reggio tradition, view digital forms as adding to the many '*languages*' with which children have to express themselves. The chapter concludes that working in different and varied expressive forms is very powerful for children and can create rich channels for self expression.

Chapter 11: Technologies for Inclusion [A]

Many of the technologies and deployment strategies which have been raised are re-considered from the perspective of inclusion. How can technologies enable young children, including those with special educational needs and disabilities, to both *access* the curriculum and express the *output* of that engagement with the curriculum. The role technology can play in creating an autonomous, enabling environment will be explored and ideas for additional input/output devices will be provided. It is acknowledged that any contextual response needs to be driven by individual learning needs, whether this is to access, support or extend learning.

Chapter 12: Safeguarding and Welfare [A]

This important chapter gives a comprehensive overview and explanation of professional safeguarding issues when technology is deployed in an early years setting. These issues include the collection, storage and access to information about children and the Data Protection legal implications. The rights of the child, safeguarding and confidentiality protocols are paramount. Recommended protocols and requirements of key bodies including Ofsted (2016), National Crime Agency, Local Safeguarding Children Board and NDNA are reviewed in addition to the provision requirements of the EYFS framework and Teachers' Standards. An overview will be given about rights and responsibilities of children, practitioners, outside agencies, parents and guardians in relation to artefacts held digitally across devices and cloud services utilised (e.g. Tapestry). You will be supported in comprehensively reviewing your personal online professional reputation; given common sense advice on how to differentiate between personal and professional digital personas; to maintain this. The 2016 Ofsted inspection framework for safeguarding makes reference to online bullying (p.5), online safety (p.6) and e-safety education (p.11), the robustness of

systems in place to protect children being exposed to harmful online material (p.12) and awareness of reporting strategies.

Chapter 13: Conclusion [A]

A review of the journey through the book will be undertaken and questions posed for the future.

References [A]

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