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Personalized Education: Pedagogical Possibilities

This chapter builds on the empirical work presented in Chapter 10 by discussing the pedagogy that could support children's personalized learning with touchscreens. I outlined how the use of open-ended content with the Our Story app supported classroom collaboration and produced different outcomes for individual children taking part in the studies. The benefits of using touchscreens also varied in each of the three educational contexts we examined in Flewitt et al. (2015). From a socio-constructivist viewpoint, the 3Cs (i.e. context, content and individual child) jointly influence the overall learning benefits. However, many scholars tend to ascribe emphasis to one of the 3Cs and discuss the educational benefits in terms of child's developmental characteristics or the context of engagement or the content of the activity. This can be a tension-generating force in research and practice. I maintain that when it comes to effective pedagogies, the 3Cs should be approached not as a conflictual question, but rather a question of balance among the three elements. All three elements are influenced by the affordances of a specific resource (such as the touch manipulation and multimedia of iPads), but ultimately, it is the pedagogy of the teachers involved in orchestrating these affordances that ensures holistic and sustainable educational experiences.

With this notion in mind, I now turn to a theoretical discussion of effective pedagogies for personalized education with touchscreens and young children. In addition to the affordances emanating from the use of Our Story, I discuss the affordance of touch manipulation and haptic engagement to propose the pedagogy of embodied learning as a positive example of personalized teaching. The possibility to easily create and share content is another key affordance of touchscreens and is in this chapter considered in light of creative pedagogy and in light of design pedagogy with a community of learners. I conclude by invoking the link between the democracy and effective implementation of personalized education in early childhood classrooms.

New pedagogies

I have critically described technology-driven personalized education at the beginning of this book and argued that we must not be complacent with the status quo. Personalized education and education, more generally, should be driven by teachers, not technology

providers. This doesn't mean that technologies cannot push the boundaries of innovation or inspire transformation in practice. Quite the opposite. In many respects, the presence of touchscreens in the classroom has renewed interest in some effective pedagogies of the past, including creative teaching and child's authorship. In schools worldwide, touchscreens inspired the so-called 'maker movement' where students actively create and co-create the teaching content. A creative pedagogy effectively supports such approaches.

Creative pedagogy

In Chapter 8, I discussed creativity in relation to the 5As, parent-child engagement and learning at home. As for creativity in schools, we find many synergies with children's autonomy, authorship and authentic engagement in the task. Based on their observations of creative teachers in British preschools, Cremin et al. (2006) proposed that the pedagogy of creative teachers is characterized by three key features: (1) the 'standing back' strategy, in which the teachers discursively position themselves as agents of possibilities or 'what if' agents; (2) profiling learner agency, where teachers actively listen to children and engage in their activities; and (3) creating time and space in which learners' ideas are taken seriously and their independence is actively sought. Creative pedagogy is therefore best understood as a set of strategies adults can use to empower and support children. These strategies are not limited to school settings – to a large extent, we observed these strategies in the home context and in the ways father supported his daughter's text-making with digital and non-digital technologies (see Kucirkova & Sakr, 2015). A creative pedagogy is a pedagogy that welcomes authorship and authenticity, and that empowers the child to be an independent learner and thinker. Creative pedagogy is therefore a perfect candidate for a pedagogy of personalized education.

Creative pedagogy has been traditionally thought of as something teachers or caregivers, that is, real human beings, can do. However, with the advent of customisable technologies, affordable multimedia devices and intelligent personal assistants, creative pedagogy can be also embedded in a specific device. For instance, there are apps for film-making which provide some tips and advice through audio-recorded prompts or pop-up messages encouraging the creator along the production process. Also, some learning programmes are designed with tracking data to issue prompts and help according to the user's progress (see Chapter 3 and the technology-enabled personalization models).

However, the design of the resources has focused on learning and convenience rather than creative activities. For adults' users, great progress has been made in terms of the personalized support provided by intelligent personal assistants, such as Siri or Google Now, developed for adults' use. These programmes provide tailored support in terms of supplying the user with requested information, and work best if they are combined with the use of several Internet-enabled devices (Internet of things) and several access points. However, the technology is used to support content delivery rather than content production and its optimal functioning necessitates the user's

input – the software can't make a pedagogical judgement a teacher could do. Creative teachers use several pedagogical techniques and one such technique is the pedagogy of embodiment, discussed next.

The pedagogy of embodiment

Embodied learning is particularly relevant for a discussion focused on touchscreens and personalization. With touchscreens, embodiment is facilitated through touch manipulation, which, when combined with the device portability, impacts on children's subjective experience of autonomy in an activity. In the next section, I therefore consider in more detail how through haptic and embodied learning, touchscreens can afford the 5As of personalization.

Touch, haptics and young children

A key affordance of touchscreens that facilitates personalized education is touch manipulation. Touch can be understood in a narrow sense of a sensory experience between our hand (fingers) and an object or, in a wider sense, of a whole body experience of the space (see Carolan, 2007). I pursue the latter understanding, which includes the 'relations, sensations, and non-representational knowledges' that a 'tactile space' can engender' (Carolan, 2007, p. 1264).

Although touch is one of our five basic communication senses (sight, hearing, smell, taste and touch), when it comes to everyday communication, it is not given the same weight as the other senses, especially in schools. However, touch is probably the earliest to develop from all communication senses. For young children, touch is essential for navigating the space and responding to others and objects within this space. Just how early touch develops and what children can and cannot understand through touch is difficult to tell. Deacon (2010) writes that touch 'is one of the most advanced senses at birth, and premature babies born as early as 25 weeks' gestation are aware of being touched'. Of course, there are many kinds of touch, depending on the purpose and context. Young children use touch to learn about the world around them; they touch things to be able to estimate the surface quality and size of objects or learn that some things are hot and some are cold. Psychologists describe this awareness as haptic awareness ('haptic' from the Greek word *haptikos* 'able to touch or grasp'; see Oxford Dictionary).

Children can develop their haptic awareness by touching and manipulating various apps on touchscreens and, in addition, touchscreens can support children's fine-motor development (Bedford, de Urabain, Cheung, Karmiloff-Smith, & Smith, 2016). Crescenzi, Jewitt, and Price (2014) argue that touchscreens can facilitate a synergistic physical-mental learning experience through the orchestration of a complex touch repertoire. The researchers examined seven nursery-aged children drawing their own pictures on paper and on iPads in a London nursery. They looked in detail how these toddlers navigate through a selection of painting apps on the iPad (Doodle Buddy app, Coloring Zoo, Fingerprint Magic), as compared to their finger painting on paper. A

multimodal analysis found that children deployed a wider range of touch movements than when using the paper for painting. With drawing on the iPad, children had to tap, press, straight stroke, circular stroke and scratch, and evaluate a number of specific touch qualities such as estimating direction, scale/size, speed of touch, duration and pressure. As a result, Crescenzi et al. (2014) argue that the iPads facilitated a wider range of touch types than traditional resources, including 'more touches in a period of time; more continuous touch sequences; longer sequences of continuous touch and more complex sequences/repertoires of touch' (2014, p. 92). These findings are encouraging as they indicate that children's haptic awareness can be expanded with touchscreens and this could potentially impact on other knowledge domains.

Embodiment

In the educational context, embodiment refers to a deep physical and mental immersion, which can be real or virtual. For virtual embodiment, the child (or reader and player) embodies the story or (avatars or game characters) in their mind, which, we know from cognitive studies, can support problem-solving and organizational thinking (Taktek, Salmoni, & Rigal, 2004).

Pedagogy of embodiment is typically focused on the entire body and how the body moves through the classroom space (Satina & Hultgren, 2001) or through the moving body in any space (see Lindgren & Johnson-Glenberg, 2013). Pedagogy of embodied learning has various methodologies, ranging from drama, role play, using dance movements or, as detailed in this section, using a touchscreen with children with impaired mobility and dexterity.

How might the embodied experiences afforded by touchscreens relate to personalized learning? I tried to get to the answer of this question in a study published in 2014 (see Flewitt et al., 2014), in which we looked at the role of touch in supporting the communication of children's feelings. These children attended a special needs school and couldn't communicate through traditional instruction modes such as verbal participation and whole-body movements. For these children, haptic engagement was key for their embodied learning experience and communication with others and we were keen to see how touchscreens might facilitate their experiences. The study was a largely theoretical exploration and was a follow-up on some of the issues we noticed in our initial iPad research in 2013 (summarized in the previous chapter).

In addition to touchscreens, the children in the school used desktop computers, interactive whiteboards (IWBs) and augmentative communication devices for communication. However, after an initial trial of touchscreens, the school almost exclusively switched to iPads. The staff and head teacher told us that they – and the children – preferred the flexibility and light weight of iPads, enabling them to do much more than they could do with the older, more cumbersome technologies. An important factor, which the teachers alluded to in the interviews, was the fact that unlike with previous technologies children could directly touch the iPads' screen. Although the teachers did not assign particular relevance to children's haptic manipulation, haptic learning had become our focus of research interest. When we looked in detail at our video data of children manipulating their iPads, we noticed an important difference

when compared to the other technologies. With desktop computers, children needed to learn how to operate a specially designed keyboard or mouse. With the interactive whiteboard, it was often the teacher who touched it on the students' behalf. With the augmentative communication devices, it was typically the child's assistant who pressed the buttons. With iPads, however, the children were fully in charge; they could directly press and tap the screen and freely explore the content through videos, pictures or text. It was not the kind of touch experience children would get when pressing the buttons on the technology specially designed to them. iPad responded to their touch in the same way it would to anyone else touching it; the device was not specially designed for their needs but contained some exciting programmes the children were keen to experiment with. Based on our analysis of field notes, video data and interviews with the staff, we concluded that 'the portability of the iPads combined with their touch-sensitivity and the responsiveness of diverse apps opened up new arenas for learning and inclusion for many students' (p. 112).

The students described the iPads as "great", "easier" and "better" than computers' (p. 113), and these positive attributes were also evident in the way the children treated their iPads, with great care taken around their storage and transport around the classroom. From the embodied pedagogy perspective, the children could embody the activities in which they were engaged, and, through the physicality of this experience, became more acutely aware of what was happening on the screen, being thus, arguably, more receptive to the content.

The children were not simply communicating what they already knew but also learnt new things through touch: 'Many apps not only facilitated children's self-expression by responding to swiping and tapped touch, but also rewarded them with the sensory experience of real, vicarious and virtual touch' (Flewitt et al., 2014, p. 112). Children who couldn't directly participate in activities before could create their own stories, choose their own pictures or sounds and adjust the colour of the display according to their own aesthetic preference. One teacher of Years 2 and 3 recognized children's sensory experience as 'not just touching the screen but there are things like shooting stars so each time they touch it they are getting sensory reward'. This teacher felt that the simple act of touching, unlike other technologies, enabled students in her class to 'become a little bit expert' (2014, p. 113). Thus, touch was here an important dimension to support children's autonomy, authorship of stories and aesthetics of the display. This contributed to a more authentic learning experience, and meant that the children felt enthusiastic and intrinsically motivated to take part in the activities. The affordance of touch, embedded in the touchscreen and incorporated by the teachers in the classroom, has thus integrated embodiment and personalization in one effective learning experience.

The design pedagogy

An effective pedagogy for future deployment of touchscreens for personalized education is based on teachers' and children's active input in the content design and management of activities, an approach that is often labelled the 'maker' or 'design' pedagogy.

Touchscreens, notably those developed by Apple Inc., reinvigorated the field theoretically and conceptually in relation to content creation. The technologies are equipped with several options for content creation, including a high-quality camera for picture- and video-making, a professional music and film editing software, typewriter with the possibility to record text through voice-recognition or touch-typing. There are also advanced possibilities to share content seamlessly and effortlessly across other devices, connecting to printers and 3D printers and GPS-enabled devices. For children interested in film- and music-making, Apple, Google and other key technology producers have revolutionized the possibilities for content production within a few years, bringing into the hands of young children software that used to be accessible only to adult professionals. These changes have inspired the 'hacker and maker' mindset, that is, an attitude that is inclined to create and change rather than passively consume content.

For children in their teens and teenagers, touchscreens offer many possibilities for 'digital making', that is, authoring content with, or for, digital technologies. Nesta, the United Kingdom's innovation charity, evaluated children's 'digital creativity' and 'digital making' with surveys of 8- to 18-year-olds in the United Kingdom, as well as with their parents and teachers. One of their key findings (see Quinlan, 2015) was that there is a great interest in digital making among young people as well as among teachers and parents, but there is little provision to nurture this interest. Consequently, makers and creators therefore tend to be individuals who are technology savvy, self-motivated and interested in experimenting with various ways of producing and sharing multimedia content.

I have been fortunate to work with some teachers, who could be described as enthusiastic digital makers. A study in a local primary school (documented in detail in Kucirkova, 2014b) gave me the opportunity to see an instantiation of design pedagogy first-hand. As part of the investigation, I observed and interviewed a Foundation class teacher who used digital personalized books (created with the Our Story app) for English lessons. In this case, the teacher did not create the content from scratch, but decided to personalize the 'Spot the Dog!' story by Eric Hill. The book was part of the English curriculum and was suggested to help children practise the writing of first names (with a capital beginning letter), full stops at the end of sentences and the short phrase 'is it'. The teacher had an ingenious idea of how to engage all children in the activity and harness the 'digital making' possibilities of touchscreens. Instead of Spot the Dog hiding in various places in the book, the teacher personalized the book with photographs of the children so that it is the children and not the dog hiding around the house. She used pictures taken of children hiding outside and meshed these with the book's original illustrations. She also removed text in some part of the book, so that children could add their own. The modified, personalized, version of the book was shown to the children on the interactive whiteboard as well as on their individual iPads. The iPad version enabled the children to type their own sentences as well as to add their own audio-recordings to the individual book pages.

Children's enthusiasm and sheer enjoyment of the activity were maintained throughout the lesson, especially when they discovered that their friends' (or their own) photographs are part of the book. As such, the teacher achieved the difficult

balance between engaging the children in a classic text (Spot the Dog) through a personal experience. Given that the content for the lesson was developed by the teacher (rather than by technology producers or education companies), it was directly relevant and motivational for the children in this particular classroom (it was individualized to them). The children could further personalize the content by adding their own text (short captions) and audio-recordings to the digital story. The final digital story was thus a collaborative personalized amalgam, which contained some text and illustration from the original author, from the teacher and from the children. The learning experience was more authentic for the students; they felt naturally more drawn (or attached) to a story featuring their own photographs and they enjoyed modifying its aspect through their recordings (aesthetic appreciation). A more general evaluation point to note here is that the technology was in this example used to enrich the practice and provide the children with a literacy experience that would be difficult with a traditional paper-based book. Technology was purposefully and intentionally enriching, not replacing, existing practice. I have made a similar point in Chapter 3, where I argued that most effective uses of technology integrate technology into existing good practice. In Chapter 3, I also considered the question of 'who' personalizes children's education. This is an important question in relation to design pedagogy too.

From the personalized education perspective, we need to ask: Whose agency is dominant when it comes to content production? Is the 'making' driven by the teacher or by the child? In Chapter 3, I considered the answers to the 'who' question by referring to education more broadly and to four stakeholders: family/parents, teachers, children and community. I return to the question and these four stakeholders in this chapter, by considering design pedagogy as an instruction that teaches the child through making, especially the making of educational resources. I do not consider the option of technology/technology designers leading the maker movement as I have already described the consequences of this approach in Chapter 3 in relation to technology-driven models of personalized education.

Design pedagogy: Parents/family as authors of educational resources

The words 'design pedagogy' might sound teacher-centric and technology-centric. However, for young children and especially those who are educated at home, parents are the first and foremost teachers. Parents and family members often produce their own 'stuff' with the children, which can include simple book authoring. With the changes brought about by Amazon and other technological changes in the twenty-first century, parents' making and designing has been taken to another level. I alluded to this trend in one of my blogs for *The Conversation*, published in 2014. In my article, I drew on two contemporary examples, widely cited in the media. One story relates to Ms Hameeda Raj – mother of Amaan, a 10-year-old profoundly deaf, active boy living in the United Kingdom – who decided to write her own book for Amaan. She became frustrated that there were not enough, if any, books for children who are deaf and hard of hearing. Her book was about a boy named Ali and his friend 'Aidy', who went on an adventure trip to a beach. So that Amaan could interpret what is happening in the

book, Hameeda added the British Sign Language signs to the book, explaining what is happening on each page. Although Hameeda thought she created a book just for her son, the title *Ali and Aidy Go to the Beach* became immediately popular across the country with those children who are deaf or hard of hearing. Hameeda uploaded the book to Amazon and began selling thousands of copies.

Parents can also create stories that validate children's feelings and present them with alternative outcomes for events they may apprehend or find difficult to deal with. For example, another mother-writer, Helen Sadler, wrote a book called *Monkey Has an Operation* for her daughter to prepare her for a lung surgery. The first motivation for writing the book was to prepare her daughter, Josephine, for a lung operation (<https://www.monkeywellbeing.com/my-story/>). Of course, Josephine was not the only child ever to have that experience, but there was no book addressing a child's fears in such a situation. To Helen's surprise, there were actually no books on other health- or hospital-related topics young children often have a fear of. One book thus led to another title (*Monkey Has a Blood Test*) and to another title and gradually grew into a popular series of 'Monkey's Wellbeing' books.

For both examples, the use of technology for book production and book dissemination was inevitable. The mothers could sell their books on Amazon and other online sites, enabling them to reach much wider audiences they would normally be able to reach via traditional bookstores. They demonstrated that personalization can identify niche market gaps. However, more importantly, they highlighted the very important role parents can play in supporting diversity and reciprocity related to personalization. What is special about *Ali and Aidy Go to the Beach* is not that a mother became a professional author. Many popular children's writers started by first writing books for their own children. The real interest is in the clever deployment of personalization in this example. The book is not fully personalized – although the main character is a young boy similar to Amaan, he is not Amaan (the illustration is not based on Amaan's physical appearance; the name is different). Yet, Hameeda's son could relate to his mother's book more than to other books available to him because they do not feature boys who are deaf or hard of hearing as the main heroes. Of course, the fact that the book contained the British Language Signs meant that Amaan received individualized support when reading it – again something not available in mainstream titles. The importance of the adult personalizing and then slightly depersonalizing a book highlights the 'dose' of personalization necessary for an effective learning experience. Similar to the Spot The Dog! example, it is important to note the parent's original way of combining personalization with the wider narrative, and of creating a story which grows out of a personal experience into a shared experience.

Teachers lead the way

Teachers are uniquely positioned to author educational content: they can identify areas of difficulty and areas of strength for individual learners and they can also provide experience and end-user perspective to inform future design of technology. There are some promising examples of educators who have made innovative contributions to the design of children's apps. For example, 'The Reading Train: Learn

to Read Books, Songs, & Games' is an app created by a teacher to support emergent readers. Teachers' authorship of educational resources requires time and digital competence – which many teachers don't have. Design pedagogy can be supported by the technology providers who can facilitate knowledge sharing and reduce the time it takes to produce new content. For example, the Amazon's platform 'Amazon inspire' (in BETA testing at the time of writing) aims to make educational resources developed by US teachers more 'discoverable and shareable' and turn them into a 'one-stop shop for teachers in the hunt for free lesson plans, educational materials and ultimately educational software' (<https://marketbrief.edweek.org/the-startup-blog/amazon-inspire-move-will-centralize-edtech/?cmp=eml-eb-mb+20160804>). Similar to the Amazon shopping website, teachers can choose, rate and comment on resources developed by fellow educators. The platform is in its Beta version at the time of writing, but promises to be a valuable tool to support teachers' design of educational content for touchscreens (in the form of apps), which, as mentioned in the previous chapter, is sorely needed in the current educational market. In addition to creating content, teachers can participate in curating and reviewing existing content. There is a growing bank of resources developed for pre- and primary school teachers to empower them in evaluating the value of specific apps for their classrooms. For instance, in a community-based online space *Teachers With Apps*, teachers share their tips and recommendations for specific apps (e.g. <http://www.teacherswithapps.com/apps/>). The more teachers participate in the co-creation of the content for touchscreens, the more likely it is that touchscreens will play a long-standing pedagogical role in early education.

Design pedagogy: Children in the driving seat

With devices, such as touchscreens, that are used by teachers as well as the children the possibility to create content is open to all stakeholders. Children's own participation in the content design and shape of the educational activities lays the foundations for an effective pedagogy of personalized education. In alignment with the 5As, children's autonomy (agency) in personalized education indicates the importance of placing children in an active position to the design and implementation of personalized curriculum. This is particularly important in schools where learners play a passive role, as documented in some disadvantaged English schools (Lupton & Hempel-Jorgensen, 2012). As for the importance of authoring content and adjusting the activities to suit the students' aesthetical preferences, this has been researched before, but mostly with older students. For example, Large, Beheshti and Cole (2002) worked with 10- to 13-year-olds to design web portals. The students were motivated and keen to contribute to the activity and had a strong preference for specific colours and graphics of the design. Focus group interviews with these children led the authors to a set of criteria for designing children's web portals: portal goals, visual design, information architecture and 'personalization' (under personalization the authors include possibility to change colour and graphics).

For children above the age of 8, child-led personalized education in the form of digital making is a popular model in several academies and free schools in the United

Kingdom (or charter schools in the United States). For children under the age of 8, digital making is typically more supported by the teacher; that is, it is less child led. The dynamics in these child–teacher relationships are difficult to map, as they vary from one child–teacher pair to another. I was fortunate to closely observe the child–teacher dynamics during digital making in two exceptional UK schools as part of the fieldwork of the NP3 project (see Chapter 3 for details). In this project, schools that employed ‘new practices, parameters and pedagogy’ had teachers who established safe boundaries and parameters within which children were free to explore ideas, create content and develop their understanding. The personalized education model was not fully child-driven but was led by the child and mediated by the teachers. In terms of children’s digital making, the technology used in these schools helped to open up spaces which are often protected from children, such as the design of the learning activities or deciding on the key theme/project for a given week. Consequently, areas of control, constraint and limitation became places of joint negotiation and meaning-making. This was possible because children used technologies (touchscreens) which positioned them on par or even higher with the teachers in terms of their digital competence. The technologies supported their autonomy and authorship because they could use them to create attractive multimedia content evidencing their skills and knowledge. In addition, with the touchscreens, the children could access the Internet and the wealth of information available online; they could customize given activities according to their learning needs (e.g. adjusting the pace or display of certain reading materials) and they could also engage in science enquiries using the devices outside the classroom. The latter did not only support children’s authorship and autonomy but also added an authentic flavour to their learning.

The crux of my argument relates to the nature of the teacher–child dynamics in these contexts and the teacher’s agency versus the child’s agency in the making process. It would be amiss to assume that design pedagogy works best if it is either teacher led or child led. For some resources and activities one might be more beneficial than the other, and it is good if they collaborate with other adults, such as in the case of teachers collaborating with professional app designers. Teacher- and child agency in design making can also work sequentially, as outlined with the Spot The Dog! example, where the teacher created the template for the story amalgam and the children personalized it afterwards.

In addition, the affordances of the particular technology used for digital making influence the making and design possibilities. As outlined in the previous chapter, for Robert, a template-based app worked well in supporting the creation of his own digital artefact, while for a group of Spanish preschoolers, an open-ended app was ideal to facilitate productive dialogue and a collaboratively produced digital story. Therefore, if we consider the digital making possibilities with touchscreens, the agency of the technology brings to bear on the evaluation of teacher-child agency. Unfortunately, although there is some support for individual child-led design and teacher-led design, there are not many technologies designed to support collaborative teacher–child digital making. There are, however, some projects that illustrate what such a collaborative design pedagogy could look like.

Design pedagogy: Creating learning communities

Teachers, children and technology providers can work together to achieve a more community-oriented approach to making and co-designing new knowledge and resources. A prime example of such an approach is the project nQuire led by a team of The Open University researchers. Scanlon, Anastopoulou, Kerawalla and Mulholland (2011) aimed to engage teachers as well as the students and support learning across various contexts (in school as well as home) in their Personal Inquiry project. Together with the software designers at the Knowledge Media Institute, they developed a software called nQuire, which grew into a number of scientific missions explored by a community of international users (see <http://www.nquire-it.org/>). The software runs on personal mobile technologies and supports children's own science and geography investigations in their local communities. Children are encouraged to conduct experiments and report evidence on issues relevant to their area and personal lives. Teachers monitor and author activities and support children's enquiries. A community of online users comments and further challenges the participants. In their summary paper, the researchers argue that 'personalization of the inquiries in terms of relevance and providing students with choice about the inquiries they carry out is an important part of the project's objective to engage students' (p. 516).

nQuire has grown over the years and has been successful because it brought together teachers, parents, children and the local community and engaged all stakeholders in an open-ended, creative space inviting their input. These are essential ingredients for an effective pedagogy of personalized education – as discussed in Chapter 10.

Taken together, design pedagogy, especially community-driven design pedagogy, creative pedagogy and pedagogy of embodied learning are three pedagogical techniques that teachers can consider if they wish to support personalized learning in their classrooms. All three techniques work best if they do not aim to transform the existing practice through disrupting or replacing existing practices. Instead, teachers interested in these pedagogies need to first identify their best practices and then use these techniques and technologies to enrich them. In other words, these pedagogical techniques can enable a creative renewal of classroom practice, but they need to build on extant excellence, prior experience and established professional expertise. Put briefly and suggestively, these pedagogies can hit the 'sweet spot' of personalized education by combining old and new and alternating teacher- and child-led activities.

The sweet spot of personalized education

This chapter's selective focus on three pedagogies is open to the charge that I have excluded alternative explanations of how touchscreens could support personalized education. To consider additional connections between touchscreens and personalized learning in early childhood, I invite the reader to consider the rich accounts provided by contributors to the edited volume *Apps and Young Learners* (published by Routledge in 2016).

My impetus for this chapter was the quest to trouble the notion of technology-driven personalized education and consider effective pedagogies related to the 5As. I suggested some links between the empirical evidence reported in the previous chapter and possible pedagogies that could explain past and promote future effective use of touchscreens for personalized learning. I described some effective pedagogies to support personalized education through children's and teachers' co-creation of content and through children's haptic engagement. In these considerations, I wrestled with the issues of presenting personalization as an exclusively independent and individual exercise. In all the effective approaches, the optimal learning moment was achieved through a balance between personal/individual and shared/collective endeavour. In my practitioner-oriented articles, I refer to this balance as the 'sweet spot' of effective personalization.

The notion of a sweet spot might imply a specific location or position. This is not what I mean – I do not see personalization as the pursuit for a single fixed point which, when activated, creates educational miracles. The optimal values will differ for different children and contexts; there is no right 'dosage' of personal and collective to serve to the children or prescribe to the teachers' or children's designers. It is a process that needs to be continuously renegotiated with all the stakeholders involved in the process of personalized education.

With specific resources such as personalized books, we can study and evaluate in detail the amount and type of personalization necessary for specific outcomes. This is particularly important for future design of effective learning resources and addressing the gap between educational research and industry developments. The gap between industry and research is of course not unique to the personalization arena and there have been many efforts to increase the knowledge exchange between research and industry. Yet, as a regular reviewer of commercial products for young children, I find it striking how many exciting personalized and 'personalizable' digital resources have been developed for young children, with little, if any, empirical research behind their learning design and possibilities for classroom deployment. This neglect underpins my effort to increase the discussion around the *pedagogical underpinnings* of a future model of personalized education.

Reflecting on my own research engagements, I propose that the defining principle of effective personalized education does not lie in the extremes of authenticity, autonomy, attachment, aesthetics and authorship. Instead, we need pedagogical practices that integrate the 5As with the humanist principles. In the remainder of this chapter I outline how the pedagogy of design, creativity and embodiment could be coordinated into classroom instruction within a liberal-humanist and democratic framework.

The humanist orientation of personalized pedagogies

I alluded to Todorov's philosophy and to his comprehensive summary of the humanist legacy in Chapter 6, where I described the 5As of personalized education. I have to look at humanism again in this chapter in relation to pedagogies, as I firmly believe that

teachers can effectively deploy the 5As only if they follow some basic humanist values. Let me state my argument in more practical terms and draw the analogy between humanist and democratic approaches to education. I do recognize that 'there is no simple correspondence between ideological families and political regimes' (Todorov, 2009, p. 31). However, Todorov (2002) also writes that 'liberal democracy as it has been progressively constituted for two hundred years, is the concrete political regime that corresponds most closely to the principles of humanism' (p. 31). So, combining humanist and democratic approaches is very much a practical tactic to usefully connect to the rich research area concerned with democratic teaching.

I understand democracy as a system that can balance the rights of individuals and groups, as a tension, as an ethos, as human effort. I believe that managing the needs between individual desires and requirements of a group is essentially about democracy. In early childhood classrooms democracy is about creating respectful, sharing classroom communities where everyone is equal, has the same rights and responsibilities and plays an integral role in the group. This may sound utopian to some people, but there are some educators and teachers who engage in such democratic practices on an everyday basis. A prime example of such a democratic classroom ethos can be found in the storytelling curriculum developed by my early childhood heroine, Vivian Gussin Paley. In her book *The Boy Who Would Be a Helicopter*, Paley (1990) describes how she achieved an inclusive and democratic pedagogy by introducing the rule of 'you can't say you can't play' to the children in her classroom. Her pedagogy does not centre on the curriculum or technology, but on the child. As the name storytelling curriculum reveals, the central mechanism through which children in her classroom learn is through storytelling. Paley's storytelling/story-acting curriculum is not a technology-mediated curriculum; it was developed years before iPads existed. Paley (1990) understands storytelling as 'a shared process, a primary cultural institution, the social art of language' (p. 23) and to support this process, Paley encouraged the children in her classroom in the so-called storytelling/story-acting activity, also called the 'Helicopter technique' (www.makebelievarts.co.uk). The technique follows a simple routine, facilitated by the pedagogy of embodiment (i.e. drama, children act out their stories), pedagogy of design (i.e. content production, children create their own stories) and creative pedagogy (i.e. the teacher follows the scaffolding principles very similar to those described by Cremin et al., 2006). In practice this means that to begin with, the teacher asks a child to tell a story and writes the story down on a piece of paper, word by word, while the child speaks. The story can be about anything; there are no restrictions on theme or characters, and the only rule is that it cannot be longer than one page. The child is then asked who they would like to be in their story, and this character is circled on the paper. Once the teacher has collected a few stories, the story-acting part of the activity begins. This involves taping a space in the middle of the classroom into a square – also known as the 'classroom stage'. The child whose story the teacher recorded is seated in the middle of the stage, together with the teacher, reading the child's story, sentence by sentence. The storyteller child acts out the main character and other children from the classroom are called to the stage one by one, depending on how many characters there are in a story. At the end of the story, the children clap and sit down, with other

children participating in the next story. Paley (1990, p. 37) introduced some loose rules to the activity, mostly to substantiate the link between the activity and its social and moral aims (which I call here humanist and democratic). For example in relation to peer commentary, she wrote:

Commentary is welcome at any time, but permission is required to insert a new character into someone's story. This is an easy concept to understand in the controlled setting of a staged story, easier than in the doll corner, but in both places the case for dramatic integrity is strong. It is essential aspect of the social contract and can be used as the basis for solving most behavioural problems. Do your actions belong in the scene you enter? If not can you convince the players to alter their script, or, failing to do that, will you agree to a different role? We call it socialisation, which simply means – at any age – that you play your part acceptably well in the given script.

The format of storytelling/story-acting is relatively simple, but its potential and actual learning benefits are enormous. Children's autonomy and authorship are celebrated, and the children are free to share their inner world and bring their ideas forward. At the same time, this freedom needs to be critically examined through self-reflection, as children reflect on the peer reception of their stories on the classroom stage. Cooper (2005) analysed the educational benefits of the individual elements of storytelling/story-acting and found many parallels with Vygotsky's zone of proximal development and socio-cultural theory of learning. In addition, 'the very structure of stories and storytelling makes the experience a vital, fertile opportunity for young children to learn many things directly and indirectly about language, print, and narrative, three critical components of early literacy development' (Cooper, 2005, p. 237). The story-acting helps with embodied (or psychomotor) learning and teaches children about expression of emotions and affect. The transition from the child's imagined story to verbal dictation and then from the paper to the collective acting links 'helps young children internalize the nuances of language and create pictures in their heads, both essential elements of deep reading' (p. 246). Not surprisingly then, there is a growing body of empirical evidence showing that classrooms which incorporate storytelling/story-acting approach into their everyday practice have children with improved socio-emotional relationships, peer cooperation, self-regulation and moral understanding (e.g. Cooper, 2009; Nicolopoulou, de Sá, Ilgaz and Brockmeyer, 2010; Nicolopoulou et al., 2014).

My own observations of storytelling/story-acting in action in the UK classrooms and in Boston kindergartens in the United States made me realize how critical democratic pedagogy is to supporting the 5As of personalized education. Autonomy can only work within the boundaries of a collective identity or community. Authorship means little if there is no respect for audience and the possibility to share an authored piece with others. Our aesthetical norms and standards are based on others' reactions and expressions and, similarly, an emotional attachment to an object depends on how much this object can connect us to others. Authenticity, too, has little significance in the void of others and their benchmarks. The narrative basis of the

activity is an effective way of balancing up the individual and collective needs. 'While the tensions between individuals and the group can never be fully resolved, the high level of children's investment in story – telling and acting can result in their voluntary self-restraint in order to insure the smooth functioning of the activity' (Mardell & Kucirkova, 2016, p. 171).

I do not claim that Paley found the magic bullet for personalized education, but she certainly draws on many democratic/humanist principles and incorporates pedagogies conducive to the 5As of personalized education. Tying together these elements with a narrative emphasizes the intimate link between narrative and personalization (see Chapter 9). It also illustrates that personalized education needs a democratic pedagogy regardless of whether it happens with or without digital technologies. Just like embodied learning and design pedagogy, democracy pedagogy is a pedagogy of practice. In the last chapter, I provide a more detailed appraisal of this proposition and integrate the three pedagogies – creative, embodied and design pedagogy – into a single pedagogical framework labelled 'pluralized personalization'.

Summary

This chapter outlines how touchscreen-mediated personalized education, which is consistent with the principles of embodied (haptic), creative and design pedagogy, can support children's learning. In relation to the design pedagogy, I outlined the possibilities of digital making led by teachers, children and community of users. Citing the nQuire project, I illustrated how community-based approaches to design and digital making could positively innovate the current education system. I also argued that in addition to pedagogy, we need to consider the issue of individual freedoms and democracy in a classroom. These humanist values might appear too abstract, so I outlined a practice that successfully blends humanist principles with effective pedagogical techniques and which has been studied for its positive educational impact. Paley's (1990) story-acting/storytelling approach can open spaces for individual story authorship within a shared classroom culture, and it supports the pedagogy of democracy where individual voices are respected and negotiated with the collective voice. In these spaces, personalized education is seen as fundamentally different from the technology-driven or child-centred models of personalized education currently advocated in many US and UK schools (see, for example, Bray & McClaskey, 2013). It is an example of an effective pedagogical framework that I call personalized pluralization and explain in more detail in the final chapter.