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The Origin and Rise of Personalized Education

Many authors and scholars are able to state what personalization is *not*, but most struggle to specify what it really is. This tautological view of personalization is particularly noticeable in relation to personalized education and learning. Scholars, including myself, have argued that personalized learning is not, or should not be, driven by technology, and that the current models of personalized education are inadequate. But what exactly do we mean by personalization, where does it come from, what influences it, what counts as personalized and what count as non-personalized?

The search for a definition of personalized education begins with some macro-level observations and a consideration of wider, societal issues. In this chapter, I answer two fundamental questions of how personalized education came about and who can make education personalized. In this overview, I consider education from a broader viewpoint: in addition to learning and teaching academic subjects, education is expanded to include skills, which might not be required or tested by the state, but which are considered crucial by the society (e.g. cooking and sewing for girls growing up in Ancient Greece and knowing how to use a smartphone for teenagers growing up in the twenty-first century). Unlike the examples of digital personalization I used in the cameo at the beginning of the first chapter, personalization is in this chapter discussed in relation to education and understood as a bespoke or individualized practice.

Tracing the origins of personalized education

I'm not a historian and what I offer here is very much a simplified historical account of how personalized education (as we know it today) might have come about. I consider the historical and societal influences on children's learning, literature and home practices in more detail in Kucirkova (forthcoming). In this section, I give a brief summary of my thoughts on the key socio-historical trends and their possible impact on the origins and developments in personalized and person-centred, or individualized, education.

Age, gender and socio-economic influences

The first references to the importance of person-centred programme of instruction can be traced back to Ancient Greece some 2,000 years ago. Although the education systems in Athens and Sparta were based on different principles, both education systems shared the premise that teaching needs to be differentiated for boys and girls and for rich and poor. This in itself shows some very basic differentiation based on child gender and background. In Ancient Rome, about 250 BC, only the rich could afford the fees of a private tutor (often employed as a slave). The educated were a significant minority – they were mostly men from rich families and constituted only about 20 per cent of the whole population. The education for this minority was bespoke and targeted the key skills necessary for these individuals, such as reading, writing and public speaking. These were skills not everyone had; indeed, they were another way of differentiating the rich from the poor (or educated from the non-educated). Other children (almost all girls) were taught at home too, but they were taught practical household skills rather than literacy and arithmetic. As such, some privileged children received quality, academically focused education that was tailored to their situation and that could empower them to become an independent citizen, while other children received standard comprehensive education. Children's background, and, put more crudely, the wealth of a family, were the decisive factors for who would receive personalized education in the ancient times. The end of the Roman Republic saw a 'two-tier education system' with a primary school for children from privileged homes and higher school for selected rich men (Kamm & Graham, 2014), again indicating some differentiation, this time based on the children's age (in addition to wealth).

If we continue the historical survey, we can see that the tale of education continued the main threads of inequality, sexism and personalization up until today, in a funnel-like shape: all three elements are still visible in today's modern era but, some argue, to a lesser extent than they used to be. More than ever before, people are literate, educated and have access to school, although it is still more boys than girls and there were still, in 2016, about 785 million adults who could not read or speak (see the global illiteracy statistics available in 'Speaking Books': <http://www.speakingbooks.com/impact/overview.html>). However, while inequality and sexism persist, personalization seems to have bounced to the extreme of standardization.

Historians agree that from about the sixteenth century, universal and standard education began to rise in countries currently described as Europe. In a 'universal' education system, the vast majority of children do not receive bespoke education delivered by personal tutors. Instead, they receive standardized education, presented by a 'sage on the stage', also known as the teacher. The content a teacher delivers in the classroom is not his or her personal decision – the content is based on the curriculum dictated by the school and national government. Unless a child attends a special school, she/he is taught from a standard script, according to nationally approved markers, which are checked through international testing (such as the Programme for International Student Assessment tests for literacy). The teachers can personalize the standardized curriculum to some extent: they can make links

relevant to the child's own experiences. They can encourage children to make things and take the lead in certain tasks, so that they are positioned more as makers rather than receivers of knowledge. However, the time for such personalization is limited and not explicitly rewarded through national assessment frameworks. Consequently, out of the 635 hours that an average child spends in a primary English school (or 1,096 hours in a US primary school¹), the child's learning experience is by and large *depersonalized*.

Such standardized education happens in most industrialized developed Minority World countries. Generally speaking, in these countries boys and girls follow the same curriculum, although some gender bias persists. Notably, international statistics show that there are more female teachers in early childhood classrooms, more female than male students in higher education and this, some argue, influences children's motivation and performance levels (see some interesting observations by Brophy, 1985, on this topic). Most countries attempt to minimize gender and socio-economic differences in public education, but the success of these efforts so far has been limited. However, unlike in the ancient world, modern education differentiates the topics of instruction according to children's *age*. In terms of the extent to which the instruction is individualized or standardized, one could argue that children at preschool level receive more personalized education than children attending primary and secondary schools. While in preschools (or early years settings) children can often spend their time playing (and thus choosing their own toys and activities from the resources available), at the primary and secondary school levels this is not the case. For compulsory education (typically for children aged 4–16), the range of topics and resources supporting their teaching is pre-established by the curriculum and the classroom teacher. Children learn facts and information that are mandated by the school curriculum, not based on their personal choice or their own selection of topics. Such an approach has been reported to be demotivating for students because it has little connection between knowledge acquired through schooling and its personal usefulness for the individual children. Children's motivation to study at secondary school is notoriously low, reflected in high dropout rates at secondary schools. From a purely theoretical personalization perspective, we could expect motivation levels to rise when students enter the university level, because they are given more choice and autonomy in the subjects they can study. The reality is of course more complicated because of the many factors related to higher education including the financial barriers to university studies in many countries and the expectation that university study should be explicitly linked to the skills demanded by the labour market.

The intra- and interpersonal connections between who gets taught what and when are complex and complicated. However, let us suppose, for the sake of this argument, that in the ancient times education started as personalized, but then, in the Early Modern Period, became more standardized with the introduction of universal education for the compulsory schooling ages. We could also speculate that in the ancient times the wealth of a child's family determined whether a child's education was personalized. In the modern times, the socio-economic background and wealth of a family still determine the pathways and access to high-quality

education. However, for the majority of educated people, the years they spent in an education system (i.e. the compulsory schooling age) is characterized by a non-personalized approach. This status quo is being changed in the twenty-first century by two key trends: first, there has been a tension between the globalization and anti-globalization movements, with rising levels of nationalism and protectionism, accompanied by mass production and corporate capitalism practices. Second, there has been a sharp rise in the availability, accessibility and affordability of high-functioning multimedia portable technologies. These two key trends could be used to explain the 'personalization rise' in the education sectors in the first half of the twenty-first century.

Globalization trends and personalization

The globalized world offers many options which were not available to the previous generation. The directors of the World Health Organization summarized them as: 'unprecedented speed and volume of international travel, the interdependence of businesses and financial markets, and the interconnectedness brought on by the revolution in information technology' (Ong, Kindhauser, Smith, & Chan, 2008, p. 478). These phenomena are new; they pose new threats and risks and therefore demand new skills and knowledge. They go hand in hand with changes in the job market and innovations in the workplace. For example, there has been an unprecedented rise of on-demand services and companies, such as Uber for taxi services, Airbnb for accommodation services or Hassle for cleaning, which provide on-demand affordable services with 'a single tap'. Naturally, personalized services are more popular in some countries than others. In Western democratic societies with market-oriented economies, the drive towards autonomy and expression of an individual's voice are the norm. In the United States and the United Kingdom especially, an individual-centred approach to learning, and life more generally, might appear as a more effective solution than it would be in a more collective society, such as China. The fact remains that affordable, non-committal, flexible services create a new 'on-demand world'. Some worry that in an acutely perceived globalized world, there is an overwhelmingly independent (rather than intra-dependent) drive towards self-fulfilment. As *The Economist* (2016) writes:

Pessimists worry that everyone will be reduced to the status of 19th-century dockers crowded on the quayside at dawn waiting to be hired by a contractor. Boosters maintain that it will usher in a world where everybody can control their own lives, doing the work they want when they want it. Both camps need to remember that the on-demand economy is not introducing the serpent of casual labour into the garden of full employment: it is exploiting an already casualised workforce in ways that will ameliorate some problems even as they aggravate others. (From *The Economist*, 2016, available from: <http://www.economist.com/news/briefing/21637355-freelance-workers-available-moments-notice-will-reshape-nature-companies-and>)

An example of an on-demand economy relevant to early childhood is the shopping experience I described in the cameo at the beginning of Chapter 1. Today's children frequently play and learn with personalized toys, books and other artefacts. This would not be possible some twenty years ago: while in the twentieth and early-twenty-first centuries bespoke products and personalized gifts were the domain of a rich few, personalized objects can be today created in a much easier and affordable way. Although not all personalized objects are technology based, their production necessitates some technology to run in the background. By 'technology' I mean here a suite of digital circuits, systems and devices that can run algorithms with big data and offer mass customization options to products and services. This technology became available and more affordable in the first decade of the twenty-first century and has revolutionized the manufacturing and consumption industry.

In addition to consumer industry, personalization technology has brought significant changes to the publishing and broadcasting industries. Personalization options available through news and information providers such as Facebook and Google allow individuals to customize the information and updates they receive. On the one hand, personalized news could be seen as an effective time-saving tool in an information-saturated world. Like-minded individuals can group around shared interests through social media networks and customized news feeds. On the other hand, personalized news means that people receive the information they want to receive and limit their access to alternative views on a large scale. This might soon escalate into a problem where people would proportionally spend more time reading local, personal and, very likely, subjective and restricted information. Overall, personalized news and customizable information flow is more vulnerable to state- and mass control, which raises questions about the perceived and real agency in customizing the information we receive from global networks.

These broader societal trends could be succinctly summarized as the rise of corporate individualism in the twenty-first century. Corporate individualism stands in contrast to anti-globalization movement, which makes suggestions for alternative production, business, lifestyle and education methods. Whether or not a globalization or an anti-globalization movement prevails in a particular context or perhaps for particular individuals is a question for other writers. What I'm interested in is the notion of both the globalization and anti-globalization movements placing a heightened focus on the 'self' and on children's identities. Corporate individualism seems to be painting identity in national and local colours and the anti-globalization movement in global and multicultural colours. Both bring to fore the importance of being a certain person or individual and both movements demand an individual who is self-conscious and self-aware and who is able to navigate the plethora of options for individualized services at his or her disposal. Similarly, the dynamics of social media and the unprecedented amount of easily accessible information further call attention to decision-making and, therefore, self-management. I do not view these socio-cultural influences as causal, but it is certainly the case that the globalization/protectionist trends gave rise to the need for reflecting and reconsidering one's main values and beliefs, as well as skills and abilities. Whether one votes for a right-wing national party or is an activist for local produce, she/he needs to be selective, self-conscious and

self-aware to make a stance. Similarly, being constantly connected to information source (whether this is Wikipedia feeds or Facebook updates from friends) implies a perpetual exposure to a range of views, attitudes and information, which an individual needs to process, analyse and assimilate. The pursuit for self-validation is likely to be related to these processes, especially if there are easily accessible and attractive options for experimenting with alternative identities – such as the ones afforded by the digital spaces. It is important that researchers and professionals observe and listen to these global macro influences on personalization as they engage in or evaluate personalized education.

Personal mobile technologies and personalization

In parallel to the consumerism industry developments, early 2010s have seen a sharp increase in the availability and affordability of personal digital technologies. These technologies include tablets and smartphones, and, given their touch-sensitive screen, can be collectively referred to as touchscreens. Touchscreens are equipped with powerful cameras, multiple sharing options, as well as many customization options. The possibility to take and share a pictorial or textual information easily (e.g. by taking a picture of a train journey and sharing it immediately with a group of friends with the ‘What’s Up’ app) calls for a different mindset than that of a digitally free traveller. Some worry that the speed and nature of personal data sharing disrupts intrapersonal relationships and that it makes people self-focused and lonelier. According to others, new technologies have connected more diverse groups and made us more social. Some worry about information overflow and some others about too much surveillance. The truth is somewhere in the middle, but what is clear is that the societal changes I described earlier go hand in hand with the changing technological landscape and that they have a profound impact on young children.

New technologies affect modern working, social and private lives in new ways, summarized by Floridi (2015) in the Online Manifesto of the Digital Agenda as follows:

The deployment of information and communication technologies (ICTs) and their uptake by society affect radically the human condition, insofar as it modifies our relationships to ourselves, to others and to the world. The ever-increasing pervasiveness of ICTs shakes established reference frameworks through the following transformations:

- the blurring of the distinction between reality and virtuality;
- the blurring of the distinctions between human, machine and nature;
- the reversal from information scarcity to information abundance; and
- the shift from the primacy of entities to the primacy of interactions (Floridi, 2015).

Of course, technologies have been around for many years, and in many respects personal mobile technologies could be perceived as another technological bandwagon for schools to jump on. However, the ubiquity of technologies in young children’s lives and the extent to which these technologies impact on their play, learning and social interaction are unprecedented. Today, a 4-year-old girl is likely to have access to, or to

own, a personal digital device, regardless of whether she grows up in the Minority or Majority world. Also, the device (hardware) that children from different countries use is often the same, with, occasionally, some basic language localization. However, the quality of the programmes downloaded on this device and the support provided with its use are radically different depending on the children's socio-cultural and economic background (see Guernsey & Levine, 2015). Differences in technology use mirror the differences in personalized education and the extent to which a personalized experience is truly personal to a specific child. Some of the qualitative differences in how touchscreens and new technologies affect children's learning are explored in detail in this book.

Technology-based shifts in the society are connected to the personalization trends in various ways, and they can show various external manifestations. For example, an activity, which became popular with smartphones and which illustrates a technology-driven manifestation of personalization, is the activity of taking and sharing selfies. 'Selfies' began as a vanity practice of young teens in early 2010s but, since then, have become a popular way of communication among all sections of population, including young children. Today, selfies are part of almost all occasions and all experiences, be this an outing with friends or a lonely dinner. Selfies have become subject of scholarly study as well as part of sociology courses in secondary schools.² New expressions have been coined to reflect the trend, for instance some writers call children born after 2015 the 'selfie generation'. Personally, I dislike this term and other generic labels given to young children growing up with technologies (e.g. 'digital natives' coined by Prensky, 2001). These labels assume a homogenous view on children and childhood and may set up the wrong expectations in the mind of a practitioner. Indeed, at several professional development workshops that I have been involved in, I have been surprised to hear the opinion that technologies make children self-centred and egoistic in their behaviour and that exclusive, self-focused products contribute to the rise of the so-called 'me generation'. I explain in Kucirkova (forthcoming) that we need to distinguish between societal trends related to personalized media, technologies and consumption and their impact on overall trends in children's development. Extremes are extremes because they relate to minorities; the vast majority of today's children do not and will not live the lives advertised by digital entrepreneurs via their self-produced vlogs³ in the backyard of a Californian villa. What educationalists and developmental psychologists need to keep in mind is that the globalization and technology trends impact on children's learning experiences, but they are not causal. Overall, these wider influences on children's lives expand our understanding of where the interest in personalized education comes from and can help us answer the question of 'why' personalized education is on the rise in the twenty-first century.

Bringing it together: Global and technology changes in the twenty-first century

Taken together, the societal and technological changes in the first half of the twenty-first century place many demands on the self. The globalization/anti-globalization trends and changes in the new technologies arena imply two things: first, that an

individual needs to be self-aware to avoid an extreme stance, and second, that an individual needs to be selective and knowledgeable about their own needs, attitudes and expectations to benefit from the wide range of individualized options available via personal technologies.

No wonder, then, that in the last decade, personalized learning has arisen as a powerful countermovement to standardized education and is perceived by several educationalists as a lever for change to lift outdated school practices. It would be difficult to determine whether the heightened interest in personalized learning is a reflection or a manifestation of the need for personal fulfilment in a globalized world and ubiquitous presence of personal digital devices. What is clear is that the current socio-economic climate demands a fresh perspective on what we teach children in terms of skills, educational content and intra-personal values. Furthermore, with the powerful possibilities of new technologies to customize information delivery, few would argue against the need to leverage these possibilities for learning.

Unfortunately, although the globalization and technologies trends might have paved the way for a personalization revolution in education, they have not created a sustainable or holistic educational approach. This is because current models of personalized education position technologies as a countermovement to the standardized, globalized and technologized movements. In Chapter 3, I explain that the current model is a reactionary (countermovement) solution. It lacks a visionary power and guiding insight into future practices. In addition, the current personalized education model assumes that personalization works for everyone and everywhere. However, personalized education only works in certain contexts and for some children. For instance, while some children might benefit from personalized resources, others might find them confusing (see Chapter 7), and while the use of technologies can facilitate many processes, it cannot replace the sensitive guidance provided by a skilled teacher (see Chapter 11). Moreover, while it is positive to see that personalization affects students' motivation and short-term memory (see Chapter 3), it is also important to support students' long-term memory and harness motivation for solving cognitive challenges (as discussed in Chapters 9 and 12).

Young children are not alone in navigating the changing landscape of technologies and education – their teachers, parents/caregivers, designers and scholars need to process and adjust to the opportunities and challenges that digitally mediated personalization represents. The question is who to place in the driving seat of these changes. Who should personalize children's education? In the next section, I move to the consideration of the principal stakeholders, who have in the past, or who could in the future be the driving force in personalized education.

Who makes education personalized?

This section considers the different stakeholders who can influence whether a child's education is personalized or standardized. In Bronfenbrenner's (2005) ecological

systems theory, this consideration moves us from the exo- and meso-systems to the microsystem of family, school and groups, immediately surrounding an individual. I outline them as separate influences in this chapter – family, teachers, technologies and peers – although in real life, these stakeholders often work together and jointly influence the extent to which a child's education is personalized.

The family

If a parent (or the child's guardian/primary caregiver) decides that their children need private tuition for a specific subject or private lessons for a specific area of study, they are essentially personalizing their children's education. The child does not attend a classroom with a high pupil/teacher ratio, where everyone receives the same instruction, but they get one-to-one tutorials with a teacher who individualizes the instruction according to the child's particular needs and progress. There can be many reasons for individualized teaching – more commonly known as private tuition. For example, private tutoring can be used to fulfil a particular need within a child's standard education: a child might be approaching the state/national exams but is falling behind his/her peers and his/her parents decide to boost the child's knowledge through private classes. This kind of private tutoring is aligned with Vygotsky's notion of zone of proximal development and is typically presented under the banner of 'helping children reach their full potential' (i.e. enabling them to reach the boundaries of their zone of proximal development). Another reason for private tutoring can be practical difficulties. For instance, the child cannot go to the school because she/he lives in a rural area and the school is inaccessible for him or her, or the child is physically or mentally unable to access or participate in the classroom, or a natural disaster has destroyed the school or the child became long-term ill. In these examples, personalized education happens on a small, often short-term basis and it fulfils a particular need. An alternative (or, for some parents, an additional) reason for private tutoring is to offer the child something extra and special. For instance, parents might decide to invest in a private teacher because they want their child to acquire specific skills in a specific area. The child might be perceived to have a particular talent (e.g. playing the violin) and the parents decide she/he should receive special, bespoke education so that she/he has enough time to nurture her or his unique talent. Parents may also believe that the public (or national/state) education system is not adequate for their child and construct the child's entire education as a set of tailored 1-2-1 sessions. Also, for some parents personal tutoring is perceived as a marker of status and they might want to pursue it for socio-cultural reasons. Whatever the reasons behind personal tutoring, the fact remains that this kind of personalized education is currently available only to a minority of children. For some of these children, personalized education is a direct response to their unique personal and/or contextual characteristics, and for other children, it is a reflection of their wealthy heritage. From this perspective, the impact of family influence on the extent to which a child receives personalized education has not radically changed since the Ancient Greek times.

The teachers

In public schools, teachers are committed (and required by the school mandate) to teach children content relevant for standardized assessments. This commitment influences the extent of teachers' possibilities for personalized teaching. It implies that in most schools, teachers do not teach children what the children want, but what the national government and a large group of people have decided to be important for a child's general education. Within this remit, however, teachers can personalize certain aspects of children's education. Teachers can provide children with individualized learning plans; they can tailor the classroom activities to the specific needs and abilities of particular children and relate the teaching content to children's lives. Good teachers have used these basic personalization techniques from times immemorial. In the twenty-first century, technology largely influences how much and how easily teachers can customize and personalize their lessons and the teaching content. For instance, with the AirWatch Teacher Tools technology, teachers can customize each tablet used in the classroom according to individual students' needs. If, for example, Rick struggles with grammar, the teacher can decide to populate Rick's iPad with PDFs, links and apps linked to grammar exercises. For John, who might be more advanced in English, the teacher can upload texts and links that she/he knows interest John. These technological changes affect and alter teachers' roles, and shift them from content creators to content curators (see Jeff Jarvis's discussion of this point). Many teachers are opposed to technology-based personalization and perceive it as transferring their power into the hands of technocrats. Other teachers actively look for alternatives that would support their ability to customize and personalize the teaching content and materials. Adaptive courseware – such as the one offered by the Smart Sparrow platform – connects teachers to other educators in the community, enabling them to create and periodically update banks of teaching resources. Teachers can exchange and further customize content, and in this process, they become both content creators and content curators on a community level. Technology is used to support the process, but the teacher is in charge and is positioned as the principal mediator between knowledge/information and the child. This is different from models where the content and its delivery are driven by the technology.

The technology

As mentioned, an important historical shift concerning personalization options took place in the twenty-first century, with the emergence of affordable, smart, portable personal technologies. These technologies influence consumerist practices through the customization options they provide, and they can, in some instances, encourage the performance of self-promoting behaviours on social media networks. The software developed for these technologies provides children with an opportunity to experiment, to author their own multimedia content and, some argue, to learn on their own.

Technology-based education is education determined by the technology provider and developer. In Chapter 3, I make the distinction between technology-driven and

technology-mediated personalized education. Here, I 'lump' the two together to usefully connect to other literature published on this topic.

By and large, the current models of technology-based personalized education involve the following process: the teaching content is customized according to a child's profile and delivered to the child on a personal mobile device. The child's profile is created by their teachers or by the children themselves, based on a set of demographic markers and average scores on a set of teaching tasks. The teaching happens between the child and the technology; the teacher is supposed to monitor and support as and when needed. Such technology-based personalized learning is becoming increasingly popular in Western secondary schools, as well as in higher education. It is, as yet, not prevalent in early childhood education.

I wrote earlier that this model of personalized education has several flaws (see Kucirkova & Fitzgerald, 2015). One of them is that such model puts teachers on the periphery of the teaching process, undermining the powerful role they have in education. The other issue is that – as the participation data of Massive Open Online Courses show – it privileges motivated and knowledge-driven individuals who are 'young, well educated, and employed, with a majority from developed countries' (see Christensen et al., 2013, online) In his book *Is Technology Good for Education* (2016), Professor Neil Selwyn summarizes the problems of technology-based personalized education as three key issues: first, Selwyn argues that current technologies do not present students with different content based on their personal needs and preferences, but with the same content, delivered in a different sequence. Second, he argues that personalized education can work for those who know how to navigate the systems but not for all students. This means that it does not tackle the educational disadvantage caused by socio-economic background. Third, Selwyn rightly points out that technology-mediated personalized education follows the entrepreneurial model where some students thrive and succeed and some simply fail. Effectiveness is established through trial and error and reward often comes through serendipitous discoveries. These are three very accurate observations and are aligned with my own concerns around technology-based personalized education. In addition, we are concerned that education becomes dominated by technology giants rather than educators and experts. The consumer technology industry is currently ruled by four 'technology giants': Amazon, Apple, Facebook and Google (Alphabet); and there is a danger that we see the same narrow dominance in education. Although often concealed under the philanthropic veil, it is clear that technology producers want to see children use more technology so that their profit rates are higher. Their personalization models are not pedagogy driven but are based on what they believe works from their own perspective. This marginalizes the role of teachers and children themselves and is against the community-based model of education I outlined in the first chapter.

What, then, is the alternative? Some believe that children should be the ones who personalize their own education. In Bronfenbrenner's (1993) model, a child-driven model of personalized education would mean moving to the very centre of the 'Individual' circle, which is surrounded by all other external systems.

The children

Over centuries, schooling and labour have been used to suppress children's natural curiosity, wilfulness and playfulness. Today, children's rights are protected and include the right 'to health, education, family life, play and recreation, an adequate standard of living and to be protected from abuse and harm' (<http://www.childrensrights.ie/>). In most schools, children's curiosity, agency and autonomy are respected and welcomed, although of course there is a lot of variation depending on the school type, local environment and a particular situation. This doesn't mean, however, that children's education is personalized. In most schools, children cannot choose what they study, when and how they play or learn – the choice is determined by the teacher or the school and the curriculum followed by the school.

A prominent exception worth mentioning here is that of the Sudbury Valley School in the United States. This school was founded on the belief that children should be actively determining their own education and there should be no teacher (or technology designer) who does it for them. The school offers children a large open environment where they are free to explore what interests them and take responsibility for their own learning. Children's autonomy is supported with a variety of resources, including art materials, sports equipment and technology. Children are believed to learn best on their own, without the teacher and without receiving the correct answer. This is an interesting perspective and one that seems to work for the children and families of the children attending the Sudbury Valley School.

Another, more common way, in which children can personalize their own education, is by accessing information online. Thanks to the Internet, children have access to an immense volume of varied information, which is constantly being updated by individuals and communities, as well as groups of journalists (as it is the case in online newspapers) or a community of fellow users (as it is the case on social media networks). On its own, Internet does not provide personalized education. However, because it concentrates vast amounts of information at various levels of difficulty and in various forms of representation (videos, images, interactive chats, string of text, entire lectures from the best world universities), individuals could use it to create their own, bespoke, education. This is the case for some children and for some aspects of their education. For instance, for young children, the acquisition and advancement of digital literacy happen very much through their own exploration of digital worlds. Given that information is presented in various forms *together with* helpful guides in various formats (e.g. video tutorials as well as short texts, interactive community forums and other inbuilt 'guides' for building Minecraft), the children may not need the adults' guidance to learn from the content they access. This, however, works for only some children and some aspects of their education.

Child-driven personalized education is unlikely to work on a wider and sustained basis. Yes, people are always interested in things personally relevant to them, but we are not naturally wired to know what is not just interesting but also useful and has significance in terms of the global community we are part of. In particular, young children may not be cognitively ready to make the right choices and know what is

good for them in the long term. This is because of children's detailed focus on the immediate and the cognitive capacity required for understanding abstract concepts, relationships and time. For example, typically developing children do not master calendar and clock time until they are about 11 years old (Friedman, 1978). This partly explains why young children focus on the present and often struggle articulating a future vision. Giving children a free reign without the appropriate support would be against a developmental and age-appropriate right to education. My position should not be read as advocating for a child-deficient model. Instead, I argue against universal models of childhood and maintain that the 'who' question should be answered differently depending on the child's age, temperament, socio-cultural background and other contextual factors. It is influenced by different subjects, different learning stages and different learning contexts.

Another important consideration from the developmental psychology perspective for child-driven personalized education concerns children's ability to recognize what is best for them as an individual, and as a member of a larger community. Personalized education, which is entirely in the hands of the children, is likely to result in a tension between the individual desires and the requirements of the group – a tension children need to be taught to resolve. Therefore, the expectation that children can process the complex information available through online spaces without adult support, assumes an adult-centric perspective on child development.

There are of course aspects of education that children could and should personalize. For instance, they can be given choices *within specific activities*. This happens on a regular basis in many schools: the teacher chooses a writing activity because the teacher understands the aims and objectives concerning writing, but the children can choose what and how they write. In this vein, we could imagine self-driven personalization applied to specific tools and experiences, including children personalizing their sports activities on the playground (e.g. by deciding the game rules) or creating their own artwork. Similarly for the use of technology, children can actively contribute to the activities and programs they use.

The context plays an important role in these considerations. In the United Kingdom, there is a rich theoretical tradition of child-centred learning within primary education. To understand this tradition, we need to refer to the key theoretical antecedent of the so-called 'Plowden report' of the Central Advisory Council for Education (Plowden report, 1967). The report was a thorough review of child developmental theories and various aspects of child's development, including physical growth, language and emotional development, and it considered the role of school, home and neighbourhoods, transition to secondary school, curriculum, the learning of different groups of children (gifted, 'handicapped' or immigrant), as well as the teaching staff and their professional development. The key recommendation of the report was to develop school curricula that centre on the child's needs and interests. The recommendation was followed up through a number of further theoretical studies, but unfortunately, not much actual change in the early years or primary school practice (see Halsey & Sylva, 1987, cited and further elaborated in Pound & Buckingham, 1992). Hartley (2009) points out that personalization conceptualized as child-driven practice is not only a theoretical but also a political

concept (rather than practical approach to education). In his article, personalization is referred to as ‘nostalgic revival of child-centred education’ and critically examined for being a concept distant from actual pedagogy.

The arrival of new technologies, with multiple options for exercising children’s agency through digital games, art and learning, has changed this reality somewhat. The so-called ‘maker movement’, initiated in the early 2000s, encourages young children to not only use (and passively consume) but also make their own digital projects (see Chapter 11 in which I discuss the design pedagogy and children’s digital making). In education, the maker movement has predominantly focused on children’s development of coding and computational thinking skills, supported through a number of coding-related initiatives and clubs (e.g. the Code Club in the United Kingdom, a nationwide network of volunteer-led after-school coding clubs for children aged 9–11; see <https://www.codeclub.org.uk/about>). As part of these activities, children are positioned as agents and drivers of their own learning, but they do not drive to the new territory on their own.

Thus, in line with the United Nations Convention on the Rights of the Child (1989), I argue that children, to the extent appropriate to their abilities, should have an equal opportunity to express their views and be allowed to influence issues that impact them. I assert in the same breath that children should be taught how to act sensibly and sensitively towards the needs of others and that this kind of teaching should be mediated by teachers, technology and the community. This leads me to section ‘The Community’, which provides my answer to the question of *who* should personalize education for children. In alignment with a community-based educational model, I hold strongly that personalized education should be personalized for the child by a community of people within a socio-technical environment.

The community

A community orientation compels me to consider the possibility of a combined influence on personalized education of all stakeholders mentioned so far – parents/families, teachers, technology designers and the children themselves. As outlined in the opening chapter, a community-based approach to educational research involves the combined influence of various community members: families, teachers, designers *together with* the children. In contrast to family-, teacher-, technology- or child-driven personalization models, a community-based approach offers a more visionary position from which to conceptualize personalized education: it doesn’t draw lines between parents, teachers, technology producers and children, but brings them together in a mutually enriching relationship. It is a place where multiple, diverse and personal experiences dovetail and mutually enrich each other, very much in alignment with the classrooms researched and co-created by Barbara Comber in her seminal work (Comber, 2015). What could such a model of personalized education look like?

Let’s imagine a primary school where all children cover all topics of the standard curriculum (i.e. as it is in the current compulsory education model), but with

some important modifications: first, the pace and sequence of their learning is determined by adaptive technology. Second, the extent to which they dwell into a topic and the time they spend on studying the topic is determined by the child's own selection of topics. This could be through a simple rating system, with priority given to topics, which the children choose as their favourite topics. The child's ratings of personal interests could be consulted with parents and teachers depending on individual children's abilities and circumstances. Peers and friends could also feed into each individual profile to ensure shared and democratic learning can take place. Third, technology could be used to provide individualized input into the learning process of each child. With a simple keywords-based algorithm, the personalized technology software could deliver personalized news and information relevant to each individual child. Unlike in current personalized education models, however, technology would be used as a site for parental and teachers' input. The individual programmes and content would be co-created in collaboration with the children and teachers. Fourth, the teachers would support the children in curating their individualized content and ensure that there is a judicious balance between the child's personal interests and wider topics, relevant to the local and global community. The teacher's role would be that of a mediator, in alignment with Vygotsky's model of learning. Teachers will personalize, but also pluralize (see Chapter 12) children's education.

Summary

In an effort to piece together the ingredients of personalized education and the impact it might have on individual children, I reviewed the reasons for why and how has education been personalized since ancient times. I also attempted to answer the question of who can and is personalizing children's education, by listing various possible stakeholders: family/parents, teachers, technology, children and community. I argued that education personalized by a community of stakeholders would not only bring together the learning community, but it would also address the current reductionist model of personalized education. By keeping personalized education varied and open to the joint influence of a network of people, we allow for personalized education that is placed on a spectrum of possibilities and that is relevant for each individual and not just a selected few.

Notes

- 1 These numbers were taken from Matt Burgess' blog 'MAPPED: How many hours do children spend at school around the world?' Available online at: <http://helpmeinvestigate.com/education/2013/04/mapped-how-many-hours-do-children-spend-at-school-around-the-world/>.

- 2 In 2015, the sociology course, which has been approved by England's exams regulator Ofqual for teaching from September 2015, includes selfies as part of the A-level course (reported in the *Huffington Post UK*, July 2014, http://www.huffingtonpost.co.uk/2014/07/23/sociology-students-to-study-selfies-for-a-level_n_5612352.html).
- 3 vlog = a blog that features mostly videos rather than text or images. Definition taken from: <http://www.dictionary.com/browse/vlog>.