1 Healthy and happy children in the digital age

The COVID-19 pandemic has forcefully reminded us that education plays an important role in delivering not just academic learning, but also in developing and sustaining student well-being, both physical and emotional. This volume explores the nature of childhood today, connecting education to trends in child physical health, emotional well-being, families and peers, and digital technologies. Setting the stage for the rest of the volume, this chapter takes a special look at the intersection between two of those themes: physical health and digital technologies. It ends with an overview of the publication and the policy questionnaire that generated the country-level solutions to shared challenges.

A snapshot in time

2020 has been indelibly marked by the COVID-19 pandemic – medically, economically and socially. In education, UNESCO reported that school closures affected almost 1.2 billion learners across the world. At the time of writing (October 2020), students in the Northern Hemisphere are cautiously returning to school. Education authorities are at the same time also preparing for the potential of a series of rolling school closures throughout 2020 and 2021, and perhaps beyond.

Part of the preparation process involves learning from what took place during school closures and in the return to school. Building on this knowledge - to fix weaknesses, to build trust, to rethink outmoded ways of doing things – is essential. In addition to ensuring the safety of students and staff, the two major goals for most systems will be to assess and mitigate the impact of any learning losses, and at the same time support physical and emotional well-being.

Schools are not just places of academic learning. They are part of the social fabric of our lives, and a large body of evidence sets out the important role they play in ensuring well-being and community. This was highlighted during school closures, along with another important reminder: that of the power of the physical world. In the rush to digital and distance learning, we were reminded of how important our physicality is. Students need to move, play, actively learn. Humans are social, and thrive on face-to-face connection. A hug emoji is not the same as a hug.

How can we balance this “old” knowledge with new digital opportunities? How can we deliver education that helps children, especially the most vulnerable, thrive academically, physically and psychologically? Addressing these questions requires taking stock of the nature of childhood today.

Understanding childhood today

The last decades have seen some fundamental shifts. Older, better educated parents are increasingly playing an active role in their children’s education. Safer environments and better regulations (e.g. on physical play spaces, more effective bicycle helmets and car seats) have helped reduce child mortality due to accidental injury across the OECD. Digital technologies empower children’s self-expression and socialisation, and in times of need, help could be just a phone call – or WhatsApp message - away. On a number of measures, modern children’s lives have clearly improved: better health care, public safety, and support for their physical and mental well-being (OECD, 2019[1]).

At the same time, 21st century children are reporting more stress and anxiety, including increased pressure to excel in an ever more competitive educational environment. On a physical level, they are reporting less sleep. Child obesity is increasing across the OECD, bringing with it potential physical, social and psychological challenges. There are worries that children are spending less time on old-fashioned activities like running around outside in favour of screen time. And the omnipresent nature of the digital world means that risks like cyberbullying follow them from the school yard into their homes.

Education must evolve and grow with our communities and children, anticipating change rather than simply reacting to problems. Delivering on this requires innovative, collaborative models that bring together parents, communities and schools to strengthen children’s resilience, lower their stress levels, enhance well-being and improve learning. To do this, we must address a series of questions:

- What is the nature of childhood today?
- How can teachers and schools work together with parents and communities to protect and guide children while still allowing them to be children, and learn by making mistakes?
- What are the impacts on education, from early childhood education and care to high school, and what does this mean for teaching and learning at each stage?

One last note: the first decades of the 21st century are the intersection of a turn of a millennium and rapid technological change. However, it is important to remember that we do not start with a blank slate just because we are in a new century. While there is a need to understand what has really changed in children's lives, it is equally important to understand what has *not* changed.

As part of this, it is important to guard against a very human tendency to over-dramatise, particularly when it comes to turns of the century and disruptive technological change. In order to do this, it is import to return to research and evidence as a starting point, in order to understand the reality of children's lives and to devise responsible policy solutions to challenges observed. This volume, along with its sister volume on emotional well-being in the digital age (Burns and Gottschalk, 2019[2]), aims to help with this process. They emerge from the OECD/CERI project 21st Century Children.

Box 1.1. OECD/CERI 21st Century Children project

The OECD/CERI 21st Century Children project explores the nature of childhood in the 21st century and what this means for education. It is deliberately multidisciplinary, cutting across silos and bringing together diverse policy and research traditions. It takes a lifespan approach, looking at childhood (ages 0-18) as a whole, regardless of the structures of our education systems. The project aims to:

- identify relevant multidisciplinary research and develop an analytic framework to link to education research and policy.
- share common challenges countries are facing and identify examples of good practice.
- determine research gaps and issues in need of further study.

The first major publication was Educating 21st Century Children: Emotional Well-Being in the Digital Age (2019[2]). The full set of outputs, including a number of research reviews and working papers, infographics and policy briefs, can be found on the website.

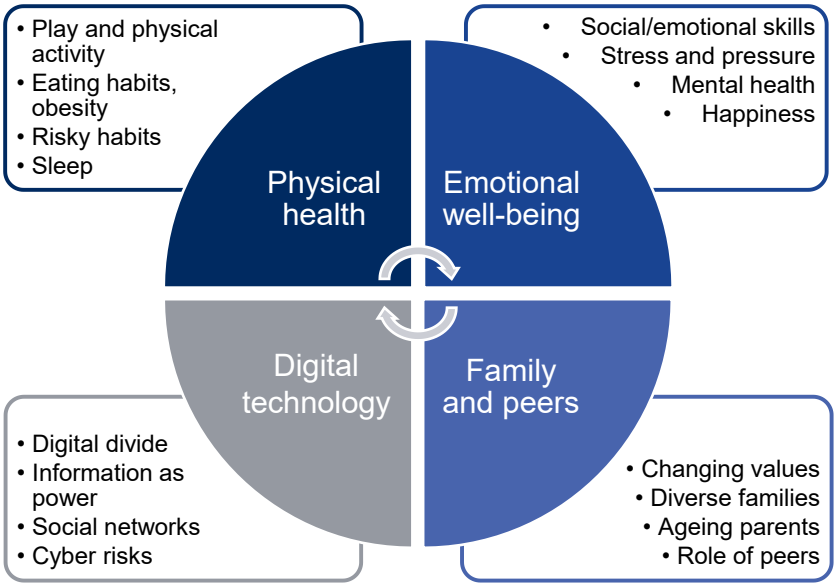
Four themes

In order to operationalise our understanding of the transformed context of childhood, a decision was made to focus on four main themes1: physical health, emotional well-being, digital technologies, and peers and families (Figure 1.1).

This is to some extent an artificial separation, as the four themes are interrelated and do not all operate on the same level. They also interact with broader societal trends, such as inequality. For example, greater income inequality is associated with lower life satisfaction and a higher likelihood of reported stress, anger, pain, worry and sadness (Burkhauser, Neve and Powdthavee, 2016[3]). Socio-economically disadvantaged individuals are more likely to engage in risky lifestyle behaviours and have reduced access to services, including safe facilities for physical activity and green space (OECD, 2015[4]). Disadvantaged children are also more likely to have poorer educational attainment, lower academic performance and increased rates of grade repetition (OECD, 2018[5]).

This volume will focus specifically on two of these themes and their intersections: physical well-being and digital technologies. It is a companion volume to a report looking at the intersection of emotional well-being in the digital age (Burns and Gottschalk, 2019[2]). Peers and families – both how they shape and are shaped by these themes – are interwoven into the discussion throughout. Before turning to the specific focus of this volume, this chapter will provide a brief overview of each of the four themes.

Figure 1.1. Four main themes of 21st Century Children project



Physical health

As Mahatma Gandhi once said, "it is health that is real wealth and not pieces of gold and silver". Unfortunately, many behaviours related to poor physical health outcomes among children and young people have increased on average across the OECD since 2000 (see Aston (2018[6]) for a full review; also Chapter 2 of this volume). Examples include:

- decreases in rates of adequate physical activity (less than 60 minutes of moderate to vigorous physical activity per day) (Inchley et al., 2020[7])
- increased overweight and obesity, and poor dietary habits including increasing overconsumption of soft drinks, sweets, salty snacks and fast food (OECD, 2017[8])
- decreases in the duration and quality of sleep (Reiter and Rosen, 2014[9]).

Encouragingly, for some OECD countries rates of overweight and obesity have now stabilised in children (OECD, 2017[8]). Other positive trends include increased fruit and vegetable consumption among children in some OECD countries and a reduction in alcohol consumption and tobacco use (OECD/EU, 2016[10]).

Despite this, rates of preventable health conditions like type II diabetes and poor cardiovascular health are still increasing (Institute for Health Metrics and Evaluation, 2017[11]). It is important not to understate the concerning nature of these statistics: historically considered diseases of adulthood, they are now evident in children as young as two years old (Van Buren and Tibbs, 2014[12]).

Improving and maintaining physical health can be achieved by supporting and modelling healthy lifestyle behaviours in school, at home and in the community (OECD, 2019[13]). Including educators, parents/caregivers and primary care providers in the design and implementation of programmes can effectively change the behaviour of children and adolescents (see Chapter 2 of this volume for more detail).

Emotional well-being

Emotional well-being is crucial for our daily lives and overall well-being. Childhood and adolescence are critical neurological developmental periods and nearly one in two mental health problems among adults begins by age 14. On average across OECD countries the following trends in emotional well-being have been identified (see Chapter 3 in (Burns and Gottschalk, 2019[2]), also (Choi, 2018[14]) for a full overview):

- According to the latest WHO data from 2016, rates of suicide decreased between 1990 and 2015 for 15-19 year-olds, with some notable exceptions (e.g. Korea, Mexico and New Zealand).
- Levels of bullying and somatic complaints (e.g. headache, stomach ache, feeling dizzy) have remained unchanged.
- There are higher rates of depression and anxiety, and lower reported life satisfaction.

It is important to raise awareness and to seek help early on for mental health problems, particularly for children and adolescents, as these problems tend to recur and have lasting negative consequences on life satisfaction, education and labour market outcomes.

Stable and positive relationships with parents and teachers are essential for improving children's well-being and social and emotional skills. Parents and teachers who respect and trust children, provide support when they are facing difficulties and care about their well-being can help them become resilient and better cope with adversities in life (Ulferts, 2020[15]). On the contrary, poverty, family dysfunction, abuse and history of mental health disorders pose significant risks to child well-being (Choi, 2018[14]).

Families and peers

Socialisation and relationships have a significant impact on one's life and well-being. Families play a huge role in children's cognitive, developmental, educational, labour and health outcomes, particularly at the youngest ages (Ulferts, 2020[15]).

Box 1.2. Parenting 21st Century Children

Parents often feel enormous pressure to help their children succeed, whether in making friends, at school or beyond. Digital technology has potentially amplified that pressure. While on the one hand parents can reach likeminded others and receive support and advice, on the other parents who turn to the Internet for help will find a bewildering amount of information, not to mention plenty of “perfect” parenting moments portrayed on social networks. Every kind of parenting style imaginable is promoted, from positive parenting to holistic parenting, free-range parenting, tiger parenting and more. However, there is often little or no evidence to support these claims (Burns and Gottschalk, 2019[2]).

A recent meta-analysis of the literature (Ulferts, 2020[15]) demonstrates that warm parenting that provides children with age-appropriate autonomy and structure is key for a healthy and prosperous development of children and adolescents. The positive impacts of warm parenting are observed in cognitive, emotional, social and physical development and in job success, well-being, relationships and health.

While parenting is a private matter, public policies can create structures and services that enable parents to acquire and practice parenting skills beneficial for prosperous and healthy development of children. Successful policies are multi-layered and include considerations about individual and community interactions, as well as context, culture and history (Ulferts, 2020[15]).

Peers also play an important part in social and emotional development, especially from middle childhood on. Increasing diversity means that children and adolescents in OECD countries are more likely to meet and interact with peers and teachers from different cultural backgrounds, ethnicities and sexual orientations. In addition, the distinction between online and offline friendships has become increasingly blurred (Burns and Gottschalk, 2019[2]).

Digital technologies

Whether it is to acquire new skills, or connect with distant as well as near friends and family, the Internet plays a central role in children's lives. Access to digital information and services has become so important that several national governments, including those of Costa Rica, Estonia, Finland, France, Greece and Spain, have formally recognised Internet access as a human right. The COVID-19 pandemic further emphasised its importance, not just as a technological tool, but as fundamental to participating as an active citizen in a democracy.

A review of the literature on digital technologies highlights the following trends ((Burns and Gottschalk, 2019[2]); see also Chapter 3 in this volume):

- *Children and youth are connecting more and at younger ages.* From 2009 to 2018, the proportion of 15 year-olds in OECD countries with home Internet access increased from 85% to 95% and reported time spent using the Internet increased to 27 hours per week in 2018 (OECD, 2019[16]). Children now tend to have their first experience with digital technologies before the age of two, often before they can even walk or talk (Chaudron, Di Gioia and Gemo, 2018[17]).
- *There are long-standing inequalities in skills and use.* Disadvantaged students tend to have lower digital skill levels on average and are less likely than advantaged students to use the Internet to read the news or to obtain practical information (OECD, 2019[16]). The challenge is intergenerational: children's digital skills, opportunities and exposure to risk are all affected by the digital skills of their parents (Burns and Gottschalk, 2019[2]).
- *Education is expected to even the playing field but there are systemic challenges to achieving this*. There are concerns about the capacity of schools and teachers to equip children with sound digital skills, particularly in disadvantaged environments. Teachers consistently report "use of ICT skills for teaching" as their second highest need for professional development, after teaching students with special needs (OECD, 2019[18]).

Special focus: Physical health and digital technologies

The increasing use of digital technologies and devices has raised questions about their impact on the health and development of children (OECD, 2019[19]). There is thus an urgent need to better understand the relationship between physical well-being and digital technologies. A review of the literature highlights the following (see (Gottschalk, 2019[20]) for a fuller overview):

- *Physical activity*: reducing screen time may not motivate adolescents and children to engage more in physical activity (Kardefelt-Winther, 2017[21]). Active video games such as *Pokémon GO!* have shifted how children engage with digital tools, requiring a certain level of movement to participate. However, simply providing children with access to active video games is unlikely to provoke spontaneous engagement and may not provide a public health benefit (Baranowski et al., 2012[22]).
- *Sleep:* excessive screen time can affect sleep quality by delaying bedtimes, lengthening sleep onset, shortening sleeping hours and delaying melatonin secretion (a sleep-promoting hormone). However, recent studies suggest that the real reduction in sleep time associated with digital engagement is small (Przybylski, 2019[23]; Orben and Przybylski, 2020[24]).
- *Obesity:* extended screen time has also been linked to obesity in children, either by displacement of physical activity or through mindless eating while watching television (Bellissimo et al., 2007[25]). However, the displacement effect is contested, the overall causal relationship is not clear and there are other important factors that might play a role, such as targeted advertising and marketing of unhealthy foods and sugar-sweetened beverages to children (Inchley et al., 2020[7]).

Everything in moderation

The mass use of digital technologies is a relatively recent phenomenon and there is limited hard evidence to date on the impact of digital technologies, including social media, on child health (Gottschalk, 2019[20]). The "Goldilocks" hypothesis argues that moderate use of technology can have a positive effect on children's mental well-being (Przybylski and Weinstein, 2017[26]). Moderate use allows children to take advantage of the opportunities provided, such as connecting to friends through social networks and using the Internet to seek information. A systematic review of the literature found that the most robust studies suggest that the relationship is U-shaped, where no use and excessive use can have a small negative impact on well-being, while moderate use can have a small positive impact (Kardefelt-Winther, 2017[21]).

This is a fast-changing field and it is key to use high quality research to guide policy and practice. Better research, including accurate measurements and longitudinal studies, is needed. It is also important to research potential benefits, for example, the potential of digital tools to increase young people's access to health information, peer support and professional services (Swist, Collin and McCormack, 2015[27]).

Overview of the volume

This volume looks specifically at the intersections between two main themes: physical health and digital technologies. It is the sister volume to Educating 21st Century Children: Emotional Well-Being in the Digital Age (Burns and Gottschalk, 2019[2]). It is organised in four parts.

Part I: Setting the stage: Who are 21st Century Children, and how are they shaped by the digital age?

Following this introduction, the next two chapters, also written by the OECD Secretariat, combine extensive reviews of the literature with challenges reported by countries and systems in a policy questionnaire.

Chapter 2 examines *Trends in children's physical well-being*, covering physical health trends in childhood and adolescence, their modifiers, and some qualities of effective interventions in education. It highlights knowledge gaps and high priority challenges identified by OECD and partner countries as well as the interconnections between these challenges.

Chapter 3 highlights *Children and digital technologies: Trends and outcomes*, covering Internet use and time spent in digital environments with the impacts of those trends. It also looks at high priority challenges identified by OECD and partner countries in this area.

Part II: Play!

Part Two of the volume explores the serious side of play. **Mariana Brussoni** looks at *Outdoor risky play*, highlighting the importance of exhilarating and scary physical play situations that allow children to gain mastery over their fears. The chapter presents the three key ingredients for supportive outdoor risky play environments – time, space, and freedom – and suggests practice and policy necessary to implement sustained and meaningful change.

Chapter 5, by **Benoit Bediou, Michael Rich and Daphne Bavelier,** looks at *Digital media and cognitive development*, with a special focus on action video games. Highlighting the findings that action video game play enhances attentional control and other aspects of cognition, the chapter illustrates the complexity of research in this domain and urges the adoption of standardised definitions and guiding principles to achieve greater granularity, accuracy and consistency in conceptualising and addressing media effects.

The focus on play continues with **Julian Sefton-Green**, who takes a closer look at *Play and learning in the digital age*. Just as learning has increasingly become a commodity to be purchased and used in the

home as much as in the school, the existential open-ended nature of play itself has been significantly influenced by video gaming and the turn to playfulness in public culture. The chapter argues that it is important not to subordinate play as an instrumental developmental function of learning and that learning itself should not be conflated with the outcomes of the formal education system.

Box 1.3. OECD/CERI 21st Century Children project policy questionnaire

The 21st Century Children Policy Questionnaire was circulated to the CERI Governing Board members for responses between September 2018 and February 2019. Respondents were asked to reflect their ministry or government's views along four main themes: digital technologies, emotional well-being, families and peers, and physical health.

26 countries and systems responded to the questionnaire: Australia, Belgium (Flemish Community and French Community), Canada, Czech Republic, Denmark, Finland, France, Greece, Ireland, Japan, Korea, Latvia, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Portugal, Russian Federation, Scotland (United Kingdom), Spain, Sweden, Switzerland, Turkey and the United States.

Responses were submitted by the Ministries of Education or other responsible coordinating body for Education of each system. In many cases information from other ministries was integrated, including International and Foreign Affairs, Public Health, Justice, Social Affairs, Environmental Protection and Regional Development, Culture and Sports.

The responses to this questionnaire offer a detailed illustration of the challenges that education ministries face in working to reinforce student well-being in a digital age and the innovative solutions to these challenges. The publication Educating 21st Century Children: Emotional Well-Being in the Digital Age, highlights the work on emotional well-being. This current volume complements it with a focus on physical health and well-being in the digital age.

Part III: The pursuit of perfection

Part Three of this volume examines the complex interplay between physical well-being and technology and the increasing pressure for success and perfection. **Rachel Rodgers** provides an overview of the theoretical frameworks and empirical work on screen and social media and its relationship to body image. She argues that media use in children and adolescents may be related to poorer body image both through the promotion of unrealistic and unattainable appearance ideals as well as the sexualisation and objectification of individuals in media.

Sebastian Sattler explores the use of prescription drugs with the aim of enhancing the cognitive performance in children in the absence of any medical need. Although still not widespread, a non-negligible number of children and youth are at risk of side effects, while others may feel pressured to take or administer such drugs. The chapter looks at the perceptions of parents and children and what affects their decisions to use such drugs. It ends with strategies to prevent risky use.

Finally, the section ends with another angle of "the pursuit of perfection": *The myth of the digital native: Why it persists and the harm it inflicts.* **Rebecca Eynon** challenges the assumptions behind the argument that young people are inherently a digitally savvy group, distinctively different in how they understand and use technology compared to older generations. The chapter highlights the persistence of the term despite limited empirical basis to support it, and demonstrates the negative implications it can have for some young people, particularly those are already experiencing forms of social inequalities.

Part IV: Policies, practices, partnerships and the pending agenda

Part Four looks at designing and implementing policy and practice, and the kinds of partnerships and support for teachers that are required. It also sets out the pending agenda for research and policy in this area. A series of examples from countries are highlighted, drawing from the policy questionnaire.

Chapter 10 looks at *Child empowerment, well-being and inequality,* underscoring the important efforts countries have made to empower students and youth to make informed decisions for their own health and well-being. Having the knowledge and skills required allows them to be agents of change and positively impact their surroundings. However, social inequalities can undermine both health and empowerment, especially as countries are dealing with the economic uncertainty exacerbated by the COVID-19 crisis. They are thus key policy areas to target in order to ensure equitable outcomes for all children.

Chapter 11 focuses on policies for *Education and child safety* and the importance of protecting children from danger in both the physical and digital world. Despite efforts to improve child safety, almost a billion children around the world experience violence in one form or another. Many children also face risks to their digital safety, including cyberbullying and privacy concerns. The chapter highlights programmes for safe play spaces and clean air in and around schools, as well as digital security and anti-bullying initiatives. In many systems, teachers are required to take action when child safety or well-being is suspected of being at risk.

Chapter 12 looks at *Building capacity: Teacher education and partnerships.* As the needs of countries' youngest citizens change, so do policy priorities developed to address these needs. Supporting teachers to respond to new societal, economic and digital needs includes helping schools work with a diverse set of actors, some of whom (for example those from the private sector) have different aims and goals. This chapter provides a rich set of country examples of policies aimed at building teacher skills, as well as innovative cases of partnerships, both focusing on the digital skills and the physical well-being of students.

The book ends with a look to the future and the pending agenda for research and policy. **Chapter 13** highlights difficult tensions in education and society more broadly: for example, our desire for youth empowerment and the urge for a zero-risk approach to protecting children. It explores the impact the increasing pursuit for perfection has on our children, parents, teachers and schools. Gaps in our knowledge and areas for improvement are identified, followed by orientations for policy, research and practice. Education must work to stay ahead of, or at least on top of, the quickly moving curve in terms of research, policy and practice.

Concluding note

This volume takes a comprehensive look at physical health and well-being and digital technologies in childhood, and the intersections between them. Its aim is to identify key changes that may fall outside conventional education discourse and the challenges they could pose for education. It suggests possible solutions to these challenges, with the goal of providing research and policy options that will help countries in educating 21st century children, and the opportunities and challenges they face in the modern world.

Education, like all public sectors, must break down its silos and work from a more holistic perspective that cuts across government departments and research disciplines. It must work with an increasingly broad variety of actors, including the private sector. It must also evolve and grow as our societies and citizens develop, anticipating change and finding preventative solutions rather than simply reacting to problems. By analysing the available research and data from a broad range of disciplines and linking these findings to educational policy and practice, this volume will explore the potential of education systems to proactively adapt and change along with our communities and children.

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Note

[1] The choice of themes was made in conjunction with the OECD Centre for Educational Research and Innovation (CERI) Governing Board members.