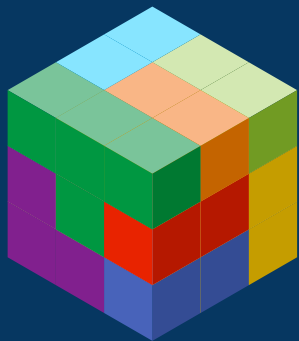


RESPONSIBLE INNOVATION IN TECHNOLOGY FOR CHILDREN

Digital technology,
play and child well-being



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RITEC

The RITEC (Responsible Innovation in Technology for Children) project was co-founded by UNICEF and the LEGO Group and is funded by the LEGO Foundation. The project is being delivered in partnership with the Joan Ganz Cooney Centre, the Young & Resilient Research Centre at Western Sydney University; the CREATE Lab at New York University; the Graduate Center, City University of New York; the University of Sheffield and the Australian Centre of Excellence for the Digital Child.

The findings, interpretations and conclusions expressed in this paper are those of the authors and do not necessarily reflect the views of UNICEF. This paper has been peer reviewed both externally and within UNICEF.

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UNICEF works in the world’s toughest places to reach the most disadvantaged children and adolescents – and to protect the rights of every child, everywhere. Across more than 190 countries and territories, we do whatever it takes to help children survive, thrive and fulfill their potential, from early childhood through adolescence.

And we never give up.



The
LEGO
Foundation

Our sincere gratitude goes to the following organisations for generously implementing creative and participatory workshops with children in their countries of operation:

Albania: UNICEF Albania

Jordan: UNICEF Jordan

Tunisia: UNICEF Tunisia

Brazil: SaferNet Brazil

Pakistan: Group Development Pakistan

Uruguay: UNICEF Uruguay

Bulgaria: UNICEF Bulgaria

South Africa: Media Monitoring Africa

United Kingdom: Kids Know Best

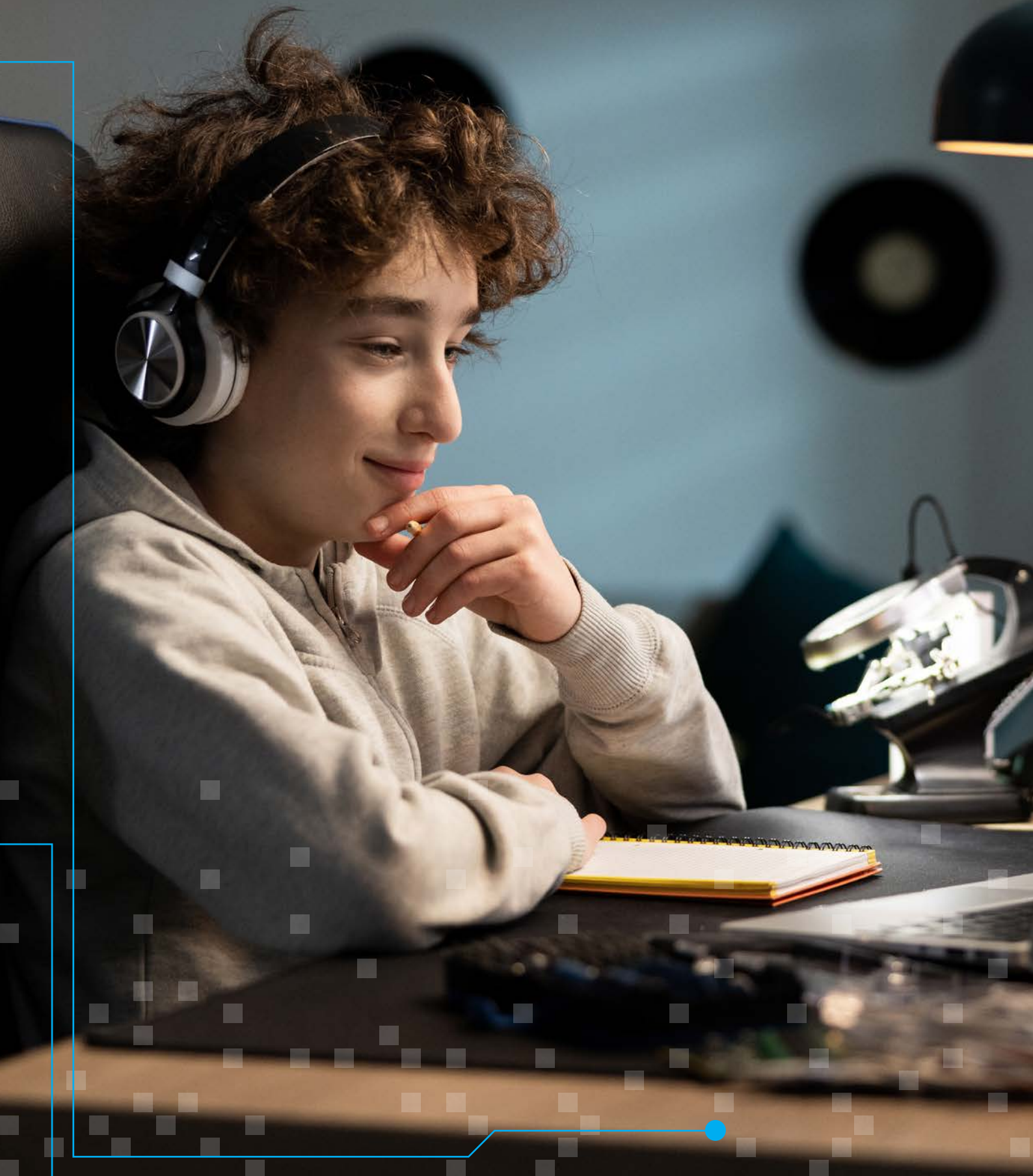
Indonesia: Semai Jiwa Amini (SEJIWA) Foundation

Taiwan Province of China: Youth Rights Alliance

Iraq: UNICEF Iraq

Tanzania: UNICEF Tanzania

 **WELL-BEING**



EXECUTIVE SUMMARY

The project

Children are spending more time in digital spaces than ever before, using a range of mobile apps, social media platforms, connected devices and online games from ever earlier ages. The recent COVID-19 pandemic has intensified this shift, rapidly moving additional aspects of children's daily lives online (UNICEF, 2020). The growing presence of digital technology in children's lives requires that we think deeply about its impact. It also demands we consider how we shape that impact best to equip and empower children for success well into their adult years.

Digital experiences can have a significant negative impact on children, exposing them to risks or failing to nurture them adequately. Nevertheless, digital experiences also potentially yield enormous benefits for children, enabling them to learn, to create, to develop friendships and to build worlds. While global efforts to deepen our understanding of the prevalence and impact of digital risks of harm are burgeoning – a development that is both welcome and necessary – less attention has been paid to understanding and optimizing the benefits that digital technology can provide in supporting children's rights and their well-being (Odgers and Jensen, 2020; Third et al., 2019). Benefits here refer not only to the absence of harm, but also to creating additional positive value.

How should we recognize the opportunities and benefits of digital technology for children's well-being? What is the relationship between the design of digital experiences – in particular, play-centred design – and the well-being of children? What guidance and measures can we use to strengthen the design of digital environments to promote positive outcomes for children? And how can we make sure that children's insights and needs form the foundation of our work in this space? These questions matter for all those who design and promote digital experiences, to keep children safe and happy, and enable positive development and learning. These questions are

particularly relevant as the world shifts its attention to emerging digital technologies and experiences, from artificial intelligence (AI) to the metaverse, and seeks to understand their impact on people and society.

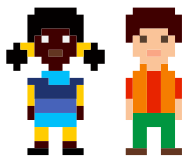
The RITEC (Responsible Innovation in Technology for Children) project was co-founded by UNICEF and the LEGO Group and is funded by the LEGO Foundation. The project is being delivered in partnership with the Joan Ganz Cooney Centre, the Young & Resilient Research Centre at Western Sydney University; the CREATE Lab at New York University; the Graduate Center, City University of New York; the University of Sheffield and the Australian Research Council Centre of Excellence for the Digital Child.

The partnership is an international, multi-stakeholder and cross-sectoral collaboration between organizations that believe the design and development of digital technology should support the rights and well-being of children as a primary objective – and that children should have a prominent voice in making this a reality.

This project's primary objective is to develop, with children from around the world, a framework that maps how the design of children's digital experiences affects their well-being, and to provide guidance as to how informed design choices can promote positive well-being outcomes.

The project is underpinned by a series of principles.

1



Child-centric:

We have prioritized co-creation with children and sought to be led by their understandings of well-being and play.

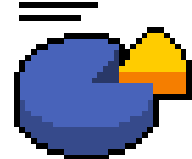
2



International and representative:

We have adopted an international approach, prioritizing countries that are typically less represented in research in this area.

3



Data-driven:

Our findings and assertions are data-driven and evidence-led.

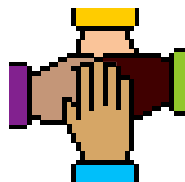
4



Open and transparent:

Phase 1 and Phase 2 reports will be shared publicly, enabling other organizations to view and assess their findings.

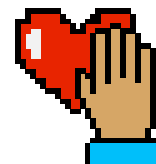
5



Collaborative:

We adopt a collaborative approach, building on past efforts and welcoming other like-minded actors and organizations to replicate and improve on our work.

6



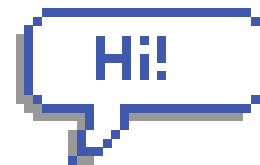
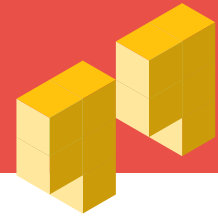
Aspirational:

We believe in the potential of digital technology to have a positive impact on children's well-being, and it is our ambition to work towards this outcome.



“Kids are open to new things and have big creativity.”

Child participant, Bulgaria



Listening to children

This project worked with over 300 children from across 13 countries to listen to and assess their perspectives on how well-being should be understood and reflected in digital experiences, especially digital play. They told us that:

Children should be consulted about decisions that directly impact them.

“It is important that children participate because they are the ones that are going to play the games.” (United Kingdom)

“Decisions [about children’s lives] shouldn’t be conducted by [decision makers] without children’s participation.” (Nepal)

Children offer creative and meaningful solutions to challenges.

“Kids are open to new things and have big creativity.” (Bulgaria)

Children reflect on their own practices and behaviours.

“Helps people to understand how teenagers are playing and it also helps teenagers to reflect on how they play.” (Brazil)

Children want companies, states, non-governmental organizations (NGOs) and other civil society actors to consult them when designing policies, products and programmes for children.

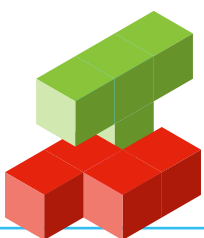
“Governments should include children in decision making ... by creating groups of children and taking suggestions from children.” (Nepal)

Children reported that our workshops provided the space and time for children to reflect on their lives, discuss important issues with other children, and convey their desires, dreams and visions.

“[Workshops like this are important] so children and teens can have a voice.” (United Kingdom)

NEW GAME

For this project, we chose to focus on digital play experiences as an aspect of children's broader digital engagement. Play is one of the most important ways in which young children interact with the world and develop essential knowledge and skills. Play opportunities and environments that promote exploration, social interaction, joy and hands-on learning are at the core of child development (Borisova, 2018). Today, around the world, children engage increasingly in play through digital technologies. There is growing evidence both of the potential benefits of digital play in children's lives and of the potential for play-based design to support broader digital engagement for children. There is, however, significant work that needs to be done to understand the relationship between the design of digital play experiences and children's well-being, including what tools and guidance are necessary for digital play to contribute positively to children's well-being, while minimizing the risk of harm.



In this report we present findings from the first phase of the project, bringing together work from the Young and Resilient Research Centre at Western Sydney University and the UNICEF Office of Research – Innocenti. We present research results and an interim well-being framework that lays out the aspects of well-being that our research shows are most likely to be positively influenced through the design of digital play experiences. Specifically, the framework highlights the dimensions of well-being that children have told us are important when assessing the impact of digital play experiences on their well-being. It offers a child-centred view on digital play and well-being, which has been largely absent from global discourses. The framework provides one lens through which we can begin to determine what is important when designing digital play experiences to promote children's well-being.

Critically, we drew on child participation methods to develop the framework to ensure that children's own insights and experiences directly shaped it. In light of the fundamental importance of child participation in the realization of children's rights and in supporting children's agency and empowerment (United Nations Committee on the Rights of the Child [UNCRC], 2021), our engagement represents an important step forward in putting children's needs and aspirations at the centre of how we think about their well-being, and of how we design future digital experiences to benefit them.





With children’s insights at the core, secondary analysis of existing survey data and research on child well-being further informed the framework. Indeed, the research project entailed three substantial and complementary activities conducted in 2020/2021:



A literature review of key concepts related to child well-being, digital technology and play;



An exploratory analysis of existing survey data from UNICEF of 34,000 children aged 9–17 from 30 countries, to understand if and how digital experiences are positively or negatively related to different aspects of child well-being; and



In-depth, creative and participatory workshops with over 300 children in 13 countries, focused on well-being and digital play.

To help think through the ways the framework might be applied, the research team also undertook a small number of informal, semi-structured scoping interviews with other key stakeholders. These interviews did not drive the framework development; rather, they were used to guide our thinking about how the framework might eventually be taken up in real-world settings:



Scoping interviews with parents in three countries (n=7), examining their concerns and guidance around children’s digital play; and



Scoping interviews with stakeholders from the game design industry in three countries (n=7), exploring the design of play experiences and key challenges for the industry.



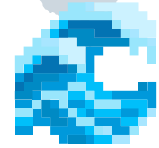
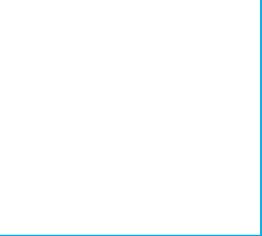
RESEARCH LOCATIONS



**Research
took place in
13 countries
with over
300 children
aged 7-18**



The designations employed in this publication and the presentation of the material do not imply on the part of the United Nations Children's Fund (UNICEF) the expression of any opinion whatsoever concerning the legal status of any country or territory, or of its authorities or the delimitations of its frontiers. The boundary and names shown on the designations used on the map do not imply official endorsement or acceptance by the United Nations.



THE FINDINGS

Our findings, in brief, were:

Well-being is holistic:

For children, well-being is physical health and safety but also mental stability and positive emotion. Most importantly, well-being is social, linked to loving others, and being loved by family and friends.

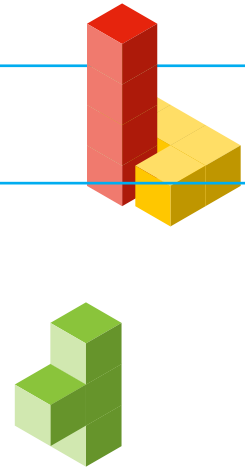
Diversity, equity and inclusion matter:

Children experience a range of barriers to digital engagement, ranging from limited internet access to app costs and culturally inappropriate content. Insights from our consultation with children, many from low- or middle-income countries, signal issues yet to be addressed adequately either by research or by industry.

Social connection is key:

Exploratory analysis of survey data showed that for children in some countries, engaging in social activities online – with friends, parents and teachers – was positively associated with many aspects of well-being. Using social media was associated with a sense of belonging, stronger peer relationships, and confidence. Parents, caregivers and teachers who engaged positively and supportively with their children's digital technology use were found to have, overall, a better relationship with their children, though the causal direction





is unclear. When asked specifically about play, many children said they have more fun when they are playing with friends. Many games designed by children in the workshops had a prosocial element where they collaborated or helped others. Some children felt safer when playing together.

Safety is a priority:

Children want digital content to be appropriate for their age, and for the digital spaces in which they interact not to expose them to violence, inappropriate language and sexual content. Children expressed that they did not appreciate coming across such content unexpectedly, and they want to be able to predict that the content they encounter will not be shocking to them. Children want safeguards in place to ensure they can: manage advertising, chatting and trolling; socialize with peers of a similar age; and be supported to manage their time. Children's safety concerns were echoed by parents and flagged by stakeholders as an ongoing challenge.

Creativity is integral:

For children, creativity was interlinked with other processes and benefits, from learning to self-confidence. Creativity is not so much a distinct goal or play style but occurs during an experience or as a by-product of digital play, alongside other outcomes.

Play is diverse:

From competition to collaboration, children told us they play in many different ways and that different play experiences contribute in distinct ways to their well-being. Parents and stakeholders recognize this and aim to support a wide variety of play, including quieter and reflective play.

Digital play has limits:

Children mentioned downsides to digital play experiences, from isolation to boredom and negative affect. In contrast, physical games were generally seen as more adaptable, more social and more physically engaging, points also echoed by parents. There are clear opportunities for industry to innovate and improve digital play.

Insights from the four research activities were synthesized into an interim well-being framework that illustrates key indicators and outcomes that children told us are important for digital play experiences. These indicators and outcomes are what we believe that any digital experience – if designed with the intention to promote well-being – should contribute positively towards.

This extends research conducted by the LEGO Foundation on the principles of Learning through Play, specifically the five characteristics that have been demonstrated to provide children with meaningful play experiences that help them learn and develop as human beings. The characteristics are based on active engagement, social interactions, meaning-making, joy and iteration, all of which are reflected in our findings.

These findings were developed independently by the partners involved in this project, but align with a recent and comprehensive study by the Digital Futures Commission (Livingstone and Pothong, 2021).^{1, 2} Their report identifies seven design principles – be welcoming, enhance imagination, enable open-ended play, no commercial exploitation, ensure safety, allow for experimentation and be age-appropriate – that resonate closely with the components above.



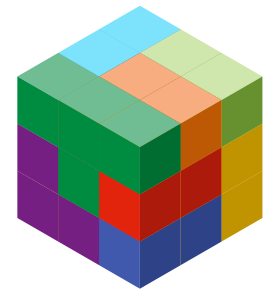
We hope that the framework will provide value to both public and private organizations looking to strengthen their understanding of children's well-being in a digital age and to begin to foster children's well-being through their processes, products and policies.

¹ The Digital Futures Commission is a research collaboration that invites innovators, policy makers, regulators, academics and civil society to unlock digital innovation in the interests of children and young people. See <<http://digitalfuturescommission.org>> for details.

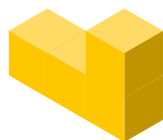
² Both this project and the Digital Futures Commission received financial support from the LEGO Group.

Research activities were synthesised into an interim well-being framework that illustrates key indicators and outcomes





The eight components of the well-being framework are:



Competence

Outcome: A digital play experience should contribute positively towards children's perception of their own competence.

Rationale: Children perceive their digital play experiences as having the potential to strengthen their ability to complete a task, to learn new knowledge and to solve problems.



Emotional regulation

Outcome: Children use the digital environment to adjust their mood, relax and regain energy to engage with peers and the world. This includes using digital play experiences to reduce the sense of stress or to enter flow-states where children become immersed in feelings of energized focus, full involvement and enjoyment in an activity.

Rationale: Providing positive forms of calm, quietness and escapism allows children to de-stress and then re-engage with peers and the world.



Self-actualisation

Outcome: Children's digital play provides them with a sense of purpose and improved social engagement and feelings about themselves.

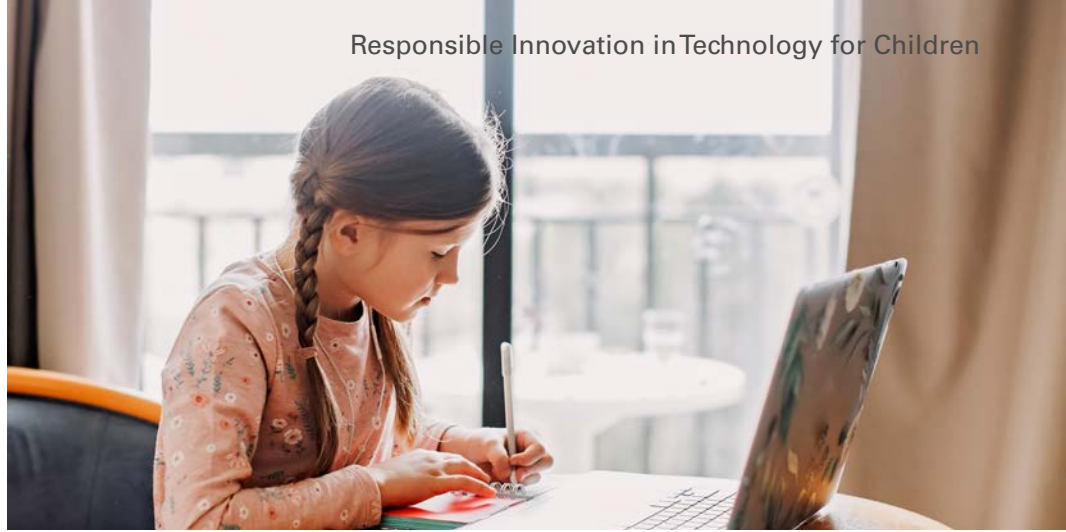
Rationale: Children suggested that a sense of purpose and self-confidence was key for well-being and suggested that good play experiences should support this.



Empowerment

Outcome: Engaging in digital play should encourage feelings of autonomy, choice and agency in children. Children are able to feel in control and make decisions, and they can attain a sense of mastery and achievement.

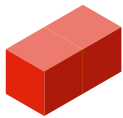
Rationale: Children can lack agency in their day-to-day activities. Digital experiences provide a space that allows children to practice and develop meaningful autonomy and control.



Social connection

Outcome: The digital environment, including play, should facilitate children's social connection with peers, family or other significant people in their lives, and do so in a way that keeps children safe from harm.

Rationale: Children in all consultations stressed social connection as key to their well-being. Analysis of survey data showed that social connection was key for a range of well-being constructs, such as a sense of belonging, stronger peer relationships and confidence.



Creativity

Outcome: Children's engagement with digital play should enhance their feelings of curiosity, nurture an openness to new experiences and strengthen their creative ability.

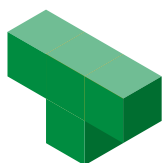
Rationale: Creativity is a desirable trait that overlaps strongly with learning. Children suggested many ways that digital experiences can foster this quality, if designed appropriately.



Safety and security

Outcome: Children should both feel safe and be safe while engaging in the digital environment and digital play. This includes safety from a wide range of risks, including, but not limited to, contact risks, conduct risks, content risks and contract risks.

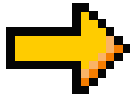
Rationale: Digital environments introduce new dangers both in terms of content and behaviours. Supporting children's well-being starts with protecting them adequately.



Diversity, equity and inclusion

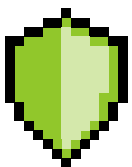
Outcome: Digital play experiences need to be diverse, equitable and inclusive to ensure all children of different backgrounds and circumstances can participate. Digital play needs to be accessible for children with disabilities and appropriate in terms of age and culture.

Rationale: Inclusive digital experiences allow children from many backgrounds and contexts to participate, supporting human rights and ethical values and providing children with new experiences.



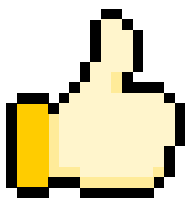
Phase 2 of our work will continue the empirical validation of the findings from the exploratory research. This work will be conducted by the CREATE Lab at New York University; the Graduate Center, City University of New York; University of Sheffield; and the Australian Research Council Centre of Excellence for the Digital Child. The team will observe 8 to 12-year-old children's digital game play experiences across multiple countries and assess to what extent play has an effect on specific factors of the well-being framework. This work will include eco-culturally informed home visits, lab-based observational and psychophysiological studies, and experimental studies in different cultural settings. These insights will be used, together with our interim well-being framework, to develop evidence-informed guidance on how to design digital experiences that have a positive relationship to aspects of child well-being. The outputs and evidence from Phase 2 will all be made publicly available.

Ultimately, RITEC aims to identify a set of empirically validated design features and mechanisms that support aspects of child well-being. Child-focused companies can integrate these features alongside more established safeguards such as data privacy and protection when they design digital experiences for children. In the long term, we hope this will form the foundation of a model of innovation that will allow companies to assess and demonstrate the positive impact of their digital experiences on children. In doing so, we hope to raise the bar in relation to how companies design digital experiences for children, and to support companies, regulators and civil society actors in making sure that children have access to the broad range of benefits and opportunities from digital technology going forward.



Companies can integrate these features alongside more established safeguards such as data privacy and protection

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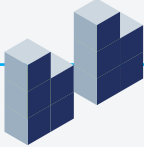
1 INTRODUCTION AND METHODOLOGY

Children³ today are accessing and engaging with digital technology more frequently and from ever younger and more formative ages. Children’s growth and development is increasingly shaped by the digital ecosystem, heightening the need to understand better its impacts, in particular on children’s well-being, or their experiences of health and happiness. Yet, many of the digital ecosystems within which children spend their time are either not designed for children (Livingstone and Third, 2017) or, if they are, fail to demonstrably support positive well-being outcomes.

How should we assess the benefits and opportunities of digital technology for children over time? What is the relationship between the design of digital experiences – in particular, play-centred design – and the well-being of children? What guidance and measures can we use to strengthen the capacity of digital environments to promote positive well-being outcomes for children? And how can we make sure that children’s needs, insights and aspirations drive our work in this space? These questions matter for all those who design and promote digital experiences, to keep children safe and happy, and enable positive development and learning.


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CREATE Lab at New York University, the Graduate Center, City University of New York, the University of Sheffield and the Australian Research Council Centre of Excellence for the Digital Child. The project’s primary objective was to develop a child-centred framework that identifies how children’s digital experiences can positively support their well-being. In the project’s second phase, these hypothetical links between the design of digital experiences and children’s well-being will be assessed by testing a shortlist of digital play experiences against the framework. With funding from the LEGO Foundation, the project is a partnership between UNICEF; the LEGO Group; the Young and Resilient Research Centre at Western Sydney University; the CREATE Lab at New York University; the Graduate Center, City University of New York; the University of Sheffield; the Australian Research Council Centre of Excellence for the Digital Child; and the Joan Ganz Cooney Center.

“[Well-being means] having my friends’ support.”

Child participant,
Tunisia



LOADING



³ In this report, we follow the United Nations Convention on the Rights of the Child (article 1) definition of a child as a human being under the age of 18.⁵



For this project, we chose to focus on digital play experiences as an aspect of children's broader digital engagement. Play is one of the most important ways in which young children interact with the world and gain essential knowledge and skills. Play opportunities and environments that promote play, exploration, social interaction, joy and hands-on learning are at the core of child development (Borisova, 2018). Around the world, children today engage increasingly in digital play. There is growing evidence of the potential benefits of digital play in children's lives.

The Playful by Design initiative from the Digital Futures Commission – a collaboration of policymakers, regulators, academics and civil society actors – also spoke to children and industry stakeholders and identified 12 qualities of freeplay in a digital world (Livingstone and Pothong, 2021). And research conducted by the LEGO Foundation and international research partners

on the principles of Learning through Play has demonstrated that there are five characteristics of meaningful play experiences that support children to learn and to develop as human beings. These characteristics include active engagement, social interaction, meaning-making, joy and iteration, all of which are reflected in our findings.

While the work of the LEGO Foundation and the Digital Futures Commission presents an excellent starting point for understanding children's needs in digital environments, particularly in relation to play, significant work is still needed to understand how the design of digital play experiences affects children's well-being outcomes and to find operational ways to contribute to well-being while minimizing the risk of harm.

This report presents findings from the first phase of the project, bringing together work from the Young and Resilient Research Centre at Western

Sydney University and the UNICEF Office of Research – Innocenti. We present research results and an interim well-being framework that highlights those areas of well-being that digital experiences, in particular digital play, should positively contribute to. Children's own insights and experiences closely guided the design of the framework, representing a first step for how we consider designing best-practice digital experiences for children and what outcomes we should be aspiring towards. The framework was further informed by secondary analysis of existing survey data and literature on child well-being.

The first phase brings together four research activities conducted in 2020–2021.⁴ The research activities represent a comprehensive approach to framework development and include both qualitative and quantitative approaches, as well as primary and secondary data.

⁴ Providing opportunities for children to voice their opinions and contribute to this important framework is an ethical practice. Nevertheless, any consultation also comes with risks of harm. Y&R's contribution was approved by the Western Sydney University Human Research Ethics Committee. Ethical procedures adhered to child safeguarding principles and the National Statement on Ethical Conduct in Human Research (Australia). UNICEF conducted secondary analyses of survey data from three datasets (Global Kids Online, EU Kids Online, and Disrupting Harm) in accordance with ethical principles for re-use of secondary data. The workshops with children were conducted during the COVID-19 pandemic, a time when many children around the world spent more time online than previously. Even so, as we highlight in our analysis later in this report, the findings echo pre-pandemic research findings and can be assumed to provide a reliable reference point for the framework's development.

Review of literature

Relevant literature on children's well-being and digital play was reviewed. This included journal articles, NGO/civil society organization reports, existing frameworks, and case studies of digital platforms. This was used to refine the methodology for the child consultations and the analysis plan for secondary analysis of survey data.

1

Secondary analysis of survey data

Secondary analysis of Global Kids Online and Disrupting Harm survey data from over 34,000 children from 30 countries around the world explored if and how a range of activities in the digital environment impact aspects of children's well-being. The results informed the interpretation of the child consultation results and the finalization of the well-being framework.

2

Participatory research with children

Young and Resilient Research Centre (Y&R) led consultations with over 300 children aged 7–18 years in 13 countries: Albania, Brazil, Bulgaria, Indonesia, Iraq, Jordan, Pakistan, South Africa, Taiwan Province of China, Tanzania, Tunisia, the United Kingdom and Uruguay. Workshops deployed Young and Resilient's Distributed Data Generation methodology and involved qualitative, creative and participatory research aiming to capture children's perceptions and experiences of well-being and play. Children participated either in two face-to-face workshops (each 3.5 hours, equalling 7 hours in total) or three digital workshops (each 2 hours, or 6 hours in total). The Young and Resilient Research Centre designed these workshops, trained and supported facilitators, and then collected and analysed the data.

3

Scoping interviews with parent and game designers to guide thinking about application

Y&R conducted a small number of informal, semi-structured interviews with seven parents, in Indonesia (3), Taiwan Province of China (2) and New Zealand (2), lasting an average of 35 minutes. The team also conducted interviews with seven stakeholders (creative directors, developers and designers), in Denmark (5), New Zealand (1) and the United States of America (1), each lasting between 45 and 60 minutes. The purpose of these interviews was to provide light-touch context for the ways that the framework might be taken up in diverse settings. The interviews did not directly shape the framework.

4

Phase 2 of our work will empirically validate the findings from the exploratory research. This work will be conducted by the CREATE Lab at New York University; the Graduate Center, City University of New York, the University of Sheffield; and the Australian Research Council Centre of Excellence for the Digital Child. In the second phase of the project, we will therefore observe 8 to 12-year-old children's digital game play experiences across multiple countries and measure to what extent play has an effect on specific factors of the well-being framework. This work will include eco-culturally informed home visits, lab-based observational and psychophysiological studies, and experimental studies in different cultural settings. These insights can then be used to develop evidence-informed guidance on how to design digital experiences that have a positive relationship to aspects of child well-being. The outputs and evidence from the project will all be made publicly available.

Ultimately, RITEC aims to identify a set of publicly available, empirically validated design features and mechanisms that support aspects of child well-being. In the long term, we hope this will form the foundation of an innovative new model that will allow companies to assess and demonstrate the positive impact of their digital experiences on children. In this way, we hope to raise the bar in how companies design digital experiences for children, and to support companies, regulators and civil society actors in making sure that children have access to the broad range of benefits and opportunities from digital technology going forward.

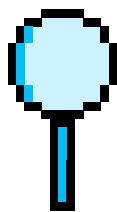


2 WHAT DOES THE LITERATURE SAY ABOUT CHILD WELL-BEING?

There is no universal agreement as to how to define – and, therefore, how to measure – well-being. This fragmented understanding of well-being is challenging at a time when actors from across all sectors are looking at means to promote positive, human-centric outcomes and opportunities from digital technology and innovation. Clarifying definitions of child well-being is particularly important given that children are spending increasing amounts of time during their formative years in and around digital experiences.

Children’s well-being is related to, but distinct from, children’s rights more broadly, as enshrined in the United Nations Convention on the Rights of the Child. Rights are fundamental principles that explain how all children should or should not be treated, while well-being (objective or subjective) is an individual state that describes how a child is experiencing life.

If some of a child’s rights are not fulfilled, they are less likely to attain a state of positive well-being. However, an individual child can have high well-being even if some of her or his rights are not respected; conversely, an individual child can have low well-being even if all of her or his rights are respected. For example, if a child is not feeling loved by her or his parents, or does not have the support of any close friends, the child may experience low well-being even if their rights are respected by Member States and others.



Child well-being as a new imperative for business

Businesses, including those designing digital play experiences accessed by children, have a responsibility to respect human rights, including children's rights, across their operations. Over and above doing no harm, businesses also have a role in advancing children's rights through voluntary actions within core business activities, collective action and other strategies.

The Children's Rights and Business Principles launched by UNICEF, the United Nations Global Compact, and Save the Children in 2012, offer a "comprehensive framework for understanding and addressing the impact of business on the rights and well-being of children". They articulate the corporate responsibility to respect, as well as the corporate commitment to support, child rights in different arenas, including products and services. Embedding child well-being within the design of digital play experiences represents a significant opportunity for businesses to demonstrate commitment to the Children's Rights and Business Principles and advance children's rights in a digital age.

Child rights in the digital environment

It is now broadly acknowledged that children's rights apply equally in online and offline spaces. And, as noted above, there is a strong push for children's rights to be considered in the design of digital play experiences for children. This includes, but is not limited to, their rights to leisure and play. Indeed, the Convention on the Rights of the Child stipulates that children's rights are interconnected. To support these efforts, in March 2021, the United Nations Committee on the Rights of the Child adopted United Nations General Comment 25 on children's rights in the digital environment. General Comment 25 provides evidence-based and principled guidance to enable Member States, NGOs and businesses to interpret the Convention for the digital age.





Child well-being is generally assessed using objective measures (such as socioeconomic status) or by using subjective measures asking people to evaluate their own lives (Rees et al., 2013). Both approaches have been used widely by international organizations such as UNICEF and the Organisation for Economic Co-operation and Development.

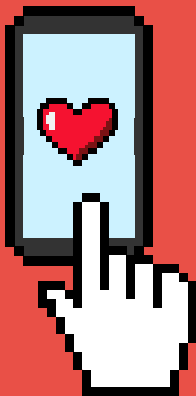
For the purposes of this research, we focus only on subjective well-being. Knowledge about and the impact of subjective well-being has grown rapidly over the past two decades (Stone and Mackie, 2013). Subjective well-being centres on how an individual experiences or evaluates her or his own life and to what extent her or his life and current situation are good and desirable

versus undesirable and negative (Das et al., 2020; Diener et al., 2017). It encompasses aspects such as happiness and life satisfaction, and psychological or 'eudaimonic' aspects focused on personal development and growth (Waterman, 1993). This model of well-being originates from the understanding of happiness, life satisfaction and positive affect (Diener, 1984) and has been related to aspects of other models, such as the five key elements of flourishing (Seligman, 2011). These five elements are: positive emotion, engagement, relationships, meaning and accomplishment. Together, these elements have been shown to enhance optimism and increase resilience, which in turn are critical building blocks of well-being (Seligman, 2018).

A focus on subjective well-being puts children's own feelings and experiences front and centre. It is valuable to measure subjective well-being as it considers children's individual perspectives rather than relying on an outsider's judgement. For example, it is possible for children to live in an affluent household and have solid education (often used as objective indicators of high well-being) while still not feeling happy or hopeful about the future. Research with both children and adults has revealed that economic circumstances are only able to explain a relatively small proportion of the variation in children's well-being, which highlights the importance of a more child-centred approach to how we conceptualize and measure

children's well-being (Rees et al., 2013). By focusing on the subjective, we acknowledge that children's feelings about their lives really matter. Involving children, listening to their needs and giving due weight to their views are important as matters of principle, as stipulated in the United Nations Convention on the Rights of the Child.

In practical terms, then, research that pays attention to children's feelings and experiences is useful to understand how digital experiences can be designed in ways that are more likely to have positive impacts.



Critically, we still do not know enough about what well-being means for children growing up in a digital world, or how to measure it or achieve it. When does digital technology facilitate or complicate family interaction? How can it helpfully engage rather than distract children? How do we balance educational opportunities with entertainment, or can the two be achieved at the same time? Moreover, it is unclear how these factors play out in different parts of the world, where children live in different circumstances and use digital technology in different ways and for different purposes. This project will begin to explore these complex questions within the context of play, specifically digital play, as a subset of children's broader digital engagement.

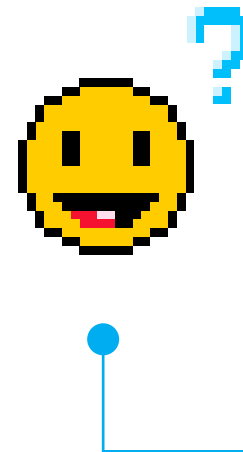
Other initiatives have also begun to ask questions around what well-being means for children. For example, the Learning for Well-being (L4WB) framework, produced by the Learning for Well-being Foundation and recently reviewed by UNICEF, describes well-being in terms of nine capacities (discerning patterns, embodying, empathizing, inquiring, listening, observing, reflecting, relaxing and sensing) organized under the following four dimensions: mental, emotional, physical and spiritual. Our approach and that of L4WB differ in that L4WB was designed to describe the innate skills and capacities needed throughout the life course, whereas our framework focuses on subjective and child-centred aspects of well-being rather than taking a capacity approach. Nevertheless, both our framework and that of L4WB make use of the rich academic literature on well-being and, as such, overlap in terms of how several well-being outcomes are described. For example, the emphasis on the core capacities in the L4WB framework of easing tensions in thoughts, feelings and body is illustrated in our framework under the emotional regulation outcome, where children seek to reduce stress or regain energy. In another example, the L4WB capacity of inquiring is related to our creative well-being outcome, in terms of the emphasis on curiosity and openness to experience.

3 WHAT IS PLAY AND WHY IS IT IMPORTANT?

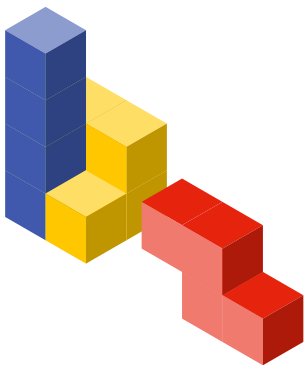
Play is a way for young children to gain essential knowledge and skills (Borisova, 2018). It is important for learning skills such as problem-solving, communication, creativity and self-regulation. For this reason, opportunities and environments that promote play, exploration and hands-on learning are at the core of child development. Play encompasses a broad range of activities such as rough-and-tumble play, role play, exploratory play and, increasingly, digital play in a variety of formats (Cowan, 2020; <learningthroughplay.com>). Although it can be difficult to pinpoint what precisely play is and how it is expressed, experts agree that play has universal benefits for the developing child.

In the academic literature, the concept of play has been rather ill-defined, despite being the focus of a broad range of examples and applications (Burghardt, 2010; Smith and Roopnarine, 2018). The starting point for many theories of play has been the focus on fun and pleasure-seeking activities (Smith and Pellegrini, 2013), with applications across therapy, pedagogy, learning and a broad range of cultural contexts. However, research has established that fun, as well as motivation and autonomy, are not enough in themselves. Play is essential to the ability to grow, learn and thrive (Pellegrini, Dupuis and Smith, 2007), a main mechanism for human adaptation (Sutton-Smith, 2009), serving a critical purpose not only for young children (Yogman et al., 2018) but as a continuous and lifelong mechanism of exploration and adaptation (Gopnik et al., 2017).

A wide range of studies describe how different aspects of play reduce negative feelings, promote positive thinking and develop resilience, across a wide range of activities. For instance, play can help to develop children's self-regulation (Bodrova & Leong, 2008), reduce anxiety and pain (Barnett and Storm, 1981), support children's ability to cope (Saunders, Sayer and Goodale, 1999), help children to share thoughts and feelings (Kestly, 2016) and reduce stress and negative emotions (Vikan, Karstad and Dias, 2013). In short, play helps children learn a variety of things, takes many forms and serves multiple purposes for children.



Play's critical role in children's lives and development is enshrined in the United Nations Convention on the Rights of the Child as a fundamental right of children. It is less clear, however, which forms of play (and especially, of digital play) influence which aspects of children's well-being, and how these forms of play can be enabled through particular design choices.



International research institutions and the LEGO Foundation have conducted several studies on Learning through Play over the last decade. From this research, five characteristics of Learning through Play experiences have been identified: joyful, engaging, meaningful, iterative and socially interactive (Marsh et al., 2020). This research suggests that learning and playing are deeply intertwined – indeed, that playing is an essential strategy for learning (Borisova, 2018). This research has also linked play to key aspects of well-being, from nurturing empathy to boosting resilience and contributing to family happiness (Hoicka et al., 2018). More recent research has identified the characteristics of Learning through Play across numerous forms of digital play and suggested there are strong synergies between these characteristics as embedded in digital and non-digital play (Marsh et al., 2020).

The Digital Futures Commission (see, e.g., Cowan, 2020) recently identified 12 important qualities of free play, which is valued for its role in cognitive, social and emotional development, fostering creativity, imagination and problem-solving skills, learning and supporting well-being.⁵ Their work provides us with a starting point to guide an agenda for providing quality play to children, including in a digital environment.

This report complements the Digital Futures Commission work and the work of the LEGO Foundation, by presenting findings from participatory research with children, revealing what they think well-being is, and specifically how they believe digital play can inspire positive experiences that contribute to their well-being. This represents an important effort in bringing children's voices to the centre of debates around digital play and child well-being.



⁵ The 12 qualities of free play are: intrinsically motivated, voluntary, open-ended, imaginative, stimulating, emotionally resonant, social, diverse, risk-taking, safety, sense of achievement, and immersive.

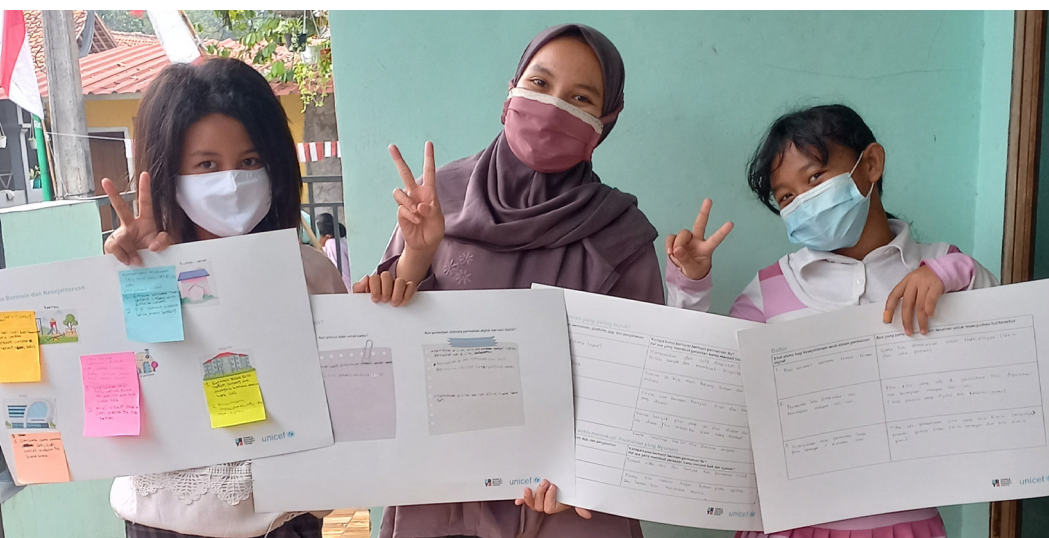
4 WHAT DO CHILDREN SAY ABOUT WELL-BEING?

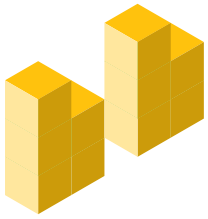
While literature on child well-being abounds, few studies ask children directly what well-being means for them – and how it might manifest in digital spaces and experiences.

The next two sections present findings from the core research activities. They draw primarily on workshops with 318 children aged 7–18 years in 13 countries: Albania, Brazil, Bulgaria, Indonesia, Iraq, Jordan, Pakistan, South Africa, Taiwan Province of China, Tanzania, Tunisia, the United Kingdom and Uruguay. These workshops employed the Distributed Data Generation methodology, which involves qualitative, creative and participatory research aiming to capture children’s perceptions and experiences of well-being and play (Third et al., 2021). This methodology has previously been used to consult with children in over 76 countries around the world, including for the ‘UNCRC General Comment 25 on Children’s Rights in Relation to the Digital Environment’ (United Nations Committee on the Rights of the Child, 2021).

These sections also draw on an exploratory analysis of survey data on 34,000 children done by UNICEF Office of Research – Innocenti, exploring potential links between digital activities and children’s well-being. Children between the ages of 9 and 17 in over 30 countries were surveyed as part of larger data collection efforts for the Disrupting Harm, Global Kids Online and EU Kids Online datasets. Because we are using existing data to answer new research questions that the original data were not intended to answer, this analysis utilizes a range of proxy variables that potentially makes the analysis less reliable. For this reason, findings from the secondary analyses are used in conjunction with the child consultations, as well as findings from the literature review, from parent interviews and from stakeholder interviews in the final development of the framework.

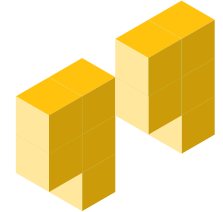
Our workshops began by asking children their thoughts. Children were asked three interrelated questions to understand how they viewed well-being: “What does it mean to be well?”; “What does it mean to be happy and healthy?”; and “What does it mean to feel good?” Across different cultural contexts, children understood well-being holistically and were remarkably concrete about what well-being is and how they experience it.





“[Well-being means] staying fit.”

Child participant, Pakistan



4.1 Well-being is physical and material

Children understood well-being as comprising both physical and material domains. Many children emphasized that physical health is vital to well-being:

“To [be well is to] be physically sound.” (Tunisia)

“[Well-being is] not having diseases.” (Tanzania)

“[Well-being means] staying fit.” (Pakistan)

Children, particularly – though not exclusively – those in low-income countries, foregrounded that well-being is dependent on having enough material resources to live a good life:

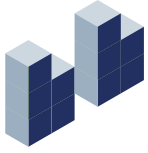
“[Well-being means] not being poor.” (Jordan)

“[Well-being means you are] given pocket money by parents.” (Indonesia)

“[Well-being is] eating well.” (Pakistan)

Literature on child well-being provides additional support that both physical and material aspects are important to children’s well-being (Fattore, Mason and Watson, 2009; Sarriera et al., 2015; Statham and Chase, 2010). Some include material well-being in defining well-being (see White, 2008). Material well-being has been shown to be associated with positive outcomes such as higher educational attainment (Ferguson, Bovaird and Mueller, 2007), academic achievement (Castelli et al., 2007) and increased mental health due to lower stress (Martikainen et al., 2013). Having access to resources such as adequate housing conditions was found to correlate with positive affect and a sense of purpose (Bradshaw et al., 2011).





“[Well-being is about] feeling content and at ease.”

Child participant, United Kingdom



4.2 Well-being is mental and emotional

Children frequently related the idea of well-being to positive emotions:

“[Well-being is] to be happy.” (Albania)

“[Well-being is] to feel satisfied with the different aspects of life.” (Uruguay)

“[Well-being is] feeling comfortable with what you do.” (Brazil)

Some characterized well-being as the absence of negative emotions:

“[Well-being is] the absence of sadness.” (Tanzania)

“[Well-being is being] without fear of the future.” (Jordan)

“[Well-being means a] stress free life.” (Pakistan)

Some children associated well-being with mental health. These children highlighted that well-being variously entails an inner sense of calm and peace; having control over their feelings; and having an overall sense of satisfaction with life:

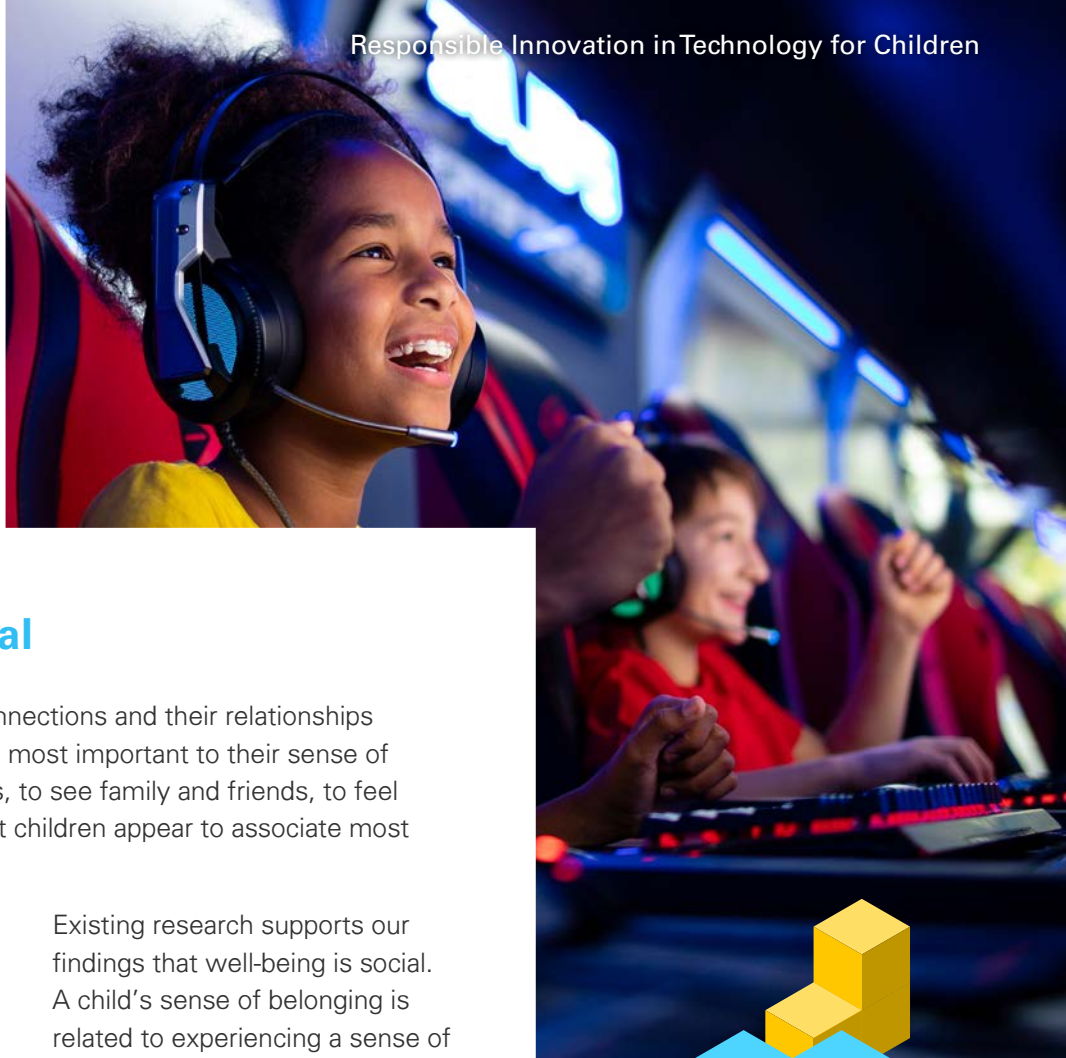
“Well-being is about inner tranquillity.” (Uruguay)

“[Well-being is] being at peace with yourself.” (Albania)

“[Well-being is about] feeling content and at ease.” (United Kingdom)

Overwhelmingly, asking a child “How happy are you?” is the most common measure of a child’s well-being (see Rees, Goswami and Bradshaw, 2010). Some researchers also consider measures of happiness as essential to policy work on child well-being (see Dolan and Metcalfe, 2011; Layard, 2010).





4.3 Well-being is social

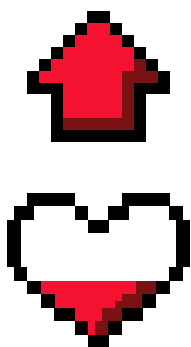
Overall, however, children's social connections and their relationships with others were, above other things, most important to their sense of well-being. To be loved, to love others, to see family and friends, to feel connected – these are the factors that children appear to associate most with making a good life:

"[Having] parents' love and satisfaction and people's love for me, and being with them [are vital to my well-being]." (Iraq)

"[Well-being is] feeling happy with other people." (Albania)

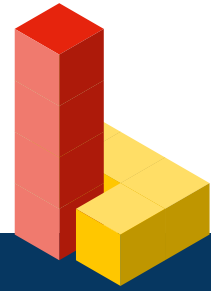
"[Well-being means] having my friends' support." (Tunisia)

"Playing with friends [brings me well-being]." (Indonesia)



Existing research supports our findings that well-being is social. A child's sense of belonging is related to experiencing a sense of closeness with the people around him or her; feeling loved; feeling part of and connected to his or her community (for example, a school or an online community); and feeling situated in the events and activities of the sociocultural world. Sense of belonging is closely connected to relatedness in Self Determination Theory (Deci and Ryan, 2008) and is associated with outcomes such as engagement in school and academic achievements (for a review, see Juvonen, 2006); fewer internalizing behaviours (Moor, Denollet and Laceulle, 2018); and, in early adulthood, success at university (Strayhorn, 2018). Sense of belonging also serves as a buffer to the potential negative effects of adverse experiences during childhood (Corrales et al., 2016).





Along similar lines, children said that well-being is not just individual but communal, stressing that they can only be well when their family and friends are also well:

“[Well-being is] when my family is fine.” (Jordan)

“[Well-being is] having a healthy family.” (Albania)

“[Well-being is] when I see my family is fine.” (Iraq)

Strong prosocial and altruistic themes also emerged in children’s responses. Children associated well-being with being a good person and contributing to the well-being of others:

“[Well-being is] helping people; like helping a friend who is in trouble.” (Indonesia)

“Helping the poor [is part of well-being].” (Iraq)

“Doing good deeds [is part of well-being].” (Pakistan)

“Taking care of family makes you feel happy and means well-being.” (Albania)

After exploring children’s broader

ideas about well-being, workshops invited children to participate in a series of activities to investigate how they conceptualize and experience play, and its relationship to well-being, in a digital age. Working with children, it became evident that there are several conditions that are fundamental to the capacity for digital play to impact their well-being positively: children’s safety and security, and their digital inclusion. Part of feeling both digitally included and safe and secure relates to how children’s diversity and equity issues are handled within digital play experiences.

Learning is a key aspect of the ways children experience well-being in relation to play. Positive play experiences involve forms of learning, ranging from the kind of learning that is an ambient outcome of self-growth to more tangible skills, such as numeracy and literacy. Learning through Play, the initiative funded by the LEGO Foundation, expands on this notion that play is key to learning by proposing five common characteristics of play activities that can foster learning. These play activities should be meaningful, joyful, socially interactive, actively engaging, and iterative.

4.4 Well-being and safety

Children consulted for this report identified safety as fundamental to their well-being across online and offline spaces. They defined safety alternately as the absence of harm, a feeling of being protected, and positive affective states:

"[Something is safe when] it doesn't make us sick or injured." (Indonesia)

"[Safety means] protection from harm." (Pakistan)

"[Safety means] not being harmed by others (physically or online)." (Taiwan Province of China)

"Safety is calmness and peace; to care for children from cruel people; to stay away from danger." (Tanzania)

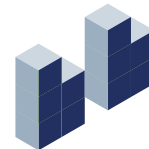
In children's framings, safety does not necessarily mean an absence of risk, which is relevant because risky play has been shown in a range of studies to have benefits for children (Gray, 2020).

Interestingly, other children suggested that true safety means not having to think about safety at all. When safety is taken seriously and properly implemented, children's anxieties about it drop away and they can concentrate on play, enjoyment and other aspects:

"[Safety means] you don't need to be worried about any physical danger or any thoughts of danger." (Iraq)

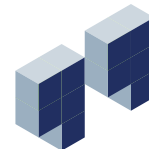
"[Safety is] to live without stress." (Tunisia)

"[Safety is when] you do not need to think about the matter of 'safety issues.'" (Taiwan Province of China)



"[Safety is] to live without stress."

Child participant, Tunisia



Findings from our child consultations on the importance of safety are also echoed in work by the Digital Futures Commission (Colvert, 2021) and Livingstone et al. (2017) in the context of digital play. Specifically, safety was thought of as necessary and foundational in play environments. In the well-being literature, children also reported a sense of safety as vital to their well-being (see Fattore, Mason and Watson, 2009).

4.5 Well-being and self-actualisation

For children, well-being also entails developing a sense of self and self-acceptance:

“[To have well-being is to] love yourself and love everybody.” (Taiwan Province of China)

“[Well-being is the ability] to accept yourself, to have self-esteem.” (Tanzania)

“[Well-being is] loving yourself, ... confidence, ... being yourself, ... and being proud.” (South Africa)

They also associate well-being with having goals and a sense of purpose. This cultivation of self-confidence, self-acceptance and self-purpose resonates strongly with the concept of self-actualisation in literature:

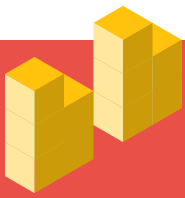
“You have to have objectives [to achieve well-being].” (Uruguay)

“[To achieve well-being, you have] to have clear goals in your life.” (Albania)

“[Well-being is to have] achieved my goal.” (Taiwan Province of China)

The research literature suggests that sense of purpose and identity are key aspects of well-being. Sense of purpose can be defined as a child having an aim that is meaningful to them and having an internal motivation to pursue that aim actively (Statham and Chase, 2010; Sumner, Burrow and Hill, 2018), which has been related to stronger resilience in children (Zolkoski and Bullock, 2012; Ungar 2015). Self-actualisation is included in some models of psychological well-being and underscores the importance for children to engage in meaningful activities and have a sense of purpose (e.g., Bethune, 2018; Ryff, 1989).





“When your dream or your life are denied.”

Child participant,
Taiwan Province
of China



4.6 Well-being, agency and empowerment

Children also identified agency and empowerment as an important component of their well-being. This was particularly obvious in an exercise where children were asked to explain what negative well-being would look like for them. Answers tended to highlight restrictions on their autonomy:

“Being commanded/ordered to do certain things.” (Indonesia)

“Lack of freedom.” (Iraq)

“Not feeling free when [or] while you do something.” (Tanzania)

“When your dream or your life are denied.” (Taiwan Province of China)

“[When you are] without rights.” (Tunisia)

Research has shown that agency is closely linked to autonomy, which refers to a child’s feeling of control and having choice, or a child’s perception that they have some control over their life and behaviour. Autonomy is one of the basic psychological needs described in Self Determination Theory (Deci and Ryan, 2008) and has been associated with greater well-being in children (Fattore, Mason and Watson, 2007). It has been described as essential for children’s psychological development (Grolnick, Ryan and Deci, 1991; Kaap-Deeder et al., 2017). Enabling children to have agency and make meaningful choices is necessary for both motivation and psychological health to flourish (Deci and Ryan, 2000).

Children’s perceptions of autonomy are associated with many important outcomes, including academic achievement (Vasquez et al., 2016), perceptions of inequality and fairness (Aldama et al., 2021) and general well-being as measured by positive affect (Kaap-Deeder et al., 2017).

5 HOW CAN DIGITAL PLAY SUPPORT CHILDREN'S WELL-BEING?

The previous section highlighted how children understood well-being and what aspects were important to them. This section considers how digital play could support these aspects, drawing on children's own statements alongside insights from the analysis of survey data, the literature review and interviews with parents and stakeholders.

5.1 Safety and security

Safety and security have long been issues of concern in the context of children's play. There is a common view that childhood is a time of dependence and need for protection (Cowan, 2020). However, this is contrasted by alternative views that too much regulation, monitoring and restriction of play can cause children to become resentful and feel limited in their ability to explore and take risks (Cowan, 2020).

While the risk of harm can differ between physical and digital play spaces, it appears necessary to balance children's need for risky play with their need for protection. "The answer is not removing all risk in play, nor is it ignoring genuine serious risks to children" states the Digital Futures Commission; it "requires a balance between protection of children's safety and protecting children's right to engage in new and challenging

activities, dispelling unhelpful myths and exaggeration of risk and instead promoting proportional responses to situations that might pose serious harm" (Cowan, 2020: 14).

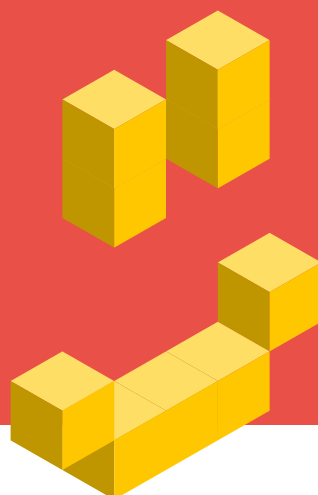
The topic of digital content was a focus in conversations with children about safety in the digital environment. In one activity, children were asked to describe their "worst game" – a digital play experience that would undermine their well-being. In this activity, children frequently highlighted violent content as a key reason why a play experience made them feel bad and/or made them stop playing. Alongside violence, sexual content, scary content and explicit language were also mentioned by children as features of the ways they imagined the "worst game ever":

"Safe play ... avoids adults' ads in children's games." (Albania)

"[The worst games contain] language and vocabulary that is inappropriate for children." (Bulgaria)

"Zombie games [are bad for my well-being] ... I was very scared, and I could not go to the toilet." (Tanzania)

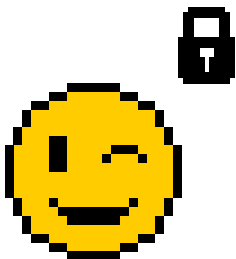
"[The worst games] are frightening games which make you feel that the character is with you at home." (Tunisia)





**“Safe play... avoids
adults’ ads in
children’s games.”**

Child participant, Albania





However, while a concern about violent content was common, a number of children said that they enjoyed playing games with some level of violence:

“[We enjoy games] ... that have a lot of shootings and fast cars.” (Jordan)

“[Some games require you kill other people’s avatars] ... but we play with friends [and it gives us] pleasure.” (Albania)⁶

For industry, this suggests that it may not be a matter of cutting out all controversial content but of carefully calibrating it to children’s maturity and expectations:

“[Safety means playing] games that are appropriate for your age.” (Albania)

“Game age ratings, content control [avoids violent and explicit content in children’s games], and separation of rooms by age and content filter depending on age.” (Brazil)

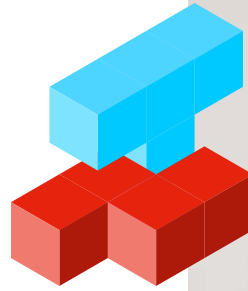
“[Designers] have to pay attention to the age of children.” (Tanzania)

The small number of parents who were interviewed as part of scoping uses for the framework were also concerned about content. In response, parents wanted to have more oversight of the content their children consume, to limit which rooms in the house digital devices are allowed in, or to limit time spent in the digital environment:

“[The internet is] a portal to all the best but also the worst of the world.” (New Zealand parent)

“Online activities have a good impact on children ... but as a parent it is very important to limit and view the content that is allowed to be accessed by children.” (Indonesian parent)

⁶ The two quotations in this extract have been altered to remove brand names. However, we have worked hard to ensure that the intent of the quotations is preserved.



Along with safe content, children also highlighted the importance of safe behaviours:

“[Developers] should not allow the game to be hacked ... [Games need to] have strong safe[ty] measures.” (Albania)

“Trolling and attacks are a major issue ... [and additional safety measures could ensure] bad people do not have the possibility of stealing your gold, coins, identity.” (Albania)

This confirms what is already known by industry: that appropriate safeguards – for example, age checks, limiting stranger contact, parental controls that are not too intrusive and functional reporting features – are necessary for safe and secure digital experiences for children.

Consultations with parents and children, and secondary analysis of survey data, all suggested that parents may be valuable allies in ensuring children’s safety in the digital environment, but they are

often left out of the equation. Children suggested that a “double account (parent–child)”, whereby parents and children have a shared account, might be helpful in some cases. Similarly, a developer we interviewed recounted how he or she realized parents are key players in supporting children’s online safety, which led him or her to begin educating parents on digital risks associated with his or her products.

Many children in the consultations reported that being with others when they are online is key to feeling safe, which was often related to being close to family members:

“[I feel safe] being around [my] older brother.” (Iraq)

“[I feel safe] with parents or grandparents.” (Jordan)

“[I feel safe] with my family.” (Tunisia)

Industry should be aware of the importance of children’s rights, relationships and opinions and find ways through design to support engagement with significant others to bolster both children’s subjective and objective safety.



5.2 Diversity, equity and inclusion

Children highlighted issues of diversity, equity and inclusion as factors in their digital play experiences, expressed in multiple ways. While research on digital play has traditionally focused on high-income and Western countries, this work is beginning to include the perspectives of children from low- or middle-income countries or in the Global South. While these issues are challenging both to encounter and to deal with from an industry perspective, it is also a space of great potential for companies to create diverse, equitable and inclusive experiences for children.

In terms of equity, digital inclusion issues are a key barrier to many children's capacity to derive well-being benefits from their digital experiences, including digital play

(see also Third et al., 2021; Third et al., 2017; Third et al., 2014).

In consultations, many children stated that they could not access an internet connection and were thus precluded from playing many games. Others relied on mobile data, which quickly became expensive, so they refrained from playing games or using apps that are too data-intensive:

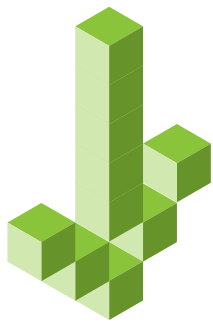
"If you play digital, you have to use [your] internet access quota." (Indonesia)

"Please provide free quotas to all parents or children who need it, because online learning usually takes up more internet quota." (Indonesia, parent)

"[My] lack of internet is stress[ful]." (Iraq)

There is clear scope here to ensure that digital play experiences work within the constraints of children's access to data.





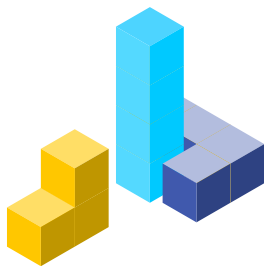
Equity also extends to issues around the financial cost of digital play experiences. Children called for games that are free. They want additional features that do not cost money, and they are vocal about the fact that children should not be made to watch advertisements to access parts of games:



"[Digital games/apps are] more expensive products [while non-digital] is cheaper." (Bulgaria)

"You have to spend lots of money continually when you are playing digital games." (Taiwan Province of China)

"[There should be] no restrictions on the features that can be accessed." (Indonesia)



For children, diversity and inclusion mean that there is diversity in the representation of game characters and that children from all backgrounds can participate without facing discrimination based on their culture, religion, gender or identity. These issues were highlighted by a number of children in different countries as an important feature of digital play experiences:

"Female characters that are smart and do things that are always done by males in games." (Jordan)

"[It's important for games to have] several types of skin tones, hair, nose shape, mouth shape, etc; have strong female characters, LGBT+; [and] offer several languages and [welcome] people from different countries." (Brazil)

"The designer should take care about children's feelings and different circumstances for kids." (Iraq)

Importantly, diversity and inclusion factors play into children's sense of safety and security in digital play experiences. Addressing such factors will be important to ensuring that digital play experiences can support the well-being of the broadest possible number of children, especially as more and more children from diverse parts of the globe engage with digital play experiences.

HELLO

5.3 Social connection

Across cultural contexts, social connection emerged as a critical part of both play and digital play. In one activity, children were asked to create their own dream game – a fun game that would make them feel good. Many of the games that children created had strong themes of connection, relationships and social interaction. When asked to map the places where they played, children often drew sites, such as the park or community centre, where they connect with others:

Children also expressed that connection is vital to their digital play experiences. For many children, play was seen as a way to make friends:

“I could meet new friends [when playing] online.” (Bulgaria)

“We enjoy meeting new friends online, especially when they play well.” (Jordan)

Some children also highlighted that they think digital play is not always social enough, reinforcing again that children’s desire for connection in their digital play mirrors their desire to connect with others in offline forms of play.

The importance of social connection was also evident in the way children talked about collaborative play. When asked to design their dream game, children often included elements of conflict or challenge. To overcome these challenges, children wanted players to work together:

“Playing with friends and classmates [at school] ... The feeling when playing the game is very happy because we help each other and are not arrogant, happy friends and no sadness, no anger, sometimes we play until late.” (Indonesia)

“Playing with new friends is a great pleasure.” (Albania)

“I enjoy playing with my friends [online].” (Jordan)

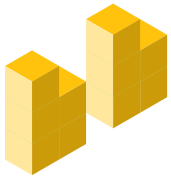
“Union makes power. Facing challenges together we are stronger.” (Albania)

“The game can be played with family or friends together.” (Indonesia)

“[Our game is] fun because it brings me together with friends and increases physical health and fitness for the body.” (Iraq)

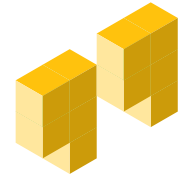
Hi!





“Our game is fun because it brings me together with friends and increases physical health and fitness for the body.”

Child participant, Iraq



Children’s emphasis on cooperation explicitly contrasted with, and challenged, the emphasis on individualism and competition that dominates popular discourse about digital games in the present.

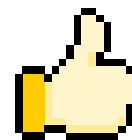
Exploratory analyses of survey data showed that online activities that involved staying connected with others through instant messaging were related to positive indicators of well-being, such as positive relationships with parents and peers, feelings of confidence and autonomy, and hope and optimism about the future.

These insights resonate with research that has documented digital play as a way of encouraging children to learn collaboratively (Huo, 2019) and of teaching teamwork skills (García et al., 2016).

Scoping interviews with stakeholders also revealed the significance of connectivity to children’s well-being:

“The whole idea of connecting people ... that we are a part of a bigger community than just the ones around us is a very, very strong component in children’s well-being.”
(adult stakeholder, Denmark)

Secondary analysis of survey data revealed that children whose parents engaged with their digital use in positive and supportive ways reported better family relationships overall. Finding ways to encourage parental involvement in children’s digital play resonates with children’s understanding of familial attachment as an important aspect of well-being. This could mean that the design of digital experiences that foster positive engagement by parents with their child’s use of technology may lead to improvements in the parent–child relationship.



● In summary, there are strong indications that identifying ways to support social connection in the digital environment and through digital play is likely to yield well-being benefits for children, provided that children are safe engaging in such social interactions.

5.4 Emotional regulation

For some children, digital play was associated with the ability to have time out, relax and step back from the busy-ness of life:

“[The game we designed] can provide a sense of escapism ... [so] if you’re going through a hard time you can just go and play a game and take your mind off of things and be in that game.” (United Kingdom)

“[Playing games with friends] can be stress relieving because it allows me to focus on something else for a while.” (United Kingdom)

“Everyone needs a break to be alone to be calm ... away from all the noise and school stress.” (Jordan)

“[Playing games] makes me [feel] relaxed ... [as] it distracts me from real life problems.” (Bulgaria)

Along with enabling time out, digital play also allows children to experience positive emotions. Children gave a range of reasons why they find certain games comforting:

“[Digital play] is a way to spend time doing things that make us feel good.” (Uruguay)

“[I find digital games] fun and entertaining.” (Iraq)

“[Playing online] makes me happy.” (Tanzania)

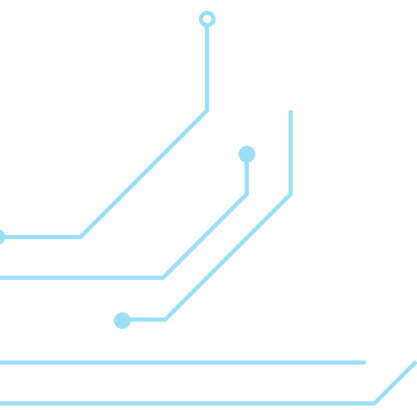
“[Playing online is] very exciting and interesting.” (Taiwan Province of China)

As we noted above, children in Jordan also explained that learning to regulate emotions in games can help them to do the same in offline contexts. This may indicate that emotional regulation learnt through gaming could support children’s lives more broadly.

Being able to regulate emotions has been found in the research literature to be an important outcome of physical play. Being able to regulate your emotions has been linked to a variety of outcomes such as psychosocial functioning (Zeman et al., 2006), school readiness (Harrington et al., 2020; Ursache, Blair and Raver, 2012) and emotional well-being (Djambazova-Popordanoska, 2016). Emotional regulation is also tightly linked with play both in the near and long term. Pretend play has been found to correlate with increased emotional regulation in kindergarten children (Hoffmann and Russ, 2012). Rough-and-tumble play was found to be related to emotional regulation five years later (Flanders et al., 2010). Our work suggests that digital play also has the potential to influence children’s emotional regulation.

5.5 Self-actualisation

For children, the importance of self-confidence, purpose and self-actualisation for their well-being was reflected in their game designs:



"[Our game] teaches someone confidence and raises self-confidence." (Tanzania)

"[Our game lets you be in] control and overcome difficulties ... [helping you] to feel proud ... To feel I exist and am important" (Tunisia)

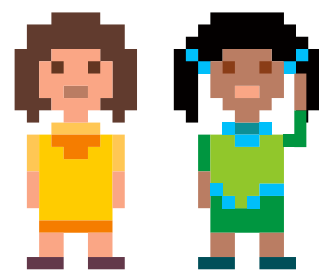
"This game gives new skills ... When we feel that we have skills that distinguish us from others, we become more confident." (Jordan)

"My best game [is designed so] I get to know myself, my personality." (Tunisia)

Aligning with this theme, children in some countries designed games to empower girls by valuing their skills and ways of being, and encouraged them to imagine a broader set of possibilities for themselves and their futures:

"[Based on] the idea that there's nothing that girls can't do, [our game has] female astronauts, female biologists and chemists, female pilots and female game developers ... [We hope it] might make them realise what they like and dislike, and what they're good at and what they would not want to do." (Jordan)

These findings suggest that digital play can help children build confidence and a better sense of who they are and what they like, which in combination with other life experiences may contribute to self-actualisation over time.



5.6 Empowerment

Children reflected the importance of agency for their well-being in their game designs. One group designed games specifically to empower girls, who had restricted choices in their culture. Other groups also foregrounded agency:

“[Our game is designed] to make people feel that they have things under control and that they can face the challenges.” (Albania)

“[Our game is designed] to make children ... control and overcome difficulties.” (Tunisia)

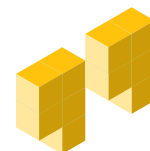
A few children explained that feeling in control during digital play allows them to experience a sense of agency, which they do not have in other aspects of their life:

“[I enjoy playing] because I can control the world and I feel successful, unlike how I feel in my actual life.” (United Kingdom)



“[I enjoy playing] because I can control the world and I feel successful, unlike how I feel in my actual life.”

Child participant,
United Kingdom



This suggests that, even if a child's agency is constrained to the digital realm, it might still provide a valuable contribution to their well-being, and be an enriching aspect of their life. For some children, the digital world might in fact be the only space where they have a sense of agency and freedom, which can contribute to their well-being and development (see, e.g., Third and Richardson, 2010).

Digital play is unique in part because it is one of few areas in life where children are empowered to take charge and make decisions, even when playing with adults. Children can gain useful experience of agency and autonomy, if enabled in digital play spaces.





5.7 Creativity

While creativity is often aligned with particular creative practices, like dance or music, or scientific pursuits, children in the consultations had a more fluid understanding of creativity. They told us that many different aspects of play are connected with their creativity.

Children explicitly connected play, creativity and learning. They talked about how play – including digital play – provides an opportunity to explore new things and makes them feel more curious and inspired to learn:

“When we are creative, we do new things, we learn and become wiser [and this makes us] happier.” (Albania)

“Digital games should encourage us to learn new skills or find out about things you didn’t know about before.” (Jordan)

“Every time you play, you gain some new experiences, so you will keep playing, not only playing a game, but also learning.” (Taiwan Province of China)

In a voting exercise conducted in the workshops, defining creativity as “being curious about new things” received strong support from children across cultural contexts. This resonates with research that identifies curiosity as a motivator for learning (Engel, 2011).

Children also related creativity, however, to a range of other experiences. Children emphasized that games should inspire children to exercise different forms of creativity. Some talked about inspiring children to create characters, artworks or narratives, and others talked about inspiring children to use their creativity to solve problems. For some children, creativity is instigated by competition:

“[Our dream game] pushes children to be creative to make the strongest dragon.” (Indonesia)

“Games should be designed [so children can exercise] creativity through strategy.” (United Kingdom)

“[Role-playing games produce] a comfortable environment where you can create stories.” (Brazil)

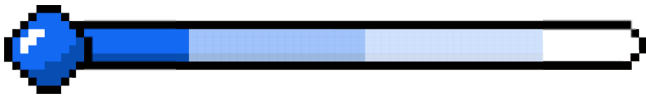
Children also talked about how creativity is involved in their developing sense of self. They highlighted how digital play experiences may trigger a feedback loop – when a child creates something that they consider successful, they feel they are creative, and this leads them to continue that creativity or extend it into other parts of their life. In other words, creativity fosters more creativity:



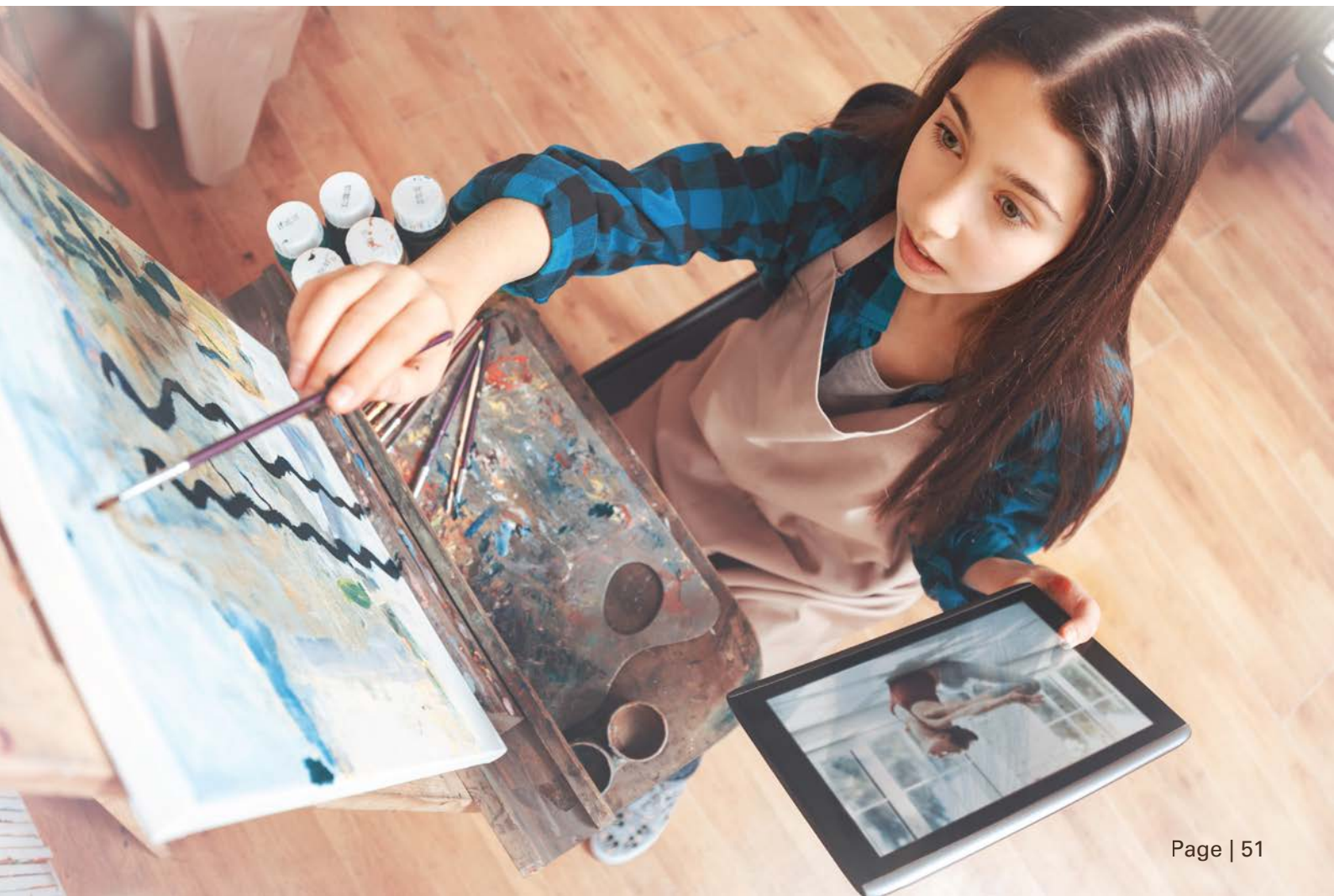
“When people find themselves creative in anything, they start believing in themselves; believing that they have creativity and new ideas, and then they become creative in other things than games.” (Jordan)

Creativity and well-being appear to be positively correlated (Celume et al., 2017). Children who are more flexible in their thinking (a form of creativity) are better able to cope with life stressors (Carson et al., 1994). Moreover, interventions that focus on developing creativity may also see increases in well-being (see Galton and Page, 2015) and positive affect (Celume et al., 2017).

This points to the issues that are at the heart of this research: namely, whether digital experiences can enhance children’s well-being and create positive spin-off effects beyond what the original design intended. The goal for the digital play industry, then, would be to design play experiences that catalyse this creative feedback loop in children, strengthening their belief in their creative abilities beyond just the game environment.



CREATIVITY



5.8 Competence

Consultations revealed the diverse meanings children attach to the idea of competence. At one end of the spectrum, children defined competence instrumentally as doing well at school and gaining new knowledge:

“[Competence] is the knowledge, reading, writing and understanding the meaning of words ... and learning the technology.” (Iraq)

At the other end of the spectrum, they asserted an idea of competence that centred on developing skills, fostering curiosity and experiencing intellectual and sensory stimulation, which in turn enabled them to learn about themselves and the world more broadly. They noted that competence can be developed in different aspects of their lives:

“[Competence is] understanding the reality of life.” (Iraq)

“[Competence is] to incorporate something that would change you in some way.” (Uruguay)

“[Competence is knowing] that tomorrow, in real life, you are able to cope and make very good choices.” (Albania)

“It’s about exploring people’s creativity to solve everyday problems, also learning about themselves and how they behave when faced with such problems, always remembering to have empathy and respect for others.” (Brazil)

Children think about digital play as an opportunity to develop skills and cognition, which in turn fosters their competencies. They pointed to the ways their digital play supports a range of competencies:

“Children explained that learning to be in control and overcoming challenges in games, teaches them to overcome challenges in real life so they don’t get angry too easily because they try many times in games and they become patient.” (Jordan, facilitator)

“Feelings of excitement and competition teach planning, being in control and overcoming challenges, even in non-digital games.” (Jordan)

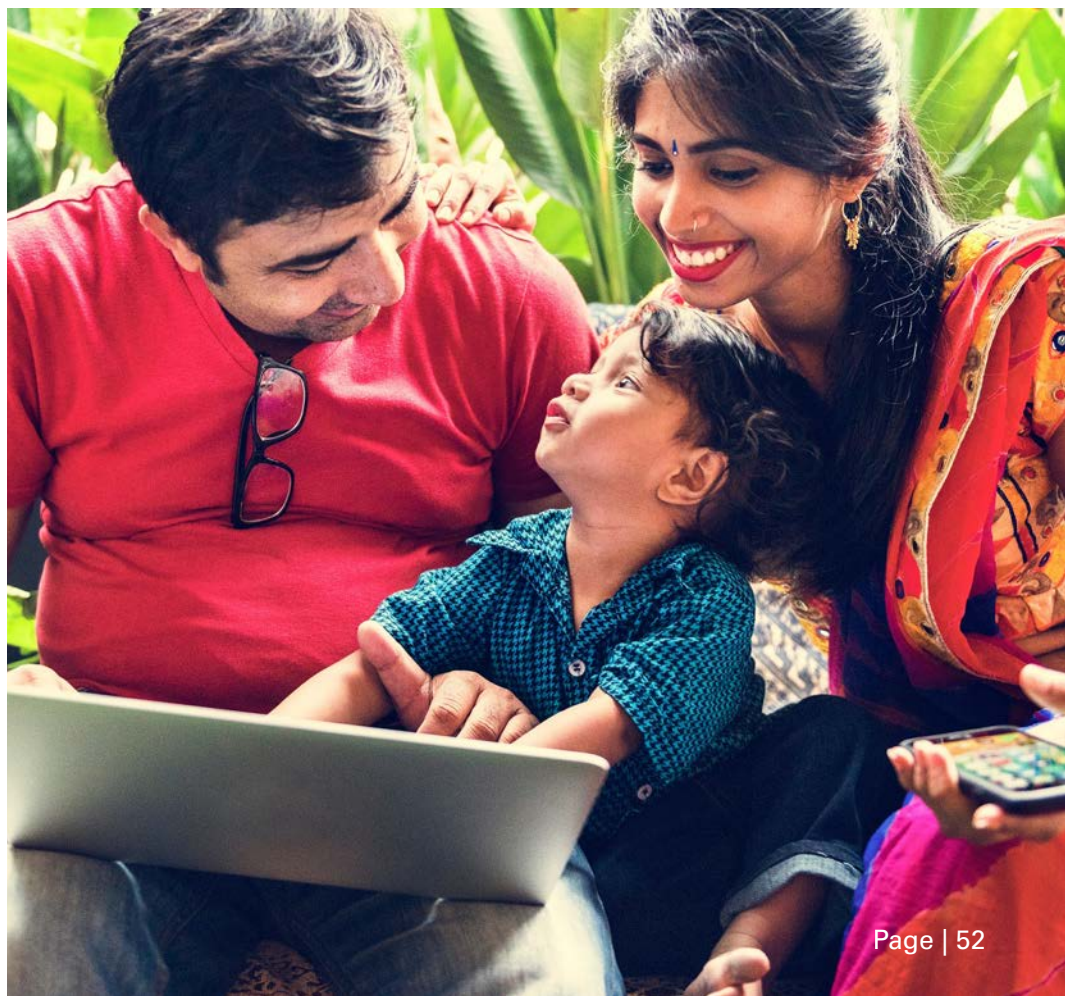
Children also discussed how they embedded opportunities to develop competencies in games they designed in workshops:

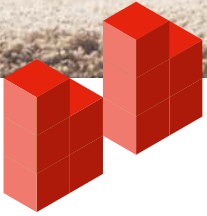
“[The action element in our game] boosts imagination so we solve problems and take decisions faster.” (Albania)

“[In our game you have to arrange letters to form words so] children get a sense of analytical awareness.” (Tanzania)

“[Our fighting game] will develop cognitive skills (memory power).” (Bulgaria)

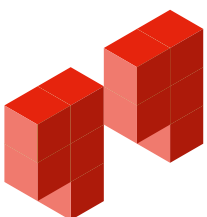
“[In our game a dragon must be raised, which] helps children to develop logical thinking.” (Indonesia)





“Children explained that learning to be in control and overcoming challenges in games, teaches them to overcome challenges in real life so they don’t get angry too easily because they try many times in games and they become patient.”

Facilitator, Jordan



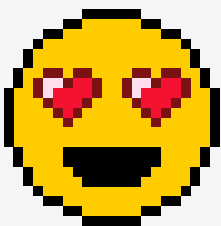
In the research literature, children’s perception of competence refers to their belief that they can achieve a given goal and feel good about themselves. Perceptions of competence can be specific, for example being confident in one’s ability to complete a particular homework assignment, or more generic, such as being confident in one’s general ability to socialize. Indeed, perceptions of competence can pertain to any domain. Self Determination Theory (Deci and Ryan, 2008) includes a sense of competence as a basic psychological need. Competence is also often recognized as an indicator in other models of well-being (see Diener et al., 2010; Moore et al., 2016). Perceptions of competence have been linked to performance in a variety of domains. Notably, perceptions of competence in academic areas have been linked to higher academic achievement (Schunk and Pajares, 2005). Work done directly with children has also highlighted the importance of feelings of competence for their sense of well-being (Fattore, Mason and Watson, 2007). Developing a sense of competence is an important well-being outcome as highlighted by our consultations with children and the research literature. Digital play experiences can help to develop a child’s sense of competence, and this competence is also highlighted by the Learning through Play initiative as an important outcome of play.

6 THE INTERIM FRAMEWORK

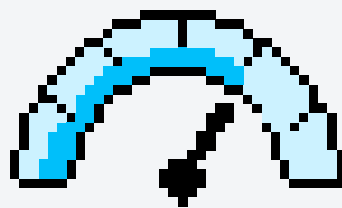
Insights from the five research activities were analysed and used to inform an interim framework for child well-being in a digital age. Key themes and corresponding insights were generated based on the consultations with children. The project team mapped children's insights against well-being outcomes drawn from the literature and key insights from the secondary analysis of survey data. This process ensured that the framework development centred on children's insights and experiences.

The resulting framework comprises three related components:

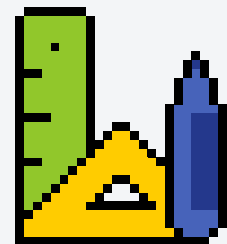
Well-being outcomes



Child-centred indicators



Affordances



Each of these components of the well-being framework has been synthesized from the children's consultations and aligned with insights from the literature review and analysis of the existing quantitative datasets.



Below we explain each of these three components in more detail.



CONTINENTS AND OCEANS

LESSON 4 : PLANT LIFE CYCLE

THE CHICKEN LIFE CYCLE

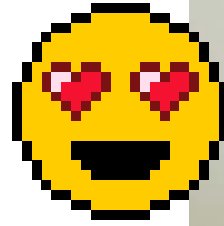
CONTINENTS AND OCEANS

Add or Subtract

$7 - 2 = 5$

6.1 Well-being outcomes

Well-being outcomes are the domains of children's well-being that we suggest can be influenced by their experiences in a digital environment. A digital play experience, if designed correctly, is hypothesized to lead to measurable improvements in these domains.



The eight well-being outcomes around which the well-being framework is organized are:

Competence

Outcome: Digital play experiences contribute positively towards children's perception of their own competence, knowledge and ability.

Rationale: Children perceive their digital play experiences as having the potential to strengthen their ability to complete a task, to learn new knowledge and to solve problems, through repeated engagement and practice with quality content.

Emotional regulation

Outcome: Children use the digital environment to adjust their mood, relax and regain energy to engage with peers and the world. This includes using digital play experiences to reduce the sense of stress or to enter flow-states where they become immersed in a feeling of energized focus, full involvement and enjoyment in an activity.

Rationale: Providing positive forms of calm, quietness and escapism allows children to de-stress and then re-engage with peers and the world.

Self-actualisation

Outcome: Children's digital play provides them with a sense of purpose and improvements in their social engagement and feelings about themselves.

Rationale: Children suggested that purpose and self-confidence were key for well-being and that good play experiences can support this.

Empowerment

Outcome: Engaging in digital play should encourage feelings of autonomy, choice and agency in children. Children are able to feel in control and make decisions, and they can attain a sense of mastery and achievement.

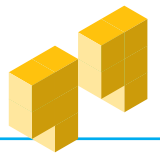
Rationale: Children can lack agency in their day-to-day activities. Digital experiences provide a space that allows children to practise and develop meaningful autonomy and control.





“[Having] parents’ love and satisfaction and people’s love for me, and being with them [are vital to my well-being].”

Child participant, Iraq



Social connection

Outcome: The digital environment, including play, should facilitate children’s social connection with peers, family or other significant people in their lives, and do so in a way that keeps children safe from harm.

Rationale: Children in all consultations stressed social connection as key to their well-being. Analysis of survey data showed that social connection was key for a range of well-being constructs, such as a sense of belonging, stronger peer relationships and confidence.

Creativity

Outcome: Children’s engagement with digital play should enhance their feelings of curiosity, nurture an openness to new experiences and strengthen their creative ability.

Rationale: Creativity is a desirable trait that overlaps strongly with learning. Children suggested many ways that digital experiences can foster this quality, if designed appropriately.

Safety and security

Outcome: Children should both feel safe and be safe while engaging in the digital environment and digital play. This includes safety from a wide range of risks, including, but not limited to, contact risks, conduct risks, content risks and contract risks.

Rationale: Digital environments introduce new dangers in terms of both content and behaviours. Supporting children’s well-being starts with protecting them adequately.

Diversity, equity and inclusion

Outcome: Digital play experiences need to be diverse, equitable and inclusive to ensure all children of different backgrounds and circumstances can participate. Digital play experiences need to be accessible for children with disabilities and appropriate in terms of age and culture.

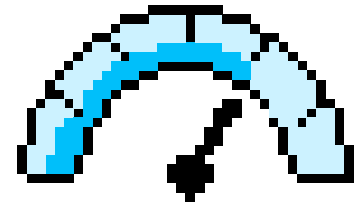
Rationale: Inclusive digital experiences allow children from all backgrounds and contexts to participate, supporting human rights and ethical values and providing children with new experiences.



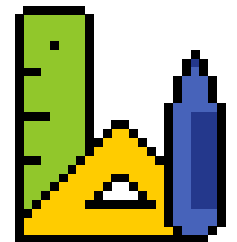
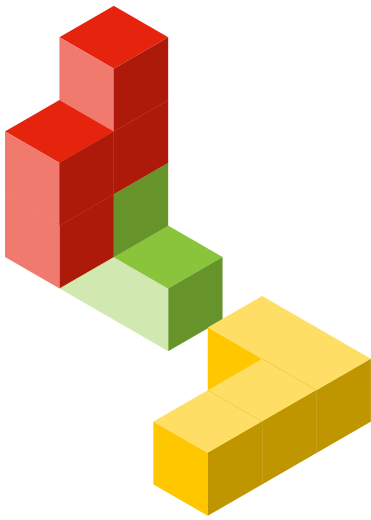
6.2 Child-centred indicators

In this framework, indicators represent examples of the kinds of change we would expect to see in children if a digital play experience has the expected positive impact. For instance, a digital play experience that seeks to empower children should yield measurable increases in a child's sense of autonomy, mastery and achievement. In this sense, improved autonomy, perception of mastery and achievement are all indicators that the empowerment outcome is being achieved. The indicators currently in the framework are sample indicators that have yet to be verified and tested and do not represent empirically validated indicators.

In order to bring these indicators to life, it will be important to develop ways to measure and test them effectively.⁷ While the Phase 1 work has already highlighted a range of potential measures, refining this preliminary list is a critical goal of the next phase of the research.



⁷ In the spirit of child-centredness, it would be ideal if, alongside measures that can be implemented by qualified researchers, child-friendly measures – that is, measures that children themselves can implement – can be developed.



6.3 Affordances

While indicators represent the change we would expect to see in children if the designs are effective in supporting children's well-being, affordances represent the specific design features that enable this change. For instance, an empowering experience (outcome) would allow children to develop mastery and have agency (indicator). The affordances that can enable such development are, for example, play designs that

allow children to practise a task repeatedly and improve at it, or play designs that provide children with meaningful freedom and choice over their actions in a game, or provide rewards at different stages of success to motivate and incentivize children to learn.

Together, the child-centred well-being outcomes, indicators and affordances create a framework that is empirically

grounded in insights from children and analysis of survey data, forming a starting point to inform product design. In the next phase of this research project, observational and experimental research will test whether specific design affordances lead to measurable increases in children's well-being.

Outcome



Competence

Digital play experiences contribute positively towards children's perception of their own competence, knowledge and ability.



Emotional regulation

Children use the digital environment to adjust their mood, relax and regain energy to engage with peers and the world. This includes using digital play experiences to reduce the sense of stress or enter flow-states where they become immersed in a feeling of energised focus, full involvement and enjoyment in an activity.



Self-actualization

Children's digital play provides them with a sense of purpose and improvements in their social engagement and feelings about themselves.



Empowerment

Engaging in digital play should encourage feelings of autonomy, choice and agency in children. Children are able to feel in control and make decisions and they can attain a sense of mastery and achievement.



Social connection

The digital environment, including play, should facilitate children's social connection with peers, family or other significant people in their lives and do so in a way that keeps children safe from harm.



Creativity

Children's engagement with digital play should enhance their feelings of curiosity, nurture an openness to new experiences and strengthen their creative ability.



Safety and security

Children should both feel and be safe while engaging in the digital environment and digital play. This includes safety from a wide range of risks including, but not limited to, contact risks, conduct risks, content risks and contract risks.



Diversity, equity and inclusion

Digital play experiences need to be diverse, equitable and inclusive to ensure all children of different backgrounds and circumstances can participate. It needs to be accessible for children with disabilities and appropriate in terms of age and culture.

Indicator

Affordances

Competence

- Increased ability to answer questions or complete an activity
- Increased ability to learn new things
- Child feels more competent socially or cognitively
- Child's knowledge has improved in certain domains

- Allow children to play an active role in problem-solving and decision-making
- Encourage and support iterative play and experimentation
- Allow children to achieve goals in diverse and non-linear ways
- Create challenges that are ambiguous and allow multiple approaches to a problem

Emotional regulation

- Child feels a reduced sense of stress
- Child is able to focus and concentrate
- Child feels re-energized to engage with peers and the world

- Allow children to complete tasks at their own pace
- Feature activities that promote flow-states and other forms of positive absorption
- Limit distracting elements like ads or pop-ups

Self-actualization

- Child has increased sense of self-worth
- Child has increased sense of purpose

- Allow children to engage in diverse role play with strong and capable characters
- Allow children to alter their characters and representation
- Feature designs that allow children to reach meaningful goals and develop in-game

Empowerment

- Increased feeling of control and ability to make decisions
- Increased feeling of mastery and achievement
- Increased feeling of autonomy, choice and agency

- Design activities that children can improve and excel at
- Provide children with meaningful freedom over their actions and choices
- Provide children with ability to showcase mastery to their peers
- Provide rewards to children at different stages to encourage them and demonstrate success
- Offer guidance to children that allows them to incrementally improve

Social connection

- Child has an increased sense of connection or belonging with peers
- Child has an increased sense of connection with parents
- Child feels socially and emotionally supported by others

- Allow children to connect with peers through play or shared spaces
- Allow children to communicate with voice or text
- Enable parent/child co-play through specific mechanisms or tasks

Creativity

- Child has increased sense of curiosity
- Child has increased openness to new experiences
- Child has a stronger creative ability

- Allow children to achieve goals in diverse and non-linear ways
- Feature play modalities that allow children to create their own designs or express themselves
- Create challenges that are ambiguous and allow multiple approaches to a problem

Safety and security

- Child has an increased sense of safety
- Child reports reduced sense of danger, threat or fear
- Child does not experience violence or abuse as part of the experience

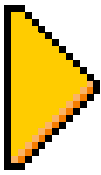




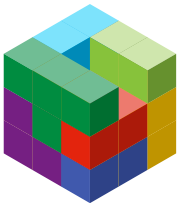
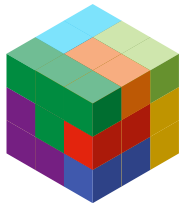
- Ensure content is age-appropriate and suitable for young people
- Include safeguards around social engagement, data collection, privacy and bullying
- Strong community management to counter toxic or predatory behaviour

Diversity, equity and inclusion

- Child feels an experience is technically accessible (cost, connectivity, design)
- Child feels an experience represents them and allows them to express their identity

- Promote accessibility by light design that does not require heavy data traffic
- Allow children to alter their characters and representation
- Design characters that represent children from all parts of the world, ages and genders

THE FRAMEWORK

 <p>Start here</p>	<p>1</p>  <p>Competence</p>	<p>2</p>  <p>Emotional regulation</p>
<p>3</p>  <p>Empowerment</p>	<p>4</p>  <p>Social connection</p>	<p>5</p>  <p>Creativity</p>
<p>6</p>  <p>Safety and security</p>	<p>7</p>  <p>Diversity, equity and inclusion</p>	<p>8</p>  <p>Self-actualisation</p>



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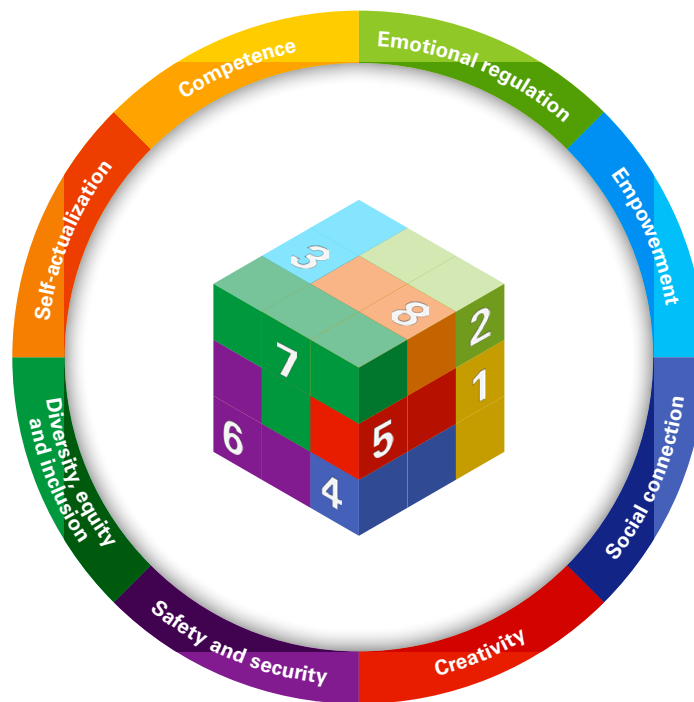
Empowerment

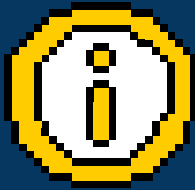
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6.4 Caveats and considerations for the research and framework

As with any research, there are limitations that should be acknowledged. First and foremost, we do not yet know how best to measure these well-being outcomes in a digital play setting: this is the work of Phase 2 of the project.

Second, recruitment for this project was challenging due to COVID-19. Given pandemic conditions, we were only able to consult with children in 13 countries, though originally the target was higher. It is the intention that some of these gaps in geographic representation will be closed during the testing as part of Phase 2, which will feed into the continued development and refinement of the interim well-being framework.

We also note the limitations that surrounded the analyses of the survey data. The survey analyses are secondary – that is, we used existing data to answer new research questions that the original data were not intended to answer. As such, we do not always have ideal survey items to create indicators for the dimensions of our well-being framework but have to rely on proxy variables, which means we lose some precision and confidence in our findings.

In its current iteration, we have not described any age-related differences in well-being outcomes and have broadly focused on children aged 9–17 in the child consultations and secondary data analysis. Additionally, we have not yet articulated how the various well-being outcomes could potentially interact with each other. For example, design choices that improve safety may have an impact on opportunities to strengthen social connectedness. We hope to start to unpack how these tensions manifest in design choices throughout Phase 2 and the remainder of the project.

Despite these caveats, the interim framework represents an exciting and ambitious research effort, underpinned by quality evidence generated directly from children. The causal links we hypothesize and ways to measure them will be tested in real-world scenarios by Phase 2 partners during 2022 and 2023.



In short, we have only just begun a longer research journey. Even so, there are a number of high-level opportunities for industry and government that we can already identify based on the research conducted, which will be presented in the next section.

7

CONCLUSIONS AND NEXT STEPS

7.1 Strengths of the research and interim framework

Our creative, participatory workshops with 300 children from 13 countries, combined with the analysis of global datasets from over 34,000 children, have yielded a wealth of insights about children’s well-being, digital play and the potential relationship between them. These insights form the basis for the interim framework and accompanying indicators. The framework and indicators are designed to be intuitive and user-friendly, on the one hand, and robust and empirically informed, on the other.

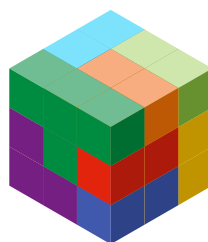
The framework and accompanying indicators are primarily intended for businesses that produce digital products and services that are likely to be accessed by children, and by governments looking to promote the well-being of citizens within their

digital transformation agendas. While the framework does not yet tell us precisely what play designs or mechanisms might produce particular well-being outcomes, it already provides a solid foundation for aspects to prioritize when designing digital experiences for children or considering child-centric outcomes to target through policy development, legislation and regulation.

Indicators suggest the kinds of things that companies need to be tracking, on the one hand, and designing for, on the other. Research to determine which play designs and mechanisms might produce particular well-being outcomes are currently being undertaken as part of Phase 2 of this project, which runs from 2022 to 2023, using this framework as the theoretical starting point.

NEXT

The preliminary version of the framework gives us a lens through which we can begin to assess and discuss children’s well-being in a digital space in more detail, and on the basis of children’s own testimonies of what is important to them. We welcome anyone who is interested in taking part in this conversation to feed into, and follow, our continued work.





7.2 Opportunities for industry

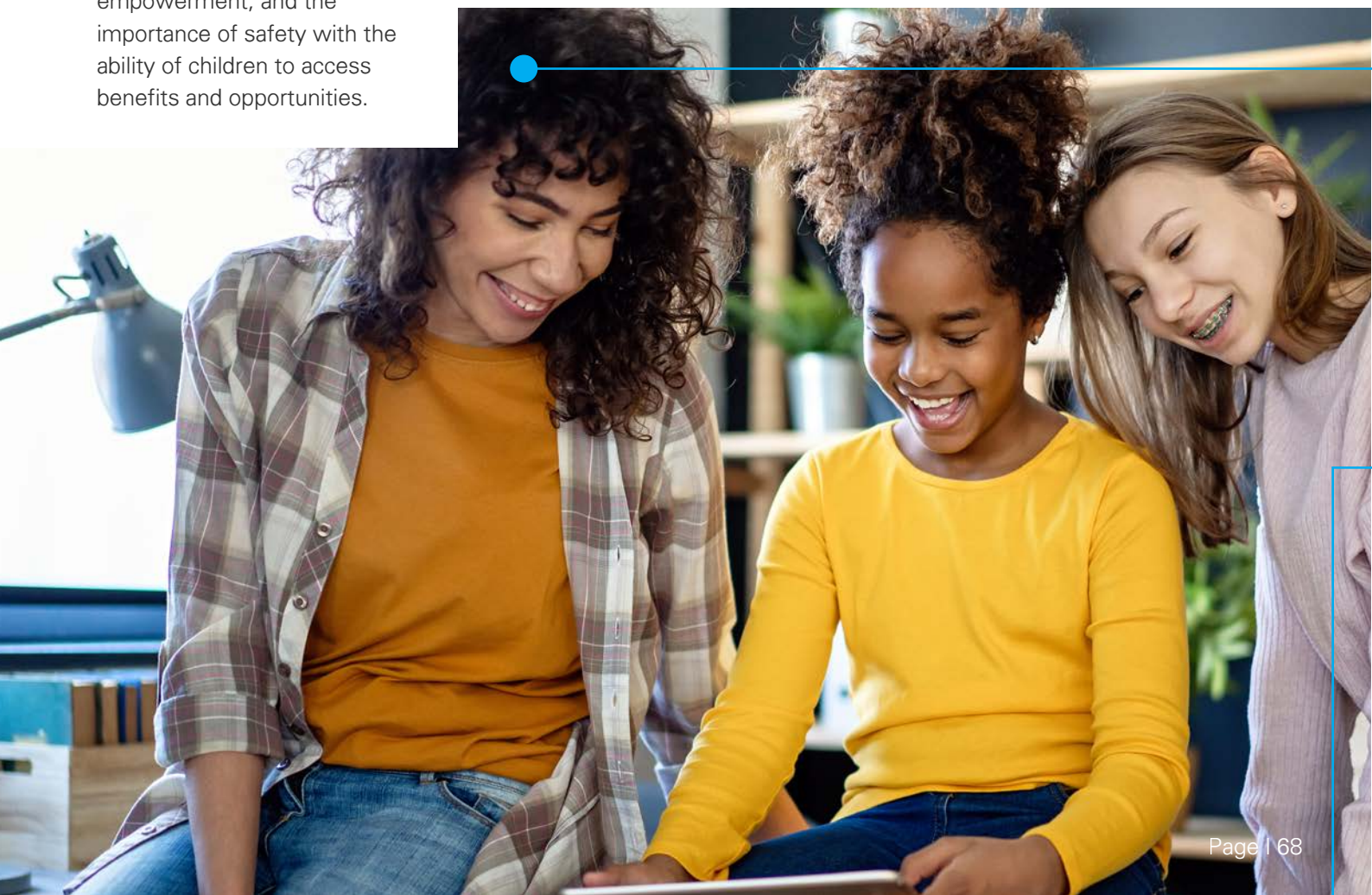
Children have a multi-faceted understanding of their well-being; companies and designers should explore this further in their own national contexts and design play experiences (content, stories, tasks) that reflect children's understanding.

We suggest for industry to take on board the following considerations.

- Design age-appropriate play experiences, aligning content with specific ages of children and stages in their development.
- Design diverse forms of play that allow all children the freedom to pursue their preferred play style.
- Explore forms of hybrid digital–physical play that require children to engage their body actively in physical and even tiring ways.
- Strive to incorporate (voluntary) social connection into play experiences, making play with others easier and more accessible.
- Integrate parents into the play experience, fostering parent–child play, parent education initiatives, and parent–child discussions about appropriateness.
- Pay attention to cultural context, employing awareness and sensitivity around gender, religion and other norms, which may also be carefully challenged.
- Build products that are accessible, especially for low- and middle-income contexts, being mindful of internet access, data costs, advertising, in-game currency and pricing.
- Invest in further cross-sectoral research in relation to the impact of digital technology on children and committing to share data, outputs and findings publicly.

7.3 Opportunities for policy makers, CSOs and government

- Recognize the diversity of children's digital experiences, rather than treating their experiences as monolithic (and negative) 'screentime'. This will enable those who work for children's well-being in a digital age to provide more nuanced and granular guidance.
- Recognize that children have unique vulnerabilities, as well as unique strengths and capabilities. Laws, regulations and codes that govern the design and deployment of digital technology and data for children should promote children's rights and their well-being, balancing the need for protection with empowerment, and the importance of safety with the ability of children to access benefits and opportunities.
- Understand children's holistic concept of well-being, including physical, emotional and social aspects and actively promote human-centric well-being outcomes through legislation, regulation and codes relating to children and technology.
- Recognize that a child is part of a broader social environment comprising family, friends and online peers, all of which influence his or her digital and real-world experiences.
- Create campaigns and initiatives that actively integrate parents into children's play experiences, whether through collaboration, discussion or other means.
- Encourage and fund independent, high-quality research on how different digital experiences influence children's well-being.
- Explore opportunities to promote digital infrastructure that can make digital experiences more accessible and enjoyable for all children.



7.4 Next steps

With the development of the interim well-being framework completed, the next phase of our work is to continue the empirical validation of the findings from our exploratory research.

Ultimately, the framework will propose a set of empirically validated design features that support aspects of child well-being, as well as a final set of indicators and measures that companies can use both to help guide their design processes and to begin to assess the impact of their digital experiences on child well-being. This work aims to be completed by 2023.

We recognise the need to continue to:

- 1 **Work openly and collaboratively in pursuit of children's well-being.**
- 2 **Welcome opportunities for collaboration and synergies with other ongoing initiatives in this area, of which there are a growing number.**
- 3 **Proactively convene cross-sectoral stakeholders that are working to further our collective understanding of children's well-being in a digital era and exploring means to foster these outcomes.**

The opportunity ahead should not be underestimated. Digital technology is here to stay, its opportunities for children will continue to grow and children will continue to engage with it throughout their childhood and into their adult lives. Collectively, we must continue to deepen our understanding of the risk of harm and commit to the adoption of measures to manage that risk. Nevertheless, this work should be complemented with a better understanding of opportunities and benefits for children, achieved through evidence-informed design choices and good corporate governance. This will help us put the rights and well-being of children first, and direct the powerful potential of digital innovation towards the realization of children's best interests.

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