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DIGITAL TECHNOLOGY,
PLAY AND CHILD WELL-BEING

Responsible Innovation in Technology for Children

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INTRODUCTION

The pervasive nature of digital technology in children's lives has changed the nature of play for many, a development that may soon reach all parts of the world. Globally, digital games are a multibillion-dollar industry that has been growing steadily for decades, attracting the attention of children in a way few other business sectors do. This leaves the digital games industry with a unique opportunity to positively influence children's well-being due to the significant amount of time children spend playing in digital environments that are designed and controlled by industry actors.

Historically, the increasing popularity and availability of digital games since the 1980s have been followed by concerns about the potential negative impacts, especially for children, leading to public discourses and industry policies centred primarily on ensuring children's safety. The work on safety has been critical, and while safety must always be a fundamental consideration, in recent years more attention has been given to the potential for digital play and digital games to also make positive contributions, for example by enabling free play, providing creative experiences, facilitating social engagement and supporting identity exploration and personal development. However, we still do not know enough about how to enable these opportunities in digital games, or whether certain design features of the digital environment are more likely to enable or impede children's well-being.

Research from the Digital Futures Commission has recently outlined characteristics of digital environments that enable free play, which has been shown to have positive outcomes for

In recent years more attention has been given to the potential for digital play and digital games to also make positive contributions to children's development.

children within and outside digital spaces. In this body of work, they noted that there has been surprisingly little attention paid to the question of how interactive digital systems could be used to improve the well-being of individuals and groups (Colvert, 2021). Meeting that challenge, and applying it specifically to digital games, the first phase of the *Responsible Innovation in Technology for Children* (RITEC) project developed a child-centred well-being framework to identify potential experiences or features in digital games that can contribute positively to children's subjective well-being in ways that are observable (UNICEF, 2021).

The RITEC-8 framework was based on a review of existing research on child well-being, extensive creative and participatory consultations with more than 300 children living in 13 countries, and analysis of survey data from 30 countries on children's online risks and opportunities.

This body of evidence showed that children feel that digital games can positively influence their well-being in a range of ways, such as increasing their feelings of competence and creativity, strengthening social connections, helping them to regulate emotions, and enabling personal exploration and identify formation.

Although this first report identified potential design features and mechanics that, in theory, should result in greater well-being for children if implemented in digital games, more research was needed to determine if these positive impacts occurred in practise.

In this second report from the RITEC partnership, we present the results from three unique research projects that engaged children and their families in six countries (Australia, Chile, Cyprus, South Africa, the United Kingdom and the United States), applying different methodologies to explore the relationship between selected digital games and children's well-being. The projects provide converging evidence of how playing digital games can and does support well-being in children.

The three research projects using different methodologies included:

1. Field-based experimental research that collected quantitative data on the effects of a multi-week digital play intervention on children's general well-being.

2. Family case studies, which were informed by ethnographic observational research. These generated qualitative data over a 14-month period with 50 children and their families to understand the relationship between digital play and well-being in the lives of different children and families.

3. Laboratory-based research on psychophysiological responses to digital play that included participatory analysis of quantitative and qualitative data together with children, to provide insight into some causal mechanisms by which digital play can enhance well-being.

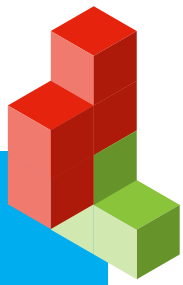
Collectively, these three studies provide a comprehensive range of empirical evidence on how digital play contributes to different aspects of children's well-being. The studies were informed by the first iteration of the RITEC-8 framework and, in turn, validate, add nuance and improve the final iteration of the framework presented in this report. The updated framework provides insights about design features and mechanics that our findings suggest will support children's well-being across aspects of autonomy, competence, emotions, relationships, creativity and identities when implemented in digital games.

EXECUTIVE SUMMARY

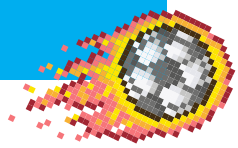
Field-based experimental research was conducted in three countries: Chile, South Africa and the United States of America. Results found that the digital play intervention significantly improved general well-being over the multi-week play sessions conducted for children in South Africa. For children in Chile and the United States, there were significant positive effects as well, but mostly amongst children with unmet psychological needs, for example those with greater feelings of loneliness and social exclusion. These children seemed to have more to gain from digital play compared with others, especially in terms of furthering their autonomy and improving parental relationships.[1]

In general, children who had a greater need for belonging saw stronger gains in their well-being as a result of digital play. For children in the United States, those with a greater need for belonging saw improvements in their feelings about their social relationships, sense of autonomy and parental relations. Those who lacked in autonomy found that playing digital games enhanced their feelings of autonomy over time and improved relations with their parents. Similarly, for children in Chile, those with a greater need for belonging and lower satisfaction with existing relationships, saw improvements to their sense of autonomy and parental relations.

Social network analyses were conducted based on observation data from the field experiment to better understand children's play in a social context. While there were some differences across countries in terms of how children interacted socially during play sessions, in all three countries, more social connections made by children during gameplay was associated with greater gains in well-being over time. Overall, these results provide converging evidence that digital play can support children's well-being by allowing them to meet specific psychological needs, including the need to connect with their peers, which can result in positive well-being outcomes over time.

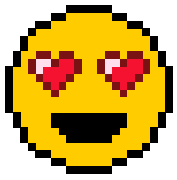


1 For the most part, the effect sizes for these results would be considered 'medium', with partial eta-squared values ranging from .03 to .06.



Family case studies were conducted in three countries: Cyprus, South Africa and the United Kingdom of Great Britain and Northern Ireland. Results found that children's digital play supported subjective well-being in relation to all the aspects of the RITEC-8 framework. **Six drivers of children's digital play** were identified in this work, reflecting the deep interests, needs and desires that were important in children's lives at the time of the study. These drivers were connected in complex ways with the environments and cultural contexts children live within. Fulfilment of these drivers, including through digital play, appears to support aspects of children's subjective well-being. These are: (i) the drive to control, collect, curate and classify; (ii) the drive to master challenges, acquire, and perform knowledge and skills; (iii) the drive to explore togetherness, empathize, tend and nurture; (iv) the drive to explore emotions and sensory stimulation; (v) the drive to create; and (vi) the drive to explore identities and deep interests. The capacity for some games to fulfil these drivers may partially explain why children chose to play specific games, or why some children found some games more supportive of their well-being than others. These findings are particularly important for understanding how and why relationships between digital play and well-being are different for different children.

The family case studies demonstrated that a range of contextual factors played an important role in shaping children's digital play and their subjective well-being in relation to digital play. These included: life transitions; neurodiversities, physical differences or disabilities, and a range of emotional and learning needs; significant life circumstances including school experiences, interpersonal relationships and experiences of control; specific family dynamics, practises and cultures; and dynamics between different environments, as in cases where children were having issues at school or, conversely, cases where digital play spanned positively across particular domains of children's social worlds, including school, places of worship or extended family communities. The contextual factors also included specific material circumstances, such as differences in household location and economies, which created unequal access to secure outdoor play space, devices, games, Wi-Fi and mobile data.



The family case studies found that specific design features appeared particularly important in supporting children's well-being. How this was done will be described in detail in this report. Some of the most important design features overall included: (i) mechanisms for customizing and creating avatars, characters, homes and spaces; (ii) choices that had real consequences for

gameplay; (iii) challenges that were personally meaningful and at different levels; (iv) control over entry and editing permissions; (v) opportunities to skip levels; (vi) representation of diverse children; (vii) accessibility for diverse children; (viii) opportunities to empathize, for example through character and narrative; (ix) opportunities to nurture and tend, for example through pet care; (x) multiplayer formats; (xi) opportunities for sensory stimulation; (xii) opportunities for physical play; (xiii) opportunities for humour, for example through humorous characters and narratives; and (xiv) opportunities to create multimodal texts.

Some of the most popular games played within the study appeared to meet multiple digital play drivers and support multiple aspects of well-being for children. However, particular design features of digital games sometimes supported, or did not support, different aspects of well-being for different children. For example, being able to skip levels supported a sense of autonomy and competence for some, but did not for others, who felt skipping levels was a form of failure.

The psychophysiological response studies found explicit links to six out of eight aspects of well-being in the RITEC-8 framework: autonomy, competence, emotions, relationships, creativity and identities.

The participatory analysis conducted together with children was found to be particularly effective in adding depth and nuance to the psychophysiological data. When children were analysing psychophysiological data and video recordings of gameplay together with the researcher, they were able to describe behavioural and cognitive strategies that they used during stimulating moments and identify different emotions during gameplay, providing clear evidence that it supported their well-being in different ways.

Although neutral facial expressions were most common during gameplay, children exhibited a wide range of observable and measurable emotions while playing, including joy, anger, surprise, fear, disgust, frustration, confusion and sentimentality. This highlights how digital gameplay provides important opportunities for learning more about emotional expression and regulation. Children who played Rocket League – a fast-paced, collaborative and competitive game – had higher heart rates and more emotional responses compared with LEGO Builder's Journey, which is a single-player problem-solving game. Emotions like confusion and surprise and frustration were commonly detected during LEGO Builder's Journey, likely reflecting the problem-solving nature of the game. Particular features of the game, such as customization options, helped children adjust their mood, relax and regain energy.

SUMMARY

In summary, this empirical research demonstrates that digital games can provide positive and measurable contributions to children's well-being. Findings from all three studies shed light on how and why digital play contributes to child well-being, which is key for turning these findings into concrete guidance for designers and companies. This work lends further support to the RITEC-8 framework as a tool to help game designers meaningfully assess and contribute to children's well-being through design, while also pointing to some of the design features that we found are more likely to make such a positive contribution.

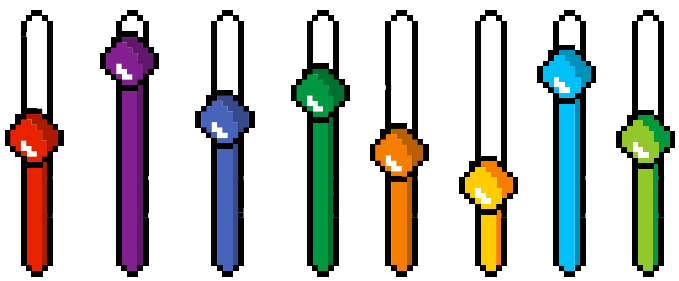
We found that digital play can contribute to many aspects of children's well-being, but that its influence is different for different children and there is substantially more evidence for contributions towards some aspects of well-being than others. Overall, we found strongest support for the potential of digital games to positively influence children's sense of autonomy and competence, their ability to understand and regulate emotions, and to form and manage relationships, as positive impacts on these dimensions of well-being were evidenced across all three studies. While across the project benefits to well-being were indicated for children regardless of current levels of need satisfaction, the experimental research suggested that the greatest gains were observed for children who were able to meet needs during play that were less fulfilled in other aspects of their lives. The family case studies similarly suggested that digital play had a particularly positive impact when it responded to children's deep interests, needs and desires, which were influenced by environmental and cultural factors. We find strong evidence that social engagement through digital play can act as an important source of social connection for children who are currently struggling in their engagement with others.

At the same time, we also find evidence that not all games are equal in terms of their potential to contribute to children's well-being. Different games support different aspects of well-being more or less, depending on their design. Importantly, we are not suggesting that one game can do everything at once for all children, just as all children do not have the same needs. In other words, a game designer probably

cannot design a game that contributes to all aspects of well-being (though safety and security and diversity, equity and inclusion are always fundamental). Rather, part of the value of this research is in helping designers identify which design features support certain forms of well-being and how this is linked to particular needs and desires of children, so that they can design games that better meet these needs and create a more nurturing play experience. The design challenge lies in understanding what positive play experiences can look like for different children, and what design choices or mechanisms are more likely to support these. We believe the RITEC-8 framework makes an important contribution to addressing that challenge, which in the long run will contribute to a digital games industry that is better able to support children's well-being and development.

As a result of these three studies, the RITEC-8 framework has been updated to reflect the new evidence generated. The updated framework presents eight aspects of children's subjective well-being that digital games have the potential to contribute to: autonomy, competence, emotions, relationships, creativity, identities, safety and security and diversity, equity and inclusion.

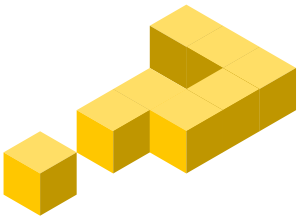
Improving and fine-tuning the framework will be necessary going forward, as new evidence around the relationships between digital play, design and well-being emerge. Actively using the framework to evaluate the well-being potential and impacts of design choices will be important for the industry going forward, in order to create a better digital play environment for children in the long term.



How do we define well-being in this report?

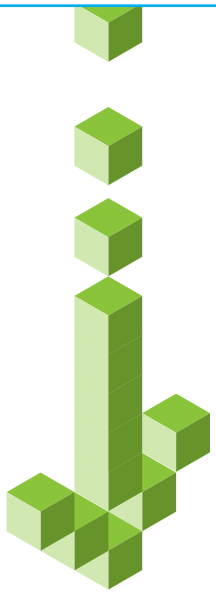
Children's well-being is related to, but distinct from, children's rights more broadly, as enshrined in the United Nations Convention on the Rights of the Child. Rights are fundamental principles that explain how all children should or should not be treated, while well-being (objective or subjective)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

It is now broadly acknowledged that children's rights apply equally in online and offline spaces and there is a strong push for children's rights to be considered in the design of digital play experiences for children. The Digital Futures Commission has undertaken significant work to understand what rights-respecting play looks like in a digital world (see, e.g., Colvert, 2021).



Noting that rights and well-being are related, this report is primarily focused on child well-being rather than child rights, and on the question of how digital games as a specific medium can be designed to contribute positively towards child well-being. Achieving this goal would likely contribute towards the fulfilment of some children's rights, but the ambition of this work is to enhance child well-being, which is different to the aim of creating a rights-respecting play environment.

For the purpose of this research, we focus only on children's subjective well-being. Subjective well-being centres on how individuals experience or evaluate their own lives and to what extent their life and current situation are positive and desirable versus negative and undesirable (see, e.g., Das et al., 2020; Diener et al., 2017). 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 a solid education (often used as objective indicators of high well-being) while still not feeling happy or hopeful about the future.



How did we select the games for this research?

All three studies involved games selected by the RITEC researchers, while the family case study research conducted in children's homes additionally involved observing which games children were playing by their own choice and as part of their everyday lives. Some of the selection criteria were of a pragmatic nature. For example, since the experimental research and family case studies were being conducted in different countries, we selected games with multi-language support for those studies that would run on tablet devices and not require high speed internet connectivity. Other criteria were related to ethics and child safety. For example, we only considered games that were appropriate for the age of each participant, and we excluded multiplayer games as they may have raised safety issues that would have been difficult to monitor. As a consequence, we are not drawing any conclusions about safety and security based on the field-based experiments or laboratory-based research, as our insights would be limited due to the research design.

Other selection criteria were related to our main research question: Can digital games enhance child well-being? Few people would make the claim that all games enhance well-being, and the field-based experiments and psychophysiological research asked specifically whether the particular games we selected can do so. To inform this selection, we conducted playtesting in which we investigated which games would support play experiences that have the potential to improve well-being in children. The games included in this research were Plants vs Zombies (tower defence with plants), Rocket League Sideswipe (a mobile vehicular soccer game), World of Goo (puzzle solving through goo ball constructions), Angry Birds 2 (puzzle solving through destruction of objects by flinging birds from slingshots), LEGO Builder's Journey (puzzle adventure through imaginative building), LEGO Tower (build and manage a tower for LEGO minifigures). The laboratory-based research used the standard version of Rocket League played on a computer instead of a mobile device.

During the playtesting, through which we selected games for later use in the main research activities, we observed participants playing a video game for 20 minutes and coded player behaviours such as facial expressions, gestures, postures and utterances as indicators of well-being in one or more of the six aspects of

well-being we adopted from the first iteration of the RITEC-8 framework. In particular, we asked whether in-game activities occurred that have the potential to enhance players' feelings of competence, agency, relatedness, curiosity, optimism and relaxation. We also reviewed the recorded gameplay video and rated the same aspects of well-being. The ratings described to what extent the participants had in-game experiences which might have contributed to a particular aspect of their well-being.[2]

We found that all games selected for playtesting involved activities that had the potential to enhance well-being, but due to their different genres and features, each game had its own strengths and supported some aspects of child well-being better than others. Results from the playtesting indicated that digital play can contribute to children's feelings of: (i) competence, for example through improved performance in terms of points, scores or goals, as well as children's strategic and technical improvements in gameplay; (ii) agency and autonomy, by enabling players to make decisions that have consequences and giving them the freedom to choose and act as they wish; (iii) relatedness and belonging, either by presenting players with characters they recognize or can relate to, or by providing a space for social conversations with other players; (iv) curiosity and openness, by providing players with exciting narratives and new characters, a space for exploration, and alternative ways of gameplay that encourage imagination and creative or innovative solutions. We created distinct well-being profiles for each game that showed its potential to enhance different aspects of well-being. To what extent this potential was actually realized over time was one of the questions explored in the field-based experimental research.

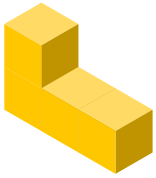
2 See published background paper for details: Plass, J.L., B.D. Homer, M. Bromley, F. Froehlich, Y. Shao, J. Young, 'Does Digital Game Play Affect Social/Emotional Child Wellbeing?', in: 'Serious Games', edited by Haahr, M., A. Rojas-Salazar, S. Göbel (eds), Joint International Conference on Serious Games, *Lecture Notes in Computer Science*, vol. 14309, 2023, Springer, Cham, <https://doi.org/10.1007/978-3-031-44751-8_11>.

HOW DOES DIGITAL PLAY CONTRIBUTE TO DIFFERENT ASPECTS OF CHILDREN'S WELL-BEING?

Select a model component to jump straight to it

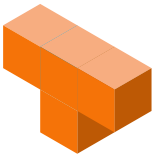
OK

Autonomy



Competence

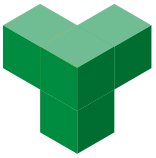
Emotions



Relationships

Creativity

Identities

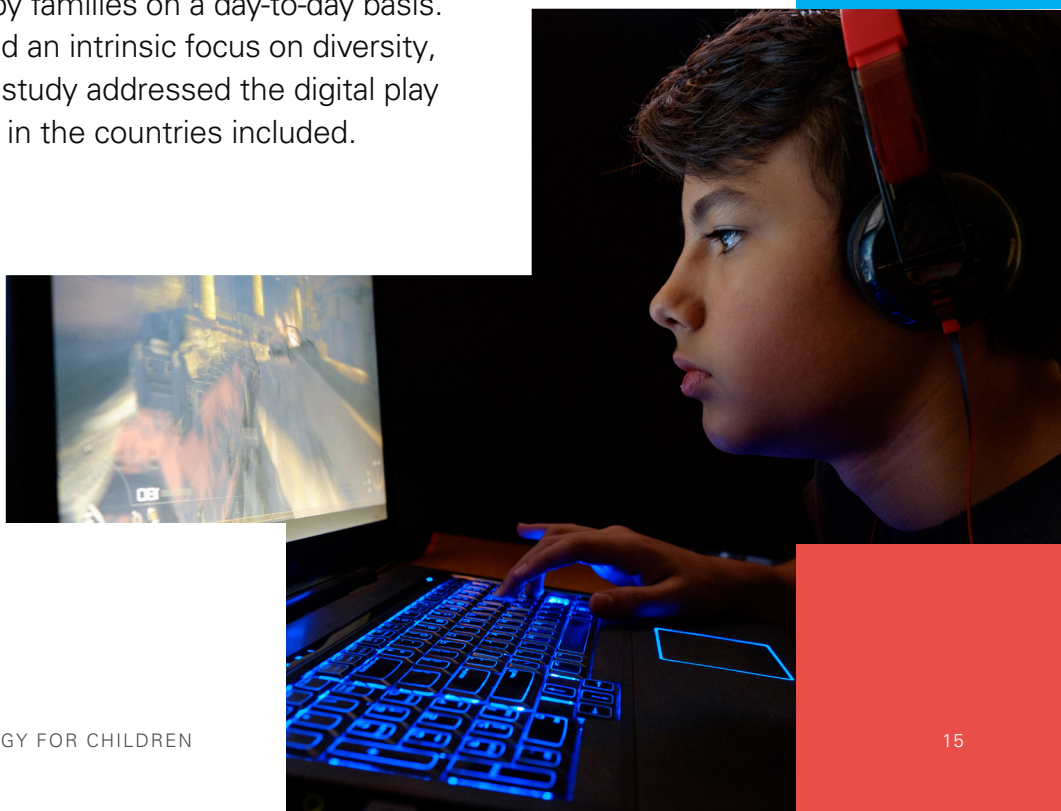


Diversity, equity and inclusion

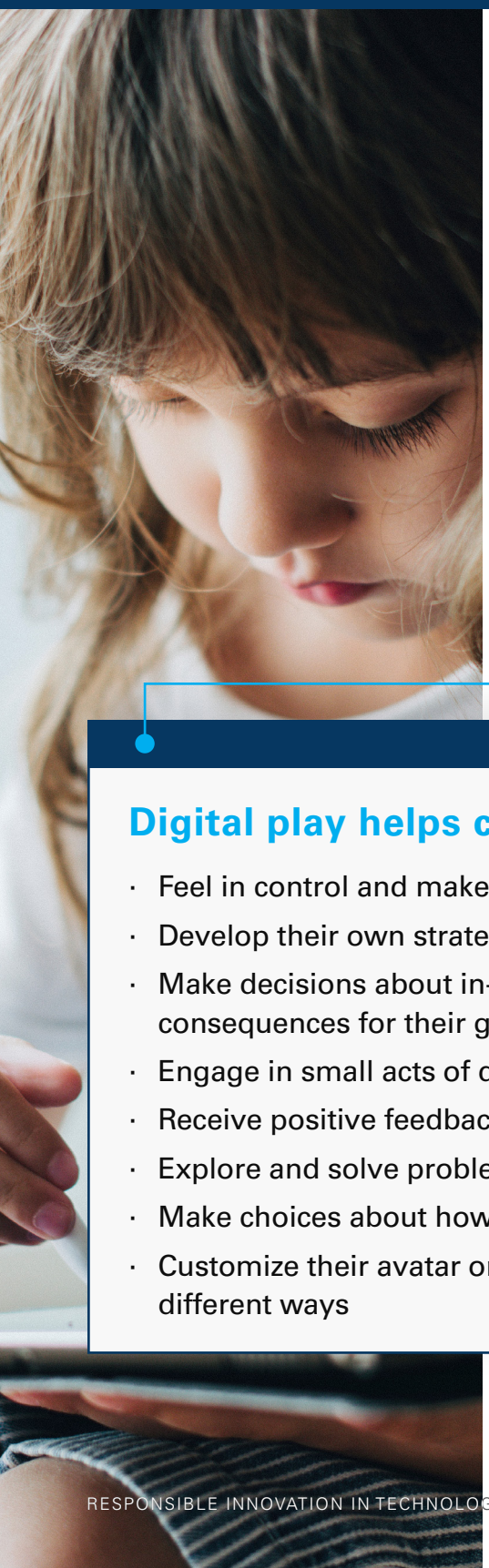
Safety and security

Drawing on results from each of the three research studies, this section presents the complete and updated RITEC-8 framework and provides detailed evidence on how children's digital play supports different aspects of their well-being. While the three studies are comprehensive, there are likely to be additional gains to children's well-being from digital play that we did not manage to capture through this research, including in other domains not captured by the RITEC-8 framework as well as benefits that accrue over longer time frames.

Specifically, our research did not have an explicit focus on safety and security, even though this is of fundamental importance for digital design. This was in large part because safety and security has been extensively covered by a wide range of other studies, but also because our game selection for the field-based experiments and psychophysiological studies did not include games or elements of gaming that were particularly risky. Even so, through observing children's and families' interactions with digital games over an extended period in our family case studies, we are able to make some contributions to our understanding of how digital safety is managed by families on a day-to-day basis. Our family case studies also had an intrinsic focus on diversity, equity and inclusion, since this study addressed the digital play of diverse children and families in the countries included.



AUTONOMY



Digital play allows children to:

Experience a sense of control and agency

Have freedom of choice

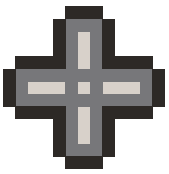
Digital play helps children to:

- Feel in control and make decisions about their gameplay
- Develop their own strategies to make progress
- Make decisions about in-game behaviours and actions that have consequences for their gameplay
- Engage in small acts of deviance, testing the limits of social convention
- Receive positive feedback on digital creations
- Explore and solve problems in the game, without a single determinate solution
- Make choices about how, when and what they build and create
- Customize their avatar or persona or other in-game objects in a range of different ways

Why is autonomy important for children?

Having a sense of autonomy, control, agency and choice can be beneficial even for very young children.

It has been 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). Enabling children to have agency and make meaningful choices is necessary for both motivation and psychological health to flourish (Deci and Ryan, 2000).



How can digital play enable feelings of autonomy?

The first report from the RITEC partnership found that children believed digital play can contribute to their sense of autonomy in various ways and can be particularly effective in doing so when designed in a suitable way.

For example, children want to feel in control and be able to make decisions about their gameplay that have consequences, derived from the player's freedom of choice and action. 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. 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 (Third and Richardson, 2010).

Our results across the three studies show that children experience autonomy through digital play in a range of different ways. The experimental research found evidence of significant gains over time in children's sense of autonomy when playing digital games. For example, children in the United States with a greater need

for belonging saw improvements in their feelings about their sense of autonomy after the digital play intervention. This effect was particularly strong for those who lacked in autonomy prior to the intervention. Similarly, for children in Chile, those with a greater need for belonging and lower satisfaction with existing relationships saw improvements to their sense of autonomy from playing digital games.

This suggests that feelings of autonomy through digital play may be even more important for children who lack opportunities to express autonomy, agency and choice in their everyday life.

Findings from our family case studies suggest that for children who experienced autonomy in other (non-digital) domains of their life, this seemed to take on less importance in a digital play context, which instead mainly offered opportunities for relaxation and fun. Conversely, for those children who perceived a lack of autonomy in everyday life, it was particularly important that digital play contexts allowed them to feel autonomous.

For 10-year-old Jemima in the United Kingdom, who experienced significant personal challenges associated with control, including becoming restrictive about what she was eating, leaving the house and who she did and did not speak to, the ability to choose the games she wanted to play appeared to support an important sense of autonomy. She expressed this by establishing when she wanted to play socially (and when she did not) and had taken a lead in asking her personal assistants to download Roblox and teaching them how to play. Jemima also felt empowered to make decisions about in-game trading, around what pets she wanted to acquire, or what trades she would like to offer and to whom.

In our playtesting research with children playing Plants vs Zombies, children stressed that being able to develop their own strategies to survive the zombie waves was important, as timing and positioning of plants could have severe consequences on the outcome of a round. The game World of Goo supported a similar approach: the decision of where to place a Goo could impact the overall build under construction. Both games shared the feature that players could solve levels in multiple ways without a single determinate solution, which meant that players could experience agency and autonomy. This was different from LEGO Builder's Journey, for example, which on most levels only allowed the player to build via a predetermined path. Player decisions had only short-term effects, as opposed to the longer-term strategies required by Plants vs Zombies and World of Goo.

In a similar vein, in our family case studies, 12-year-old Ethan from Australia said that he particularly enjoyed playing Legend of Zelda: Tears of the Kingdom because the strategic puzzles within the game afforded diverse solutions and enabled players to devise their own way of doing things.

> "The Legend of Zelda: Tears of the Kingdom came out. I really love that game. And actually, ... also I think it's helping me with my school in a way. It's because like, the game encouraged like, thinking a lot and like using critical thinking and stuff. It's ... because there are always puzzles. Like, you need to create things and try to figure out a way around things ... I guess that game was designed so that everyone plays differently? And they have their own way of doing things?"

START

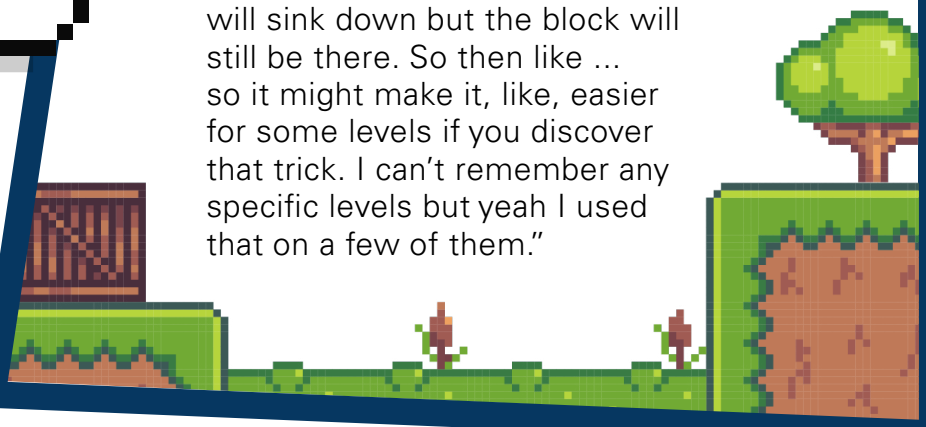
The psychophysiological research demonstrated similar results to the playtesting and family case studies. In a conversation between a researcher and a 13-year-old boy from Australia about a moment in the game that had elicited joy, the boy described how at that moment during the gameplay he had multiple options available to explore and solve problems, resulting in a sense of autonomy.

1

Researcher:
"What decisions did you get to make in this game about where to build or anything like that?"

2

Boy 13, Australia:
"Like where to build and then I think there's also some … puzzles where there are like multiple ways to see the solution. For mud, if you place a block on it, then it won't … then when you jump on it, the mud will sink down but the block will still be there. So then like … so it might make it, like, easier for some levels if you discover that trick. I can't remember any specific levels but yeah I used that on a few of them."

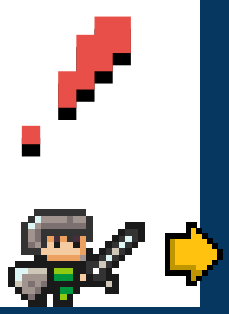


Researcher:
"So when you found some, you know, different choices or decisions, how did that improve or not improve the game for you? The gameplay or feelings of the game?"

3

4

Boy 13, Australia:
"It was cool, because it wasn't just like solving a task anymore. It was like you could like get to choose … there are like different ways to choose how to do it. So like there's exploration in to how you can solve it instead of just doing [inaudible]."

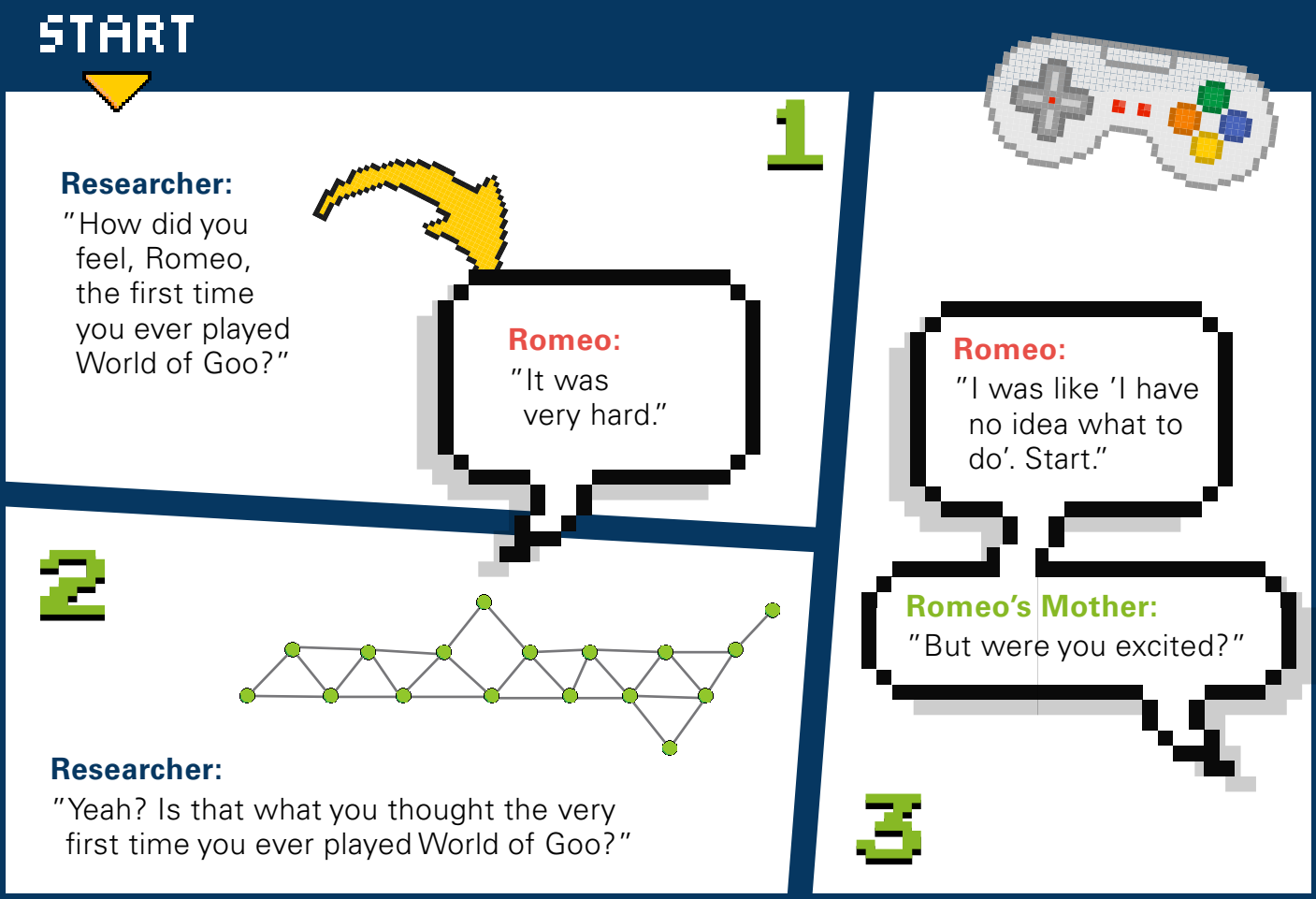


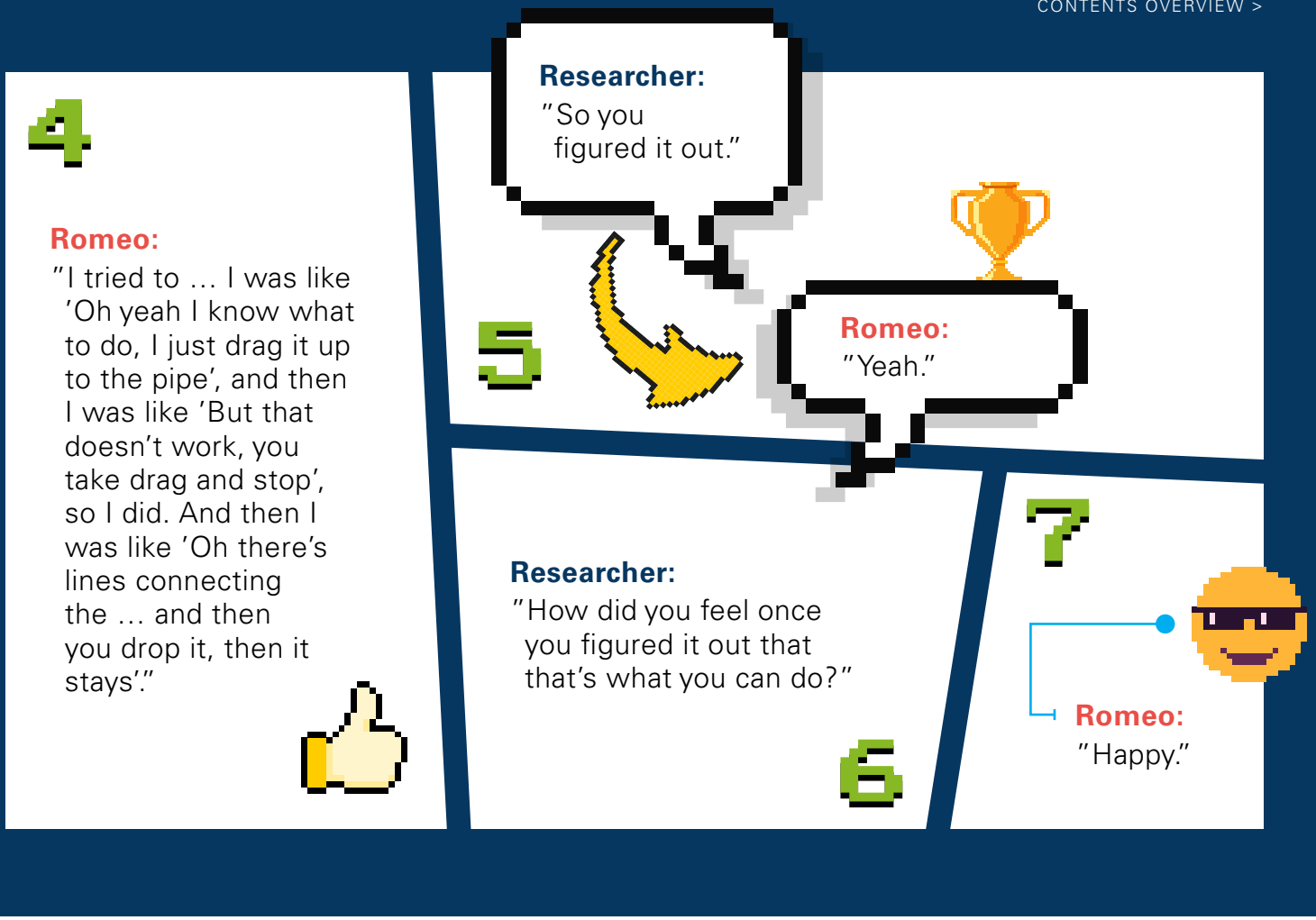
Many children appeared to experience autonomy through choices about building and creating. In the United Kingdom, 10-year-old Henry expressed a preference for games where he could design, create or build things. His favourite was the Theme Park Tycoon 2 game, within the Roblox platform.

Henry highlighted the importance of choice and freedom.

> "You get to design your own rollercoaster ... how long the track is and if you want you could make a loop or something ... it gives you the options to make it however you want, you don't have to do it like how it says ... you get to do whatever you want and just create your own theme park."

In terms of design, opportunities to encounter and resolve strategic challenges and engage in problem-solving emerged as a key part of autonomy. This aspect was discussed in a conversation between the researcher and Romeo, a 7-year-old boy from the United Kingdom.





For other children, feelings of autonomy were associated with choices that had little or no consequence for gameplay in terms of narrative or experience but were nonetheless personally meaningful. Avatar customization was an important contributor to feelings of autonomy. In some cases, customization of avatars connected strongly with explorations of personal identity, although children also experimented with designing avatars that looked very unlike themselves, including with different skin colours. In Cyprus, 7-year-old Ariadne felt a sense of autonomy in relation to choosing the clothes and hair for her panda in the virtual pet care game Virtual Pet Panda Adventures.

In our family case studies, researchers found that when children talked about autonomy in relation to their digital play, they often related this to positive emotions, emphasizing a connection between feelings of autonomy and positive affect.

Penny, a 9-year-old from the United Kingdom, shared how she felt.

> "It makes me feel free, finally it makes me feel like I'm just … I'm like Charlie [family dog] that's just been let out of his cage after six hours. Freedom!!"

Digital play also provided opportunities for children to experience agency through small acts of transgression, for example through games that afford playful sabotage and mischief. In one case, 9-year-old Pinar in the United Kingdom gleefully told a researcher about a time when she blew up her mother's Minecraft house.

COMPETENCE

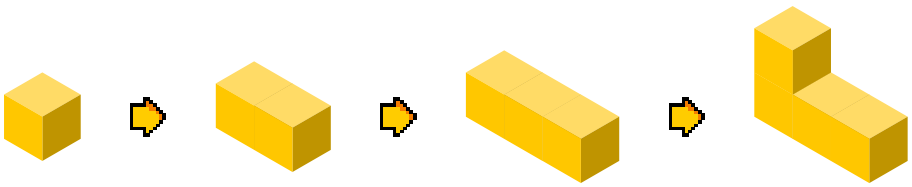
Digital play allows children to:

Experience a sense of mastery

Feel they can achieve goals

Digital play helps children to:

- Experience progress and be meaningfully rewarded/congratulated for progress through, for example, markers of improved performance in the form of points, scores or goals
- Build or create, ranging from building with blocks through to customizing/personalizing avatars
- Continually adjust their in-game strategies, based on what they learn
- Overcome challenges with particular activities and pass levels
- Engage in sustained practise of new skills/competencies to overcome challenges and experience a sense of getting better at something
- Incrementally master small components of strategizing, planning, creating and building
- Foster knowledge acquisition and skills building in something that is personally meaningful to them
- Partake in activities that interest them and identify and explore their intrinsic motivations
- Engage in aspects of gameplay that support them to persevere with and overcome challenges
- Incrementally master small components of strategizing, planning, creating and building



Why is competence important for children?

Building new skills and knowledge in life is key to children's well-being.

A child's perception of competence refers to their belief that they can develop, learn and achieve a given goal if they put effort into it. When a child has competence, they are able to complete specific tasks, experience increasing independence, and feel satisfaction from their capability (Alonso, Tare and Rood, 2024).

Competence has been positioned as a basic psychological need (Deci and Ryan, 2008) and is often considered an important aspect of psychological well-being for children (Fattore, Mason and Watson, 2007). 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.

How can digital play enable feelings of competence?

To maximize competence, children should experience an optimal level of challenge for them in the activities in which they engage: too little challenge, and children will experience boredom; too much challenge, and they will feel overwhelmed (Alonso, Tare and Rood, 2024). Where this boundary lies is necessarily individual.

That children experience feelings of competence and engage in knowledge acquisition and skills building through digital play was evident across the three studies. We found that children develop a sense of competence when playing by gradually improving their skills (and therefore performance) in the game, or by persevering with and overcoming challenges. For games that are not primarily about performance, children can still develop a sense of competence by getting better at elements that involve strategizing, planning, creating and building.

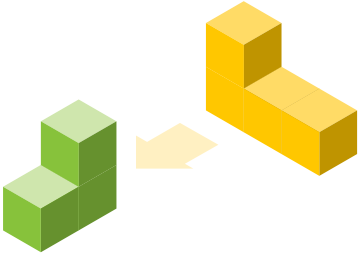
In our playtesting research, competence was relatively easy to observe through extrinsic rewards players received, as an increase in competence was related to improved performance calculated by the game and communicated to the player in the form of points, scores or goals. For example, in Rocket League Sideswipe, the number of goals and defences acted as indicators of competence, with players receiving immediate feedback on their performance.

Apart from those easily measurable outcomes, improvements in actual gameplay was another observable indicator of competence. Players got better at the games and were able to continuously adjust their strategies based on their performances. We observed children reacting with positive emotion to in-game events that supported feelings of competence. When being awarded certain achievements, they smiled, yelled out "yes" and jumped off their chairs with their hands raised in victory. They showed confidence by giving themselves pep talks and disparaging their virtual opponents. During our conversations with the children, they often presented clear ideas about the best strategies and about why they won or lost at the end of their gaming sessions.

Observing and assessing competence was more difficult in some games than others. For example, puzzle games, such as LEGO Builder's Journey, are non-competitive games with no built-in scoring system. LEGO Builder's Journey invites the player to solve puzzles by exploring and playing with bricks to solve a puzzle. Although it is possible to track the time and number of attempts players needed to solve a level, the game is not designed to rush through levels or to finish in one attempt. Therefore, perceived competence is less likely to occur if children play this game solely with the intention to complete it as quickly as possible but is perhaps a more likely result if they engage with the overarching story and complete all the puzzles successfully in the end.

The theme of overcoming challenges as a pathway towards feelings of competence was also prominent in our family case studies. However, the types of challenges that were motivating were different for different children, suggesting that different types of challenge may be needed to support feelings of competence for different children.

Making progress in relation to goals or level-based challenges was a clear source of feelings of competence for some children. For example, one parent of a 7-year-old in the United Kingdom noted the pride their child demonstrated when passing levels in World of Goo.



> "If he then passes a level he'll feel really like … Yeah I've done it! You know, he'll be really proud of himself, like … Yes! 'You know that's quite hard, did you see that mama? I did that!'"

Similarly, in South Africa, 9-year-old Tinotenda's mother said that digital games can boost children's confidence, giving them an opportunity to see that,

> "They can do it!"

Many of the children who enjoyed games like World of Goo experienced frustration as part of the process of overcoming the game's challenges. Indeed, it appeared that a certain level of frustration was important in spurring them on to keep trying levels and developing their competence further. For example, in South Africa, 11-year-old Nkosinathi said that he found playing World of Goo exciting despite his expressions of frustration. Nkosinathi explained that this game helped him to learn how to concentrate and to try different strategies, which is a key component of developing competence. Also in South Africa, 9-year-old Quinn, the older brother of 6-year-old Anna, appeared eager to help his sister succeed in World of Goo by making encouraging comments ("You're close!") and offering prompts, while leaving space for her to discover things for herself.

It was clear that challenges in digital play could sometimes introduce the risk that feelings of competence may be undermined. For example, in the case of Ollie (an 8-year-old boy living in the United Kingdom), in-game obstacles that he could not easily overcome sometimes provoked frustration and anger. Ollie had been excited to play LEGO Builder's Journey since the start of the project and seemed to be getting on well during his first play, until increasingly difficult strategic challenges in the game began to frustrate him to the point of wanting to give up, triggering strong emotions.

"Did you see that mama? I did that!"

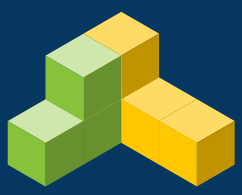
> "I hate this game. I, literally, just this part … I hate it … I don't even want to do it … I just wanna … I don't want to do this part."

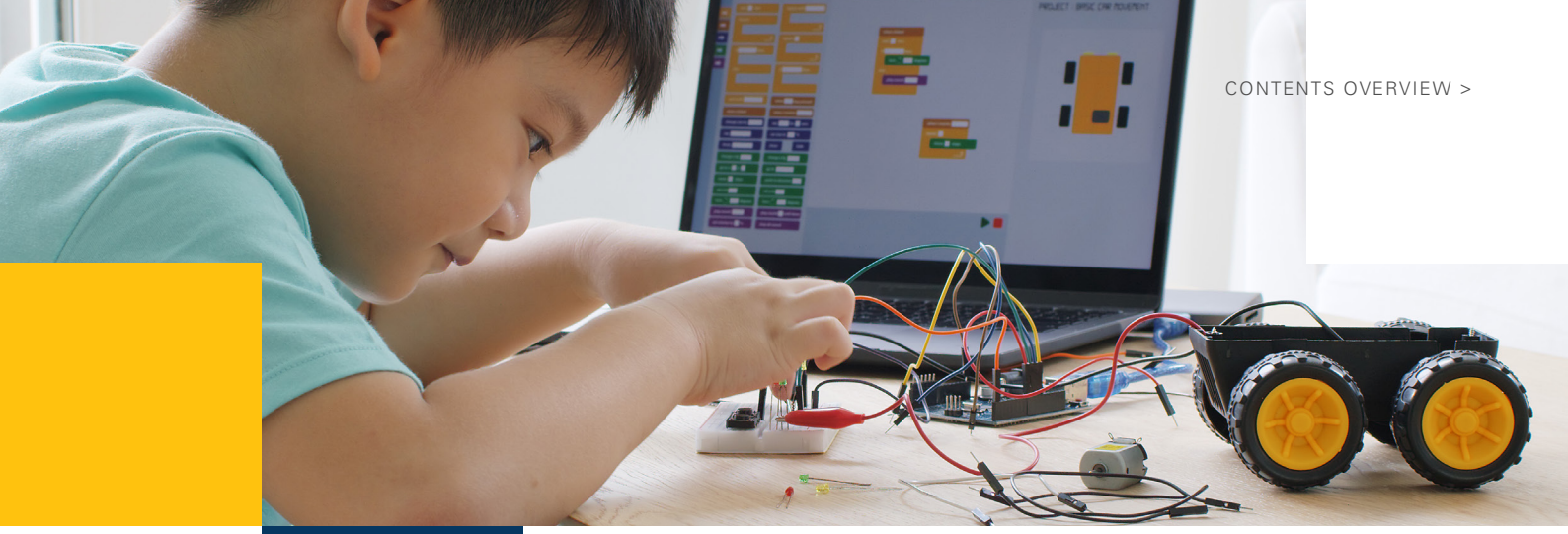
However, children demonstrated various strategies for balancing the positive and negative aspects of well-being associated with such challenges, such as controlled disengagement and re-engagement or seeking guidance online. Parents also helped children develop emotional resilience in relation to these challenges. For example, Ollie revealed during a subsequent visit (four weeks later) that he had returned to the game and completed it. Ollie's mother supported his emotional resilience when he played digital games, including acknowledging and naming the difficult emotions by asking, "It's really frustrating isn't it?" This demonstrates linkages between competence and emotions (another aspect of the RITEC-8 framework), and shows how digital gameplay can provide an opportunity for parents to support children both in building competence and skills, but also in learning how to regulate negative emotions in case of frustrating or challenging experiences.

Beyond making progress in relation to goals or level-based challenges, children in our family case studies experienced feelings of competence by developing knowledge and skills that were personally meaningful. A sense of competence associated with skills and knowledge was often the result of sustained practise and engagement.

For example, in Cyprus, 9-year-old Romeos dedicated substantial time to honing his skills in playing FIFA on the PlayStation and in watching YouTube videos related to FIFA gameplay. Romeos seemed to experience feelings of joy in connection to his dedication to FIFA practise and the subsequent experiences of expertise.

> "Because when you play, the first day … Uh, in a week, you'll get better if you practise … I'll feel nice … Because I have something to get involved in, for a lot of time."





Relatedly, some children felt a sense of competence in relation to what they had created within digital game contexts. In the United Kingdom, many children appeared proud when showing their parents things they had built, including Minecraft builds, houses in Bloxburg and rollercoasters in Theme Park Tycoon 2. Others liked to show their parents the avatars they had created, including how they had customized their hair and outfits. This demonstrates how children's feelings of competence can be associated with building and creating, which emphasizes the roles that individual digital play drivers can have in terms of children's perseverance and, ultimately, their sense of competence.

As with autonomy, findings from the family case studies suggest that for children who experienced a lot of challenges and associated opportunities for mastery in other (non-digital) domains of their lives, digital play was a less important context for experiencing feelings of competence, and instead offered opportunities for relaxation and fun. For example, though school achievement was considered very important in Adaobi's (11-year-old girl from the United Kingdom) family and achievement was sometimes a source of anxiety, Adaobi was only minimally affected by losing in her digital play, her family referring to her as the 'Calm Master'.

The psychophysiological research, specifically in the participatory analysis of observational data, found several clear linkages between in-game events or behaviours and children's feeling of competence. Twenty-seven examples of children expressing feelings of competence were identified by children themselves across the video-recorded play sessions. For example, expressions of competence occurred when players experienced difficulty with progressing in a particular activity, when they made progress in the game, when they experienced uncertainty about how to complete a task, or when scoring points or a goal.

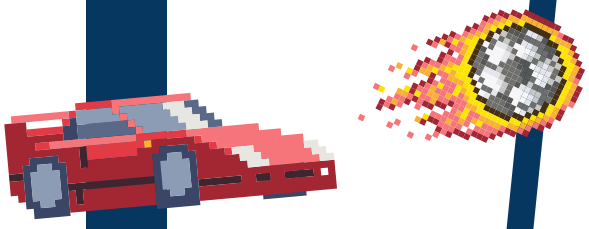
START

Researcher:
"How do you feel when you get a good trick shot?"

1

2

Boy, 11, Australia:
"I feel important and that I should like learn to actually know how to do the trick on purpose."



3

Researcher:
"Why do you feel important?"

4

Boy, 11, Australia:
"Because like all the very good Rocket League players, they do that kind of stuff too. And I felt like kind of low to them. So when I pulled something off like that, I felt like I'm at their level."

Players also highlighted the ways in which games like LEGO Builder's Journey facilitated confidence.

Boy, 12, Australia:
"I was just trying to figure out, like, trying out the different pieces to see which would work. I'm just trying to get the hang of the game. Then, yeah, so just trying it out. And then when I got it, then it felt very good. Rewarding."

1

2

Girl, 10, Australia:
"I felt proud. And happy that I moved on to a further level than the usual zone. This time was bigger and longer. I went to new levels every time. I didn't really have much time. Because it was my first time playing it to get used to it. It was not easy."

EMOTIONS

Digital play allows children to:

Experience a range of emotions

Be aware of their emotions

Regulate their emotions

Digital play helps children to:

- Continuously engage without interruptions, leading to flow states where they become immersed in a feeling of energized focus, full involvement and enjoyment in an activity
- Experience positive forms of calm, quietness and escapism, enabling children to de-stress
- Enjoy pleasant music or images that contribute to positive mood and relaxation
- Experience negative emotion, including fear, risk and anger, and build resilience and skills necessary to deal with them
- Find off-ramps when negative emotions arise
- Provide sustained attention for children who live with disabilities or who are neurodivergent

Why is experiencing and regulating emotions important for children?[3]

Emotional regulation is the process of monitoring and managing heightened emotions in a given context.

Engaging in play, including digital play, provides children with an opportunity to practise and build emotional regulation and can provide avenues to process important emotional events. Children experience a range of emotions like frustration, joy and disappointment through play and it can help them develop the skills needed to recognize and respond to their emotions (Alonso, Tare and Rood, 2024).

Being able to regulate emotions has been linked to a variety of outcomes such as social functioning (Eisenberg, Spinrad and Eggum, 2016; Zeman et al., 2006), school readiness (Harrington et al., 2020; Ursache, Blair and Raver, 2012) and emotional well-being (Djambazova-Popordanoska, 2016). A review of evidence by Eisenberg, Spinrad and Eggum (2016) suggests that the emotion-related regulatory processes developed more quickly in the early years of life and slowed down during adulthood.

[3] It is important to emphasize that when this research refers to 'regulating' emotions, we refer to the ways that children are aware of their own emotional needs and engage voluntarily in digital play in service of these needs.

How can digital play enable children to experience and regulate emotions?

Children play digital games for a wide range of reasons, which include to experience a range of emotions, adjust their mood, relax and regain energy to engage with peers and the world.

The first report from the RITEC partnership found that digital games can help children de-stress by providing positive forms of calm, quietness and escapism. This includes playing 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. This was previously referred to as "emotional regulation" in the RITEC-8 framework, but was adjusted in this report to emphasize that being able to experience and develop a better awareness and understanding of emotions during digital play has significant benefits for children, in addition to learning how to regulate them.

It was evident in all three studies conducted for this report that children engaged in digital play to relax, mitigate feelings of stress and anxiety, seek comfort and calm down, all of which can influence their well-being positively. Our playtesting research found some evidence that a game's pleasant music could put players in a positive mood, which could also contribute to an experience of relaxation. In our observations, players generally presented a calmer demeanour when playing self-paced games where they were in control over the tempo, such as LEGO Builder's Journey and LEGO Tower, compared with more competitive and fast-paced games like Rocket League Sideswipe. When players were confident that they would win, we observed more relaxation in their postures. For example, in Plants vs Zombies, players who had built strong defensive positions, with plants that could easily fight off the zombies' advances, leaned in relaxed positions on their backrests or played with only one hand.

In our family case studies, it was clear that different children engage with digital play to experience or regulate a range of different emotions at different times and that individual life circumstances play a role. We found evidence that children were playing games to regulate their moods. Liana, a 10-year-old in Cyprus, would play games on her iPad to relax, 11-year-old Luke said that playing digital games helped him to keep calm, while 9-year-old Tinotenda said playing games like Kick the Buddy was a good form of stress relief.

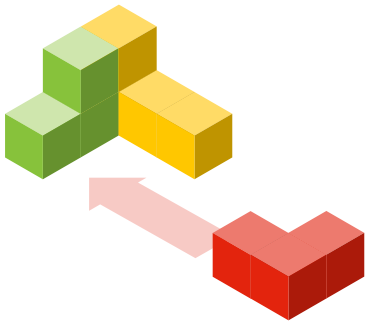
> "I think it's a stress game. ... It's like a game that gets out your stress."

Ethan, 12 years old, was aware of his own propensity to become overly competitive and put too much pressure on himself, and would try to regulate this, trying to engage with play as a form of escapism and avoid becoming too competitive. Penny, 9 years old, showed awareness of her emotional state while playing and would simply turn a game off and have a break when she began to find it upsetting. Ariadne, 7 years old, avoided playing digital games that felt too difficult for her, and if she encountered frustration, she tended to stop before negative emotions arose.

In some cases, seeking a sense of calm from digital play appeared to connect explicitly with specific factors affecting children's well-being in other ways: 12-year-old Logan, who articulated feelings of dread on Sunday nights, knowing that school would start again the next day, appeared to play to distract himself from the anxiety.

> "... just that rubbish feeling where it's like 7 o'clock on a Sunday and the weekends just fly by and you've got Monday morning tomorrow back at school, and I just hate it ... It's just normally I'm here having fun and can do what I want and I've got used to that habit, just playing and doing what I want. And then I'm back at school and it's just miserable boring work."

Children also appeared to play digital games to stimulate flow states. In South Africa, Nkosinathi talked about how games like Subway Surfers helped him to concentrate. In the United Kingdom, 12-year-old Thomas said he particularly liked games which afforded what he called a sense of 'fluency'. These appeared to be games that supported continuous engagement without interruptions. Being in this state of flow was experienced as feeling 'good' and 'happy', feelings that were associated with continuity of experience



> "It feels good because like you can just keep on going and you have to just ... you feel happy because you don't have to keep on like re-trying."

Thomas' father added his own thoughts, which also emphasized continuity.

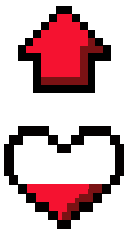
> "I thought that ... idea of fluency as he described it, or flow, I kind of got that in terms of there not being a hard ... end to his involvement, that actually the games that he was, kind

> of, talking about allowed him to, kind of, stay and not ... have to suffer from dropping out completely and having to, kind of, you know, have a ... limit on his ... engagement."

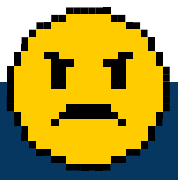
Digital play can also serve useful functions for children living with disabilities or other difficulties. In the United Kingdom, Ollie's mother talked in depth about the idea of digital play and its ability to support sustained focus for children like Ollie. Although they have not begun the formal process of a diagnosis, she noted that Ollie exhibited some symptoms of attention-deficit/hyperactivity disorder (ADHD), finding it hard to relax. She said both of them struggled to concentrate: "Our attention can be all over the place a little bit if there's nothing really to lock into."

Arts and crafts helped her to achieve this focus and, indeed, her favourite activity to share with Ollie was sustained art and craft tasks. For Ollie, she noticed, digital play served a similar function, particularly within games like Minecraft that offered continuity of experience.

Similarly, 10-year-old Jemima, from the United Kingdom, has autism. She has also been diagnosed with pathological demand avoidance, so leaving the house for her was a cause of anxiety and was sometimes experienced as both an abrupt change in routine and a cause of sensory overload. Digital play was a vital means of self-regulation for Jemima and just holding digital devices when she left the house brought comfort and helped her keep calm. The role of digital devices as comfort objects appeared connected with Jemima's knowledge that holding digital devices gave her the option of engaging in digital play, which she would often do to stay calm, and appeared to offer a sense of continuity between home and other environments. When asked what the world would be like if there were no digital devices or digital games, Jemima immediately responded: "Death".



Of course, children may also play digital games to feel emotions like joy, pleasure and happiness. Many children said they experienced joy when they won in digital games or achieved something of note. At the same time, some children also appeared to play digital games to experience seemingly negative emotions, including fear and risk, and some experienced anger as part of their gameplay.



In the psychophysiological research, when one 7-year-old boy from Australia reviewed and analysed his facial expressions during gameplay, he agreed that he experienced a moment of anger in the game but then explained how he quickly got over it and focused on the next step. This was the conversation between the researcher and the 7-year-old boy.

START

1

Researcher:
"It looks like there's more and more anger as the game progresses. Why do you think that is?"

2

Boy, 7, Australia:
"I don't know. I mean there was a little bit ... Oh, because the other team ... I felt like I was upset that the other team was like, come on, man, like bro. Like, it's so so unfair how they're so good."

Researcher:
"Okay, how did you ... so if you were feeling these negative emotions, how did you recover afterwards?"

3

4

Boy, 7, Australia:
"Because I probably scored the goals or just I forgot about it ... Because the game, like I told you before, has boosters, [you can] customize your car ..."

In another example, a participant in the psychophysiological research reviewed their heart rate data during a period when they felt stuck in the game, which had brought on feelings of annoyance and sadness for them. As they persevered, they found ways to overcome the obstacles in the game. They subsequently report feelings of energized focus, involvement and enjoyment in the activity, and succeed in regulating their emotional state. For example, this was a conversation between a researcher and a 10-year-old girl from Australia:

START

1

Researcher:
"Here your spike did go above the line and went down under the lines. I wonder what's happening in the game here, do you think?"

Girl, 10, Australia:
"Oh, I was stuck ... I couldn't ... I was ... I thought I could go up but I couldn't."

2

3

Researcher:
"Oh, how did that make you feel?"

Girl, 10, Australia:
"Annoyed."

Researcher:
"Yeah. Anything else?"

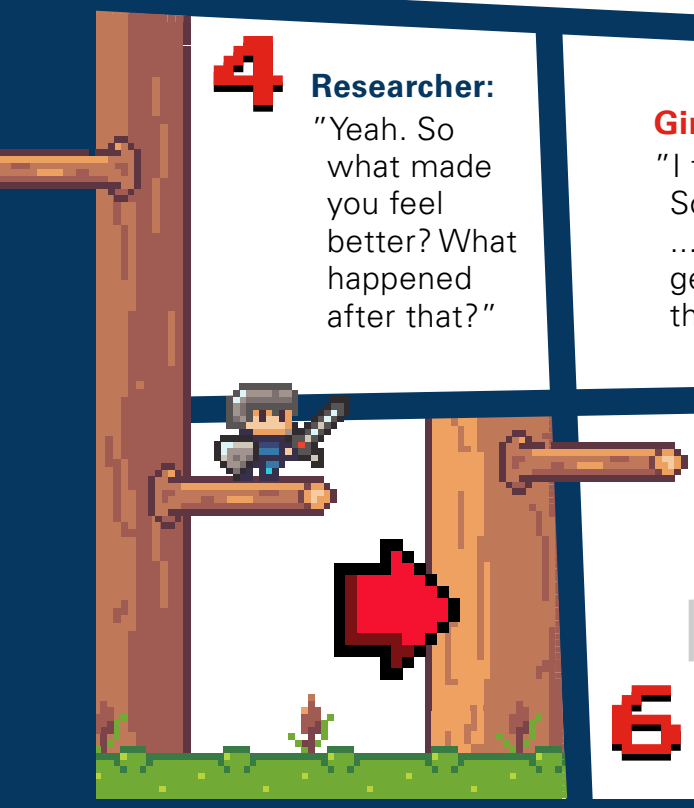
Girl, 10, Australia:
"A bit sad because I was close but I couldn't go up."

4

Researcher:
"Yeah. So what made you feel better? What happened after that?"

5

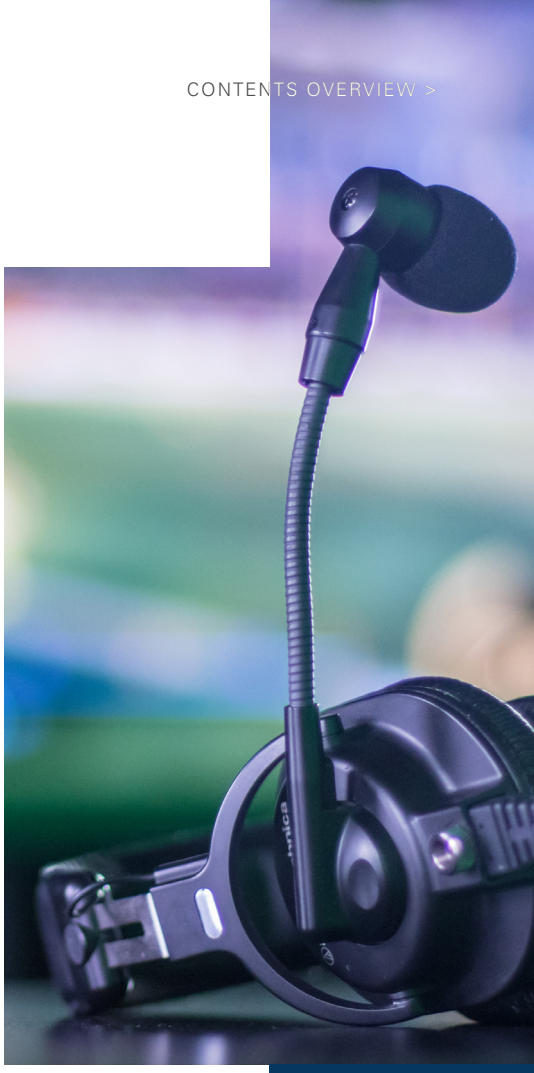
Girl, 10, Australia:
"I found a way to get up ... I played with it. So I moved ... I thought, what could you ... How could you get up? And how do you get up if I was actually in the game, and then I put it there and then I got there."



6

Researcher:
"So when you were able to achieve that, what did that feel like?"

Girl, 10, Australia:
"I felt happy."



These examples show that challenging experiences in digital games can provide opportunities for emotion regulation skills to be developed and used by children. Strategies used to regulate emotions during the research included positive self-talk, laughing it off, blowing out their breath and reconceptualizing events as funny. The findings highlight that the participants were aware they were experiencing genuine emotions. However, they were also aware that games offered a relatively safe space to explore emotions and used that understanding to practise techniques so they could move on and try to enjoy the games again, and to practise managing emotions in ways that they could apply beyond digital play. In Australia, during one home visit, 6-year-old Miles' parents both perceived that digital play could present situations whereby things may not have gone as Miles expected or desired, such as losing in a game. But through these experiences, Miles' parents perceived that he built resilience by experiencing and learning to cope with feelings of frustration and disappointment. Also in Australia, 8-year-old Elly's mother expressed hopes that Elly's work to manage her frustration when playing Nintendo, through breathing exercises and temporarily removing herself from the game, might transfer back to better experiences within her conflicted school friendship group in the longer term.

Indeed, these skills may transfer to real life situations, especially when children are supported by their parents to recognize these emotions and regulate them in a way that serves their well-being. Several parents in the study appeared to engender a sense that they were in the challenge with their child, by using inclusive first-person language ("How do we get past it?") or finding ways to encourage their children when they were disheartened ("I'm sure we can figure out what to do…").

However, parents engaging in this sort of supportive engagement can face a complicated balancing act in weighing longer-term emotional development against shorter-term emotional experiences. Sometimes, parents were observed to actively complete parts of the games for their children or find solutions for them, without requiring the child to conquer the challenges that were frustrating or prohibitive to further gameplay. For example, 7-year-old Ariadne's mother helped her to progress past parts of games she struggled with by completing them for her. While this appeared to support Ariadne's well-being in the moment, and also enabled her to play other parts of the game, it also meant Ariadne was not learning to persevere with challenges or overcome frustration, which might ultimately support feelings of competence and purpose and help her regulate negative emotions.

RELATIONSHIPS

Digital play allows children to:

- **Experience connectedness with others**
- **Feel that they belong**
- **Manage social connections**
- **Be aware of others**

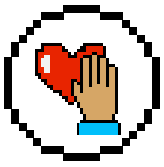
Digital play helps children to:

- Make new friends, and socialize, compete, create, share and/or collaborate with people they haven't met face-to-face
- Socialize with, compete, create, share and/or collaborate with family members or other people
- Be part of a team that works together to achieve shared goals
- Teach others or share information about how to play or how to succeed at different activities
- Be part of gaming communities, both online and in person
- Provide a space for children who live with disabilities or who are neurodivergent to meet other children with similar circumstances

Why is fostering and managing relationships important for children?

Social connection is one of the most important factors of well-being in a child's life.

From infancy, children are wired to connect – first with their caregivers, then with peers, and ultimately with community. Strong social connections predict a range of positive outcomes, from physical health to academic achievement (Alonso, Tare and Rood, 2024).



How can digital play enable children to foster and manage relationships?

Relationships often develop from shared interests and experiences, such as play.

Children may play with a range of individuals, but deeper connection confers particular benefits: when children play with friends, the interactions tend to be more pro-social, supportive and cooperative than when they play with peers who are not friends (Alonso, Tare and Rood, 2024). Digital connections can both help to establish new relationships and maintain existing ones, including between generations.

We found significant evidence in all three studies conducted for this report that relationships are vital to children's digital play experiences and that it is a way for them to both make new friends and spend time with other important individuals. They derive a lot of joy and meaning from playing together, both through competing and collaborating. It is clear from this research that digital play can be a highly social activity, and children socialize both within and around the game, sometimes at the same time. This was previously referred to as "social connection" in the first iteration of the RITEC-8 framework and was adjusted in this report to emphasize that, while being able to experience social connection with others during digital play is important, there are also well-being benefits associated with feeling a broader sense of belonging, developing an awareness of others and being able to manage social connections, including disconnecting from others, during digital play.

In our three studies, digital play provided opportunities to collaborate, socialize, create, relate and connect with others. For some children, it provided opportunities to be part of gaming communities, both online and in person, which contributed to their social relationships, provided a sense of collective identity and belonging. At the same time, others played to take a break from social activities, giving them time and space to do things on their own, such as exploring difficult emotions or emergent aspects of identities.

In the experimental research with children, our social network analysis convincingly demonstrated that those children who made more social connections with others during gameplay experienced increases in their reported well-being over time. The experimental research also demonstrated that those children in Chile and the United States who had a greater need for belonging saw even stronger gains in their well-being as a result of digital play. This is especially noteworthy as the games selected for this research were not social (multiplayer) games, yet children still found ways to make them social.

Through the family case studies, we learned of at least four distinct ways in which digital play enables children to explore social connections.

First, children engage in play practises that involve social connections within physical and digital spaces simultaneously. In one of our family case studies, 10-year-old Jemima had shown her personal assistants how to download Roblox and other games on their devices and taught them how to play her favourite games. They played together, sitting side-by-side, so they were able to see each other's screens. Similarly, Pinar and her 6-year-old sister enjoyed playing digital games in which they interacted using multiple means of communication:

START

1

Pinar's mother:

"Pinar and [her sister sit] … next to each other. And they speak and interact verbally but their eyes are like on here, on their tablets. So if I go in the room I hear them saying, 'Come on, jump up, jump up now. No you've not jumped far enough, jump a bit higher'. So they are communicating but they are literally looking at the screen. It's amazing."

2

Pinar:

"Yeah, but we are kind of technically looking at each other, because we're looking at our player or character."

Conversely, sometimes 9-year-old Penny and her siblings would play together in a digital space such as Bloxburg, while each sitting in different rooms of their family home.

Second, children also interact with family, friends and unknown others within digital spaces while playing, communicating through a mix of in-game text or voice chat, or other digital communication devices or platforms. In our family case studies, we found that 9-year-old Harriet in the United Kingdom played Roblox on her tablet and talked to friends who were playing the same game using her mother's smartphone. Likewise, for 10-year-old Liana, digital play provided contexts and spaces for connecting with friends. Liana connected with her friends either through PlayStation or, if the game did not allow for connectivity, using Snapchat or Viber.

In terms of this second way of feeling socially connected, in the psychophysiological research, while interpreting the video-recorded reactions to their own gameplay, one child participant commented on how being able to talk to the other player is important because it facilitates stronger peer connections and improves teamwork.

START

1

Researcher:
"Okay... And we'll go into a time when you were just talking to the other player... so what was happening and what were you saying?"

2

Girl, 12, Australia:
"So ... um ... I think I was talking to her about the boosts and like, how I wasted it, but then I scored anyways. And then she was like, shouting encouragement, which was very nice."

3

Researcher:
"And were you able to kind of connect with the other participant during the game?"

4

Girl, 12, Australia:
"Yeah, cos' she's got, like, this really nice, like, she's really easy to get along with."

5

Researcher:
"Did you know her before?"

Girl, 12, Australia:
"Nope."

6

Researcher:
"So what did it mean that you were able to talk to them? Like for you, for the game?"

7

Girl, 12, Australia:
"I think it really improved like how we worked together. Because if you don't really know each other, it kind of gets awkward. And you don't really know what to say. So, because like we're kind of bonding, our teamwork just gets a little better."

HELLO

Third, digital play can also provide a springboard for connecting with others. For example, in our family case studies we learned that YouTube and football news served a social purpose for 9-year-old Romeos and his friends at school, acting as a shared interest about which they could share their knowledge, opinions and experiences related to football. Legend of Zelda: Tears of the Kingdom acted in a similar way for 12-year-old Ethan, who said that:

> "There are a lot of people at school who talk about it. And I have a group of friends who really like it, and it's nice. So, it's something we can all like, talk to each other about."

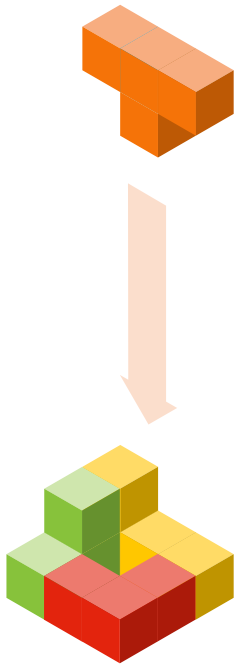
For 10-year-old Liana, the need to be with, connect, do and create with friends appeared to be central to her digital play and activities. In these contexts, social connection was characterized by relational practises that included building and showing buildings in Minecraft to receive feedback and collaborating to achieve particular goals.

Hi!

Fourth, children also found that digital play offered opportunities to empathize, nurture and tend in relation to both humans and animals, experiences that are important in helping children to forge positive social connections. The huge popularity of the title Animal Crossing: New Horizons during the COVID-19 pandemic may well connect in part with the game's opportunities to empathize with characters, but also tend to and nurture natural environments.

In our psychophysiological research, we found evidence throughout our observations that digital play contributes to children's relationships. Similar to results from our family case studies, it was clear that children experience positive social connections during gameplay, both in the form of sharing knowledge and working towards shared goals, which some children found very motivating. Positive social connections also occurred when children met for the first time to play together as part of the study, and we found through our observations that gameplay can foster friendship even in the short term.

Teamwork is important for positive social connection, and participants reported feelings of happiness when teammates succeeded. Conversely, a lack of cooperation and teamwork can be frustrating for children, and through interviews conducted for the psychophysiological research we learned that some children prefer to play alone for these reasons:



START

1

Girl, 9, Australia:
"No, I was like... I was gonna make like into the wrong goal or something. And I was like... and [sibling] got mad at me for it."

Researcher:
"Okay, so when ... were you... would you prefer to play with someone or on your own?"

2

3

Girl, 9, Australia:
"I play a lot of games on my own, so I guess alone."

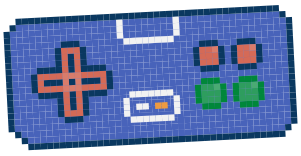
4

Researcher:
"Okay, why is that?"

5

Girl, 9, Australia:
"Because I like play a lot of games on my own and I can get... I dunno... I can get very frustrated with people and people can get really frustrated with me when we're like playing together so I like playing alone more."

START



1

Researcher:
"Okay. So what was it like playing your brother... Playing with... playing Rocket League with your brother in the lab?"

Girl, 9, Australia:
"Not very fun. He doesn't really know the meaning of teamwork in these kinds of games. I mean, it probably would have been best if I just didn't do anything."

2

Importantly, we found converging evidence from our multiple strands of research that children who have a stronger need to feel connected to others see even greater improvements to their well-being over time through their engagement in digital play.

Several examples of this came through in our family case studies: 12-year-old Ethan in Australia was experiencing feelings of loneliness during the course of the research, and playing with friends from school online was particularly important for him during this time. Similarly, 10-year-old Jemima in the United Kingdom struggled with anxiety during the course of the research but was able to experience personally meaningful interactions with strangers through anonymous trading and collaboration in digital games. These experiences were particularly important in helping Jemima regain some social connection, which was otherwise absent from her life due to her disengagement from school and difficulty leaving the house. For 9-year-old Pinar, also in the United Kingdom, who found in-person social interactions at school "confusing and mean", digital play was critical as a safe space for social interaction, most commonly within a private Minecraft server created for neurodiverse children. Conversely, children who were experiencing particular social tensions in their lives appeared to have a greater need to disconnect from others and benefit from being able to do so through digital play, as in the case of 10-year-old Hailey in the United Kingdom.

Taken together, results from our research provide strong evidence that one of the main ways in which digital play supports well-being in children is through the social connection it creates with peers. We also find strong evidence that social engagement through digital play can act as an important source of social connection for children who are currently struggling in their engagement with others.

CREATIVITY

Digital play allows children to:

- **Be open to a range of experiences**
- **Imagine different possibilities**
- **Act on original ideas**
- **Make things**

Digital play helps children to:

- Exercise different forms of creativity in the game, for example by creating characters, artworks or narratives
- Freely explore or solve problems in a multitude of ways, affording children a lot of leeway to experiment with game mechanics
- Engage with interesting narratives and characters in an open and curious manner
- Exert choice and agency, for example in customization, design and decoration

Why is creativity important for children?

Creativity is the capacity for coming up with novel ideas and solutions.

It often involves combining existing items or concepts in new or surprising ways and is characterized by thinking strategies that expand possibilities coupled with evaluative selection from these imagined options (Alonso, Tare and Rood, 2024).

Creative development can be encouraged and taught – or discouraged and foreclosed – through experience. Environment influences creative output, and research shows that children are more creative when they are specifically encouraged to come up with original ideas (Alonso, Tare and Rood, 2024). Pretend play, storytelling and role-playing with peers encourage fantasy and make-believe, giving children a chance to adopt varied roles and transform objects into props and take on different roles. In this respect, imagination and play are precursors to fully developed creative capacity.

How can digital games enable creativity in children?

Regulating excitement about ideas, persisting and managing mood when one's ideas are rejected or don't work out, and coping with self-consciousness about originality are all examples of how creativity is enabled through digital play.

Digital experiences may create low-stakes environments for children to experiment with creative interests and develop emotional regulation needed for sustained creative action (Alonso, Tare and Rood, 2024). In the first report from the RITEC partnership, children talked about how digital play provides an opportunity to explore new things and makes them feel more curious and inspired to learn. They emphasized that games should inspire children to exercise different forms of creativity, for example by creating characters, artworks or narratives, and to freely explore or solve problems. They believed digital play can enhance their feelings of curiosity, nurture an openness to new experiences and strengthen their creative ability.

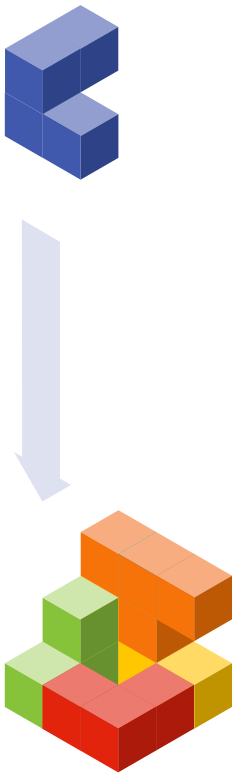
We found evidence of this throughout our three studies. Summarizing these findings, we find that children develop their creativity when playing games that are open-ended, that allow children to customize or design avatars, or find multiple solutions to problems, or afford them a lot of freedom to explore and try different game mechanics. In general, through all our observational research, children showed curiosity and openness towards game settings, narratives, characters and alternative methods of gameplay.

In our playtesting research, children playing Plants vs Zombies and Angry Birds were curious to try out new characters they had unlocked and learn how new plants and birds could be utilized. In World of Goo, curiosity was observed in repeated attempts to try different ways of building the Goo structures.

"You have to be imaginative, to see possible solutions".

In World of Goo, the high degree of curiosity that children exhibited was associated with the high agency and autonomy that the game afforded, allowing plenty of freedom to explore different solutions to the puzzles. In addition, children showed great interest in the different game worlds and narratives. They asked questions about who the sign painter (a character who gives out instructions) was and why they were collecting Goos in World of Goo, and about whether "the two figures will ever stay together for a moment, for a longer moment" in LEGO Builder's Journey (where the purpose is to bring two characters together by building structures that allow them to meet).

In our family case studies, creativity within and through gameplay took on multiple expressions. Creativity was expressed through making decisions and choices about actions within games; customizing avatars and characters; creating music; and designing or building things such as houses or rollercoasters. Children were also able to explore, construct and express individual and collective identities through avatar customization and other gameplay, as a mix of creativity, exploration of personal identity and self-expression.



For example, 9-year-old Penny's digital play choices appeared to be driven by the need to explore, construct and express identities. Bloxburg, which she describes as one of two favourite games, provides her options for detailed avatar customization, design and decoration. Its open-ended design also affords her the pursuit of diverse and individualized pursuits within it. When Penny was asked what was good about Bloxburg, she frequently talked about customization, choice and independence.

Pira, 9 years old, emphasized how digital contexts were particularly supportive of her desire to create because the available resources were infinite.

> "You don't run out of stuff [in digital contexts, whereas in physical play] you might run out of glue, paper, colours, the scissors might not work for some random reason and they won't just cut through and they just turn sideways. [In digital contexts] they can't run out, unless it's storage or ideas."

While too much choice might be overwhelming for some, it may help level the playing field for socioeconomically disadvantaged children.

In our psychophysiological research, interviews with children and participatory analysis of video recordings revealed several ways in which creativity was demonstrated throughout gameplay. This took the shape of finding new ways to achieve goals, experimenting with game features, items and materials as they play a game (for example driving on walls, or exploding opponent's cars). Children showed an interest in engaging creatively even when the game didn't directly support such interactions.

START

1

Researcher:
"So, can you tell me a bit more about what you would have liked to have been able to create in the game?"

2

Girl, 7, Australia:
"Like ... if it like all fell apart, like the whole thing and then you can put it back together in different ways."

3

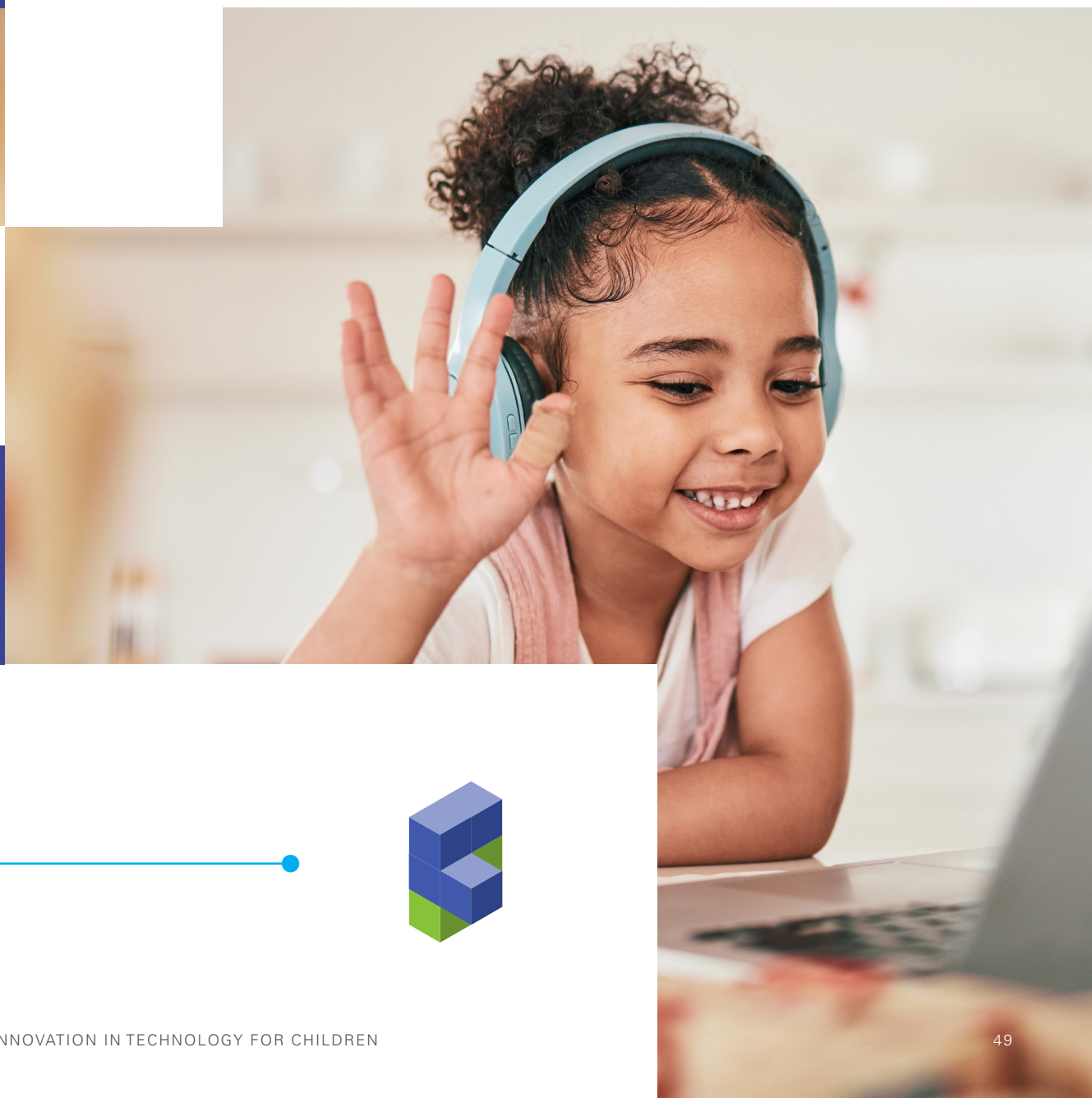
Researcher:
"Oh, that would be interesting. What would you create?"

Girl, 7, Australia:
"Like trees and then, and then a river around it and then people ... and then like, like sand all around it and then people can ... play and sit and then just chill."

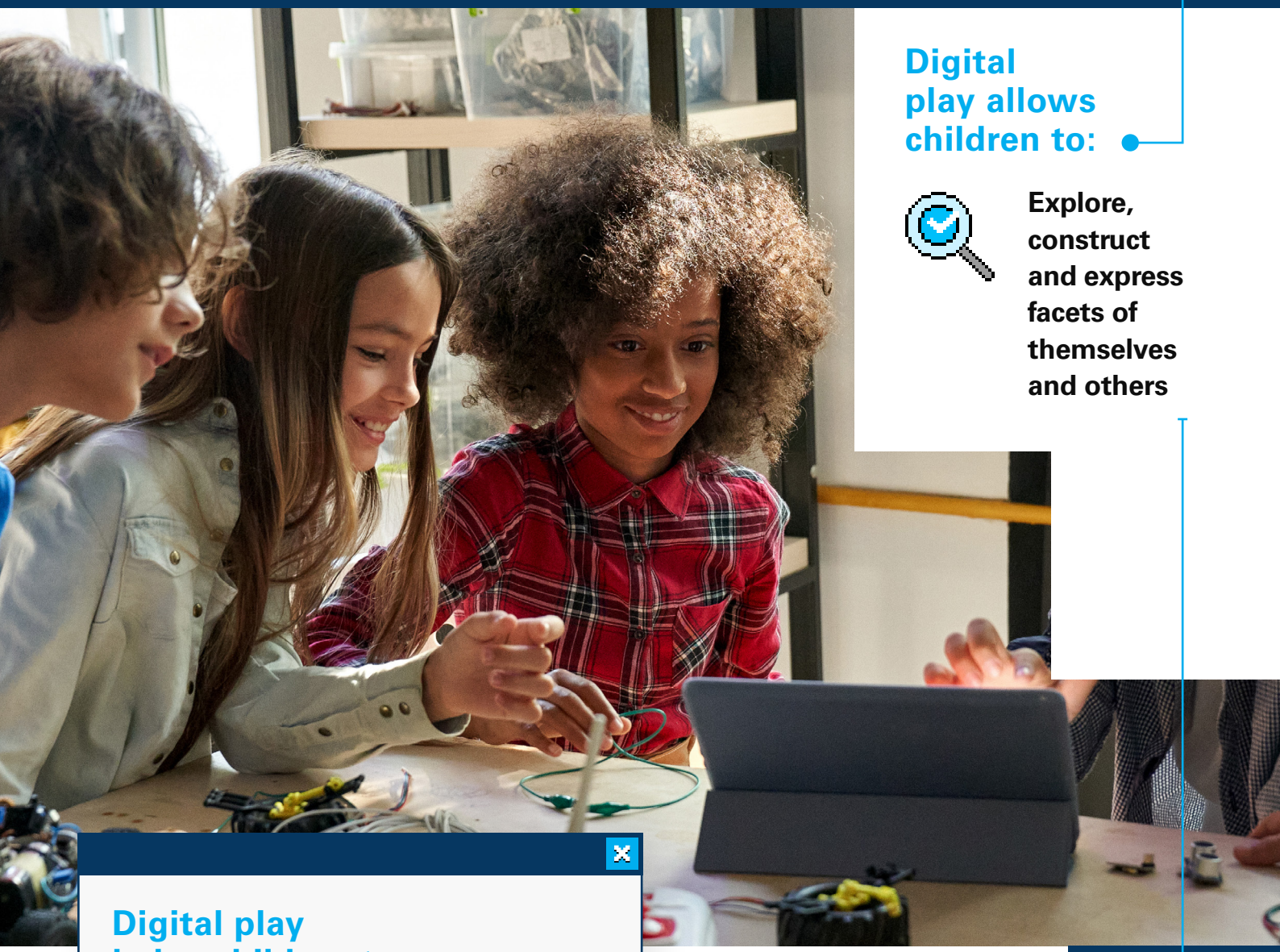
4

Enjoyment was experienced when players had creative freedom, which is closely related to game design. In this study, participants identified more freedom in Rocket League than in LEGO Builder's Journey; while using bricks to build LEGO structures in the physical world allows great creative freedom, the scaffolded tasks and limited bricks provided in LEGO Builder's Journey were found by some children to be limiting.

Broadly, we found evidence that creativity in particular was closely related to other aspects of well-being, especially autonomy, agency and choice; potentially, these are enablers for children to engage creatively with games. Similarly, games that are designed in ways that allow children to express their creativity may be more likely to provide a sense of autonomy.



IDENTITIES



Digital play allows children to:

Explore, construct and express facets of themselves and others

Digital play helps children to:

- Connect digital play with broader career aspirations, interests or hobbies
- Construct, express and explore individual, collective or future identities
- Collect, curate and classify objects in the game

Why is exploring and expressing their identity important for children?

A child's identity emphasizes a sense of uniqueness: a combination of experiences, interests and attributes that together form their sense of self.

Forming a personal identity is a lifelong process, to understand your own needs, desires and goals (Erikson, 1958). Navigation of these developmental tasks has long-term implications for child well-being and future adult functioning.

Our focus on identities in this work is purposefully narrow. A child's (and adult's) experience of life is significantly influenced by vectors of identity such as gender, ethnicity, class and disability, some of which are partially explored in other sections. We recognize that identity is a broad concept with a large body of scholarship behind it that has explored the topic from multiple perspectives.

How can digital play support children in exploring, constructing and expressing identities?

In the first phase of the RITEC project, children said that the cultivation of self-confidence, self-acceptance and a sense of purpose was important for their well-being.

These are all aspects of a child's identity that are shaped throughout childhood. Early research on digital engagement suggested that for adolescents in particular, the digital environment can be "a stage for experimentation and exploration in a time of intense interaction with people and new ideas that adolescence represents" (Turkle, 1995).

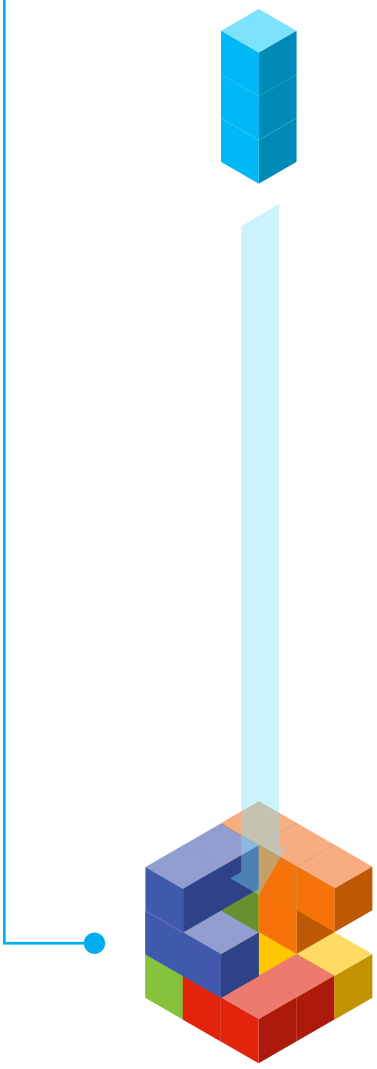
A significant body of research on identity formation has shown potential for digital spaces to promote self-discovery, by allowing hidden or unexplored aspects of their identity to emerge by engaging in role-playing and experimenting. We found significant evidence that this process can be supported by digital play in our family case studies, but we did not observe it through the field-based experiments or psychophysiological research. This aspect was previously referred to as "self-actualization" in the first iteration of the RITEC-8 framework and was adjusted following this report.

Children explored, constructed and expressed identities through their digital play in several different ways in our family case studies. First, digital play offered a space to explore imagined future identities, as in the case of Logan, whose Bloxburg play connected with a broader career aspiration to work as an architect or interior designer. Luke's digital play connected with a broader desire to start his own YouTube channel focusing on digital games. Meanwhile, Willow's The Sims role-play served as a means to explore a possible future professional identity as a veterinarian. In the United Kingdom, 12-year-old Thomas and his father talked about how playing Scratch and Minecraft enabled Thomas to pursue his interests in technology and programming.

Second, digital play offered an avenue for children to explore emergent personal identities. For example, 9-year-old Penny found that Bloxburg's highly customizable avatar feature afforded her rapid and relatively low-stakes experimentation with different hair, make-up and clothes. Indeed, Penny was keen to spend some of her pocket money on clothes for her avatar in Bloxburg, despite her mother's belief that she would be better off spending it on 'physical' clothes and jewellery, which she was indeed beginning to do, albeit more gradually.

Third, children explored collective identities through their digital play. In Cyprus, 10-year-old Liana appeared to identify strongly as a gamer, appearing to derive an important sense of collective identity from her engagement with digital play. Meanwhile, in South Africa, 10-year-old Mount played Fantasy Football with his father and members of his local church congregation, supporting a sense of collective identity.

Opportunities to explore identities through digital play were particularly important for children who were experiencing transitions in terms of their age, friendship groups and associated identities. Children's experiences of identity and its interactions with digital games are closely linked to matters of diversity, equity and inclusion and are further discussed in the following section.



DIVERSITY, EQUITY & INCLUSION

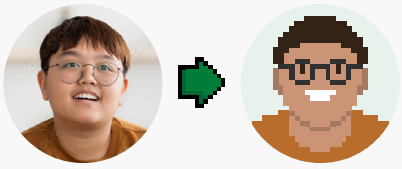
Diversity, equity and inclusion in relation to children's digital play are particularly important both for their well-being and from a child rights perspective.

As stated by the Digital Futures Commission, "The diversity in forms of play in global digital playgrounds can promote diverse representations of varied lived experiences, abilities and identities" (Colvert, 2021:52). However, there is still a lack of acceptance of some social groups online, and certain forms of identity exploration and expression are marginalized (Colvert, 2021).

In the family case studies, diversity, equity and inclusion was understood in terms of two broad areas:

1

The representation of diverse individuals (both player controlled and computer controlled) within digital games played by children.



2

The extent to which digital games played by children supported the full engagement of, and well-being benefits for, a diverse range of children, including those with different bodies, physical and learning disabilities and differences, different material circumstances, and different deep interests, needs and desires.

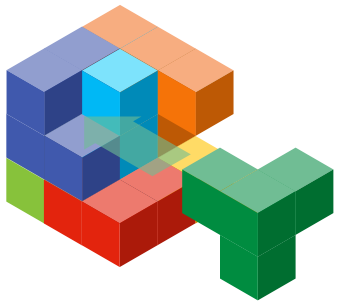
In terms of representation, given evidence that children's overall satisfaction with body image decreases with age, and the role that digital media plays in children's explorations of identity, there is a clear societal need and ethical obligation for digital games to respectfully represent a broad range of children (and adults), in all their diversity. Some of the games that children discussed in the present study offered far greater opportunities for the representation of diverse children (and adults) than others. Meanwhile, other games that children played offered potentially harmful and stigmatizing portrayals of body size (for example, the +1 Fat Every Second game on the Roblox platform).

In terms of supporting the equitable engagement and well-being benefits of digital play for different children, our family case studies identified two broad ways of thinking about diversity, equity and inclusion. First, a range of individual and contextual factors made a difference and second, children's digital play was driven by different deep interests, needs and desires. Neurodiversity, physical differences and disabilities or emotional and learning needs shaped the relationship between well-being and digital play in our family case studies. For example, for some neurodiverse children, particular design features supported a

sense of autonomy, which appeared important for their well-being. Indeed, there were many encouraging examples of the ways that specific design features of digital games afforded digital play practises that were particularly supportive of aspects of well-being for children who are neurodiverse or are identified as having, or identify as having, a range of emotional and learning needs. Finally, our family case studies highlighted several ways in which the relationship between well-being and digital play was associated with material factors such as housing and socioeconomic status. For example, access to secure outdoor space to play varied between households and children's physical safety was an issue for some families.

Differences in household location and economies created unequal access to devices, games, Wi-Fi and mobile data and meant that not all digital play options could be realized by every child. For example, national blackouts in South Africa meant that some children experienced regular electricity cuts which prevented them from engaging with their preferred digital games.

Designing with diversity, equity and inclusion in mind should always be considered a fundamental guiding principle of good digital play design. In terms of representation, designers of digital games should aspire to represent diverse children and childhoods, for example through depicting different skin tones and enabling avatar customization to include wheelchairs and other assistive technologies. In terms of equitable access, organizations, such as the charity SpecialEffect, are working to help children with severe physical challenges access digital games through adaptations. There is an argument to be made for design that begins with trying to serve the access needs of as many children as possible, be they physical, specific to learning or associated with material circumstances. Finally, they should keep in mind that children have different interests, needs and desires, and an abundance of games with various design features are necessary to support the well-being of children at different times.



SAFETY & SECURITY

Though not a direct focus of the research conducted for this project, safety and security were frequently raised as topics of discussion by both children and their parents.

They expressed a range of concerns about safety and security, many of which have been discussed in other studies.

However, there were also encouraging examples of the ways that digital play can support children's feelings of safety and security.

1

It is well established that play is an important context for safe identity exploration, and the family case studies add weight to the body of evidence that digital play serves a similar function. Design features that supported the exploration, construction and expression of different identities were particularly supportive of a sense of emotional safety.

2

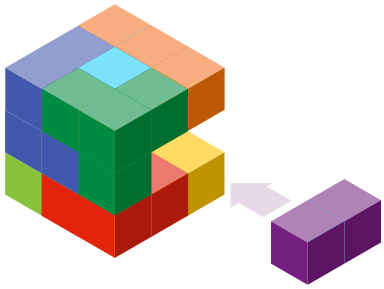
Children's exposure to risks online, and in their digital play more specifically, has long been a topic of great and justifiable concern. The family case studies demonstrate that, when the level of exposure is appropriately managed by parents, digital play provides important opportunities for children to experience different types of risk and, in doing so, learn about those risks and develop strategies for avoiding them in the future or coping with their impacts.

Parents supported children's controlled exposure through soft surveillance of their digital play and actively engaging children in reflective conversations about their experiences. For example, parents used the opportunities presented by advertising and in-game purchasing mechanisms to help children develop a critical understanding about how advertisements work, what they're for and how to make informed decisions about purchasing. They worked closely with children to help them develop awareness of, and strategies for avoiding, the possible risks presented by engaging with strangers online in digital play or through recreating violent or risky physical actions observed in digital play.

They worked to support children's awareness of how much time they played for, to help them achieve balance. They helped children minimize, or cope with, negative inter-child interactions within digital play and to develop emotional awareness and emotional resilience.

In some cases, parents felt that controlled exposure to these risks would help children not only in terms of future digital play, but also in contexts beyond it, such as in social interactions with friends in school.

These findings raise important questions about the balance between attempting to protect children's well-being through rules and restrictions and attempting to give children adequate space to explore digital play independently and experience a broad range of possible risks to well-being in a controlled way. This is an area of concern that many families in the study were actively grappling with.

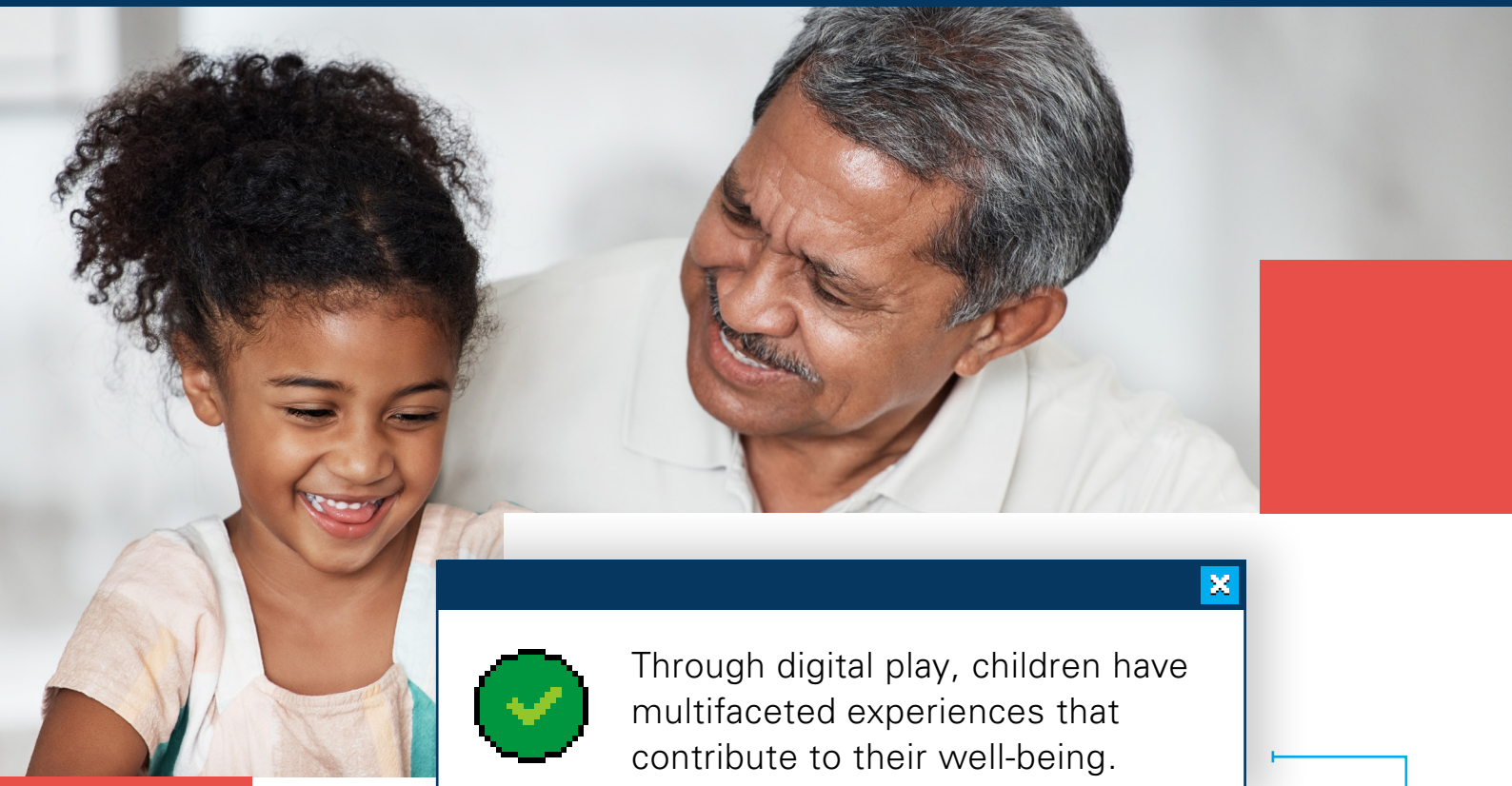


> "I think that some rules are good. But, like, sometimes I think that if you just make a rule that it's wrong, then you don't really learn that."

- 12-year-old boy from the United Kingdom in a conversation with his father.

Designing with safety and security in mind and doing no harm should always be the most fundamental guiding principles of good digital design, not only for play experiences but the digital environment as a whole. Digital play designers must, of course, seek to design features that limit risks to children. However, if we accept that exposure to some level of risk – be it emotional, economic or physical – is unavoidable, then an important additional consideration for designers might be how best to help children develop the skills and coping mechanisms necessary to avoid or minimize the harm of the risks associated with digital play. It is important that games are designed bearing in mind the age of the children for whom the games are intended. Younger children tend to have lower digital skills and a more limited understanding of what risky or harmful experiences look like and may therefore benefit from digital play environments that pose fewer risks (especially more serious risks like grooming or sexual abuse).

CONCLUSIONS & RECOMMENDATIONS



Through digital play, children have multifaceted experiences that contribute to their well-being.

This report shows that digital games can contribute to children's well-being as defined by the RITEC-8 framework when they are designed in a certain way, allowing them to experience a sense of control and agency, have freedom of choice, experience mastery and feelings of achievement, experience, understand and regulate a range of emotions, feel connected to others and manage those social connections, imagine different possibilities, act on original ideas, make things, and explore, construct and express facets of themselves and others.

These experiences and feelings are important for children's lives, and highly present when they play digital games, alone or with others. Companies and designers should focus on enabling these well-being opportunities for children through design, taking into consideration local contexts and cultures as well as the individual and collective needs of children in all of their diversity. In addition, designers will benefit from considering further how to design experiences that respond to children's deep interests, needs and desires; our research has convincingly demonstrated that this is when digital play has a particularly positive impact on children's well-being.

The greatest gains in well-being were observed for children who were able to meet needs during digital play that were less fulfilled in other aspects of their lives. This was especially true for those children who lacked a sense of autonomy and were less satisfied with their social relationships. In this sense, digital games offer another potential venue for these children to express their autonomy, form new social connections and experience a sense of belonging that they might otherwise lack. These findings add to a growing body of research that demonstrates the potential for digital spaces to contribute to children's social lives, and there is broad recognition that children enjoy and benefit from having agency and choice when playing (Colvert, 2021; Mukherjee and Livingstone, 2020).

Overall, we found strongest support for the potential of digital games to positively influence children's sense of autonomy and competence, their ability to understand and regulate emotions, and to form and manage relationships, as positive impacts on these aspects of well-being were evidenced across all three studies.

In this report we have presented a wide range of design features of digital games that we found supported these aspects of children's well-being. While there were a range of examples of how digital games promote creativity in children, this was closely linked to autonomy, and it is possible that creativity requires a certain amount of autonomy to be allowed in the game, and vice versa.

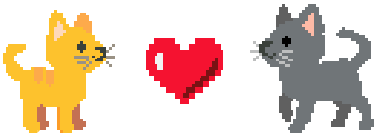
FINDINGS

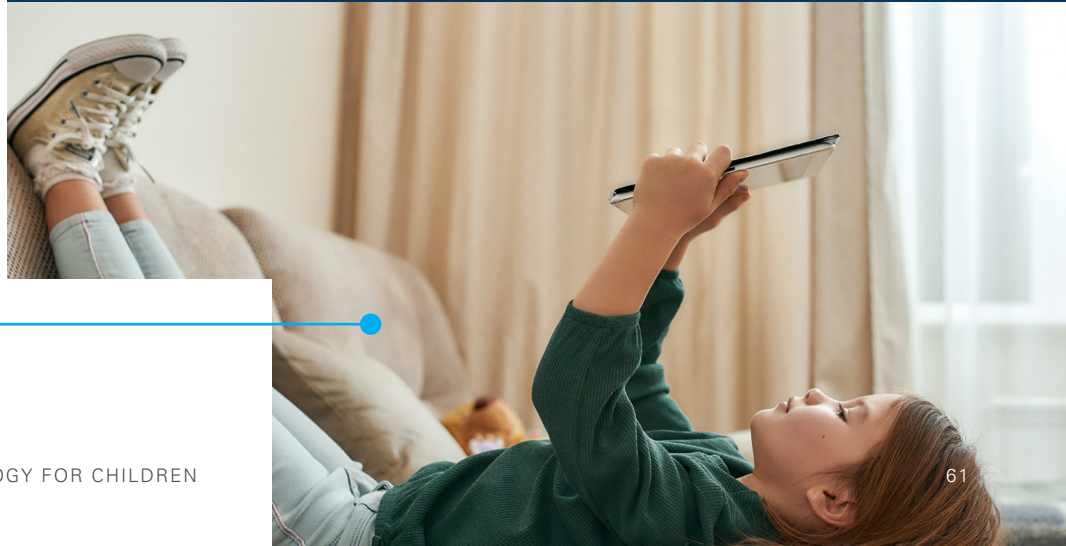
The findings from this report suggest that design intended specifically to support children's autonomy should focus on features that allow children to feel in control and make decisions that matter for their gameplay, explore and solve problems in the game without a single determinate solution and make choices about how, when and what they build and create, including customizing their avatar or other in-game objects in a range of different ways (see page 17).

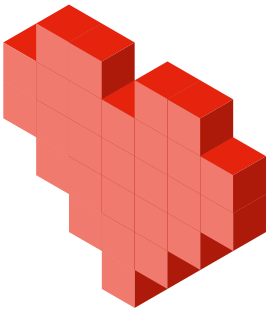
To support children's feelings of competence, design choices should provide meaningful rewards for progress, allow children to adjust and improve in-game strategies based on what they learn as a pathway to overcoming challenges, and engage them in sustained practise of new skills and an experience of getting better at something (see page 24).

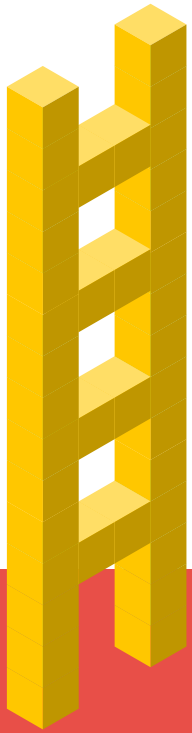
To support children's experiences, understanding and regulation of emotions, designs should allow children to be in control of the tempo of the game, allowing them to continuously engage without interruptions and experience positive forms of calm, quietness, escape, as well as more challenging emotions like fear and risk. Importantly, games should also provide off-ramps when negative emotions arise (see page 31).

To support children's relationships, designs should focus on features that allow children to make new friends, and socialize, compete, create, share and/or collaborate with people they know and don't know, taking into account that children are different, live in different circumstances and seek to fulfil different needs, desires and deep interests through their digital play (see page 39).









All of this needs to be done in a way that emphasizes children's safety and security, underpinned by the guiding principle of doing no harm. The digital games industry needs to acknowledge the risk of harm occurring and invest in significantly more resources to keep children safe as they use their products and services, especially those that allow children to interact socially with others. While the family case studies demonstrated that parents can help children develop awareness of, and strategies for avoiding, risks presented by engaging with strangers online, this does not absolve the industry from doing its utmost to ensure that its platforms are safe, or from playing an active role in educating children and their families about staying safe in digital play. This is particularly important for children living in families where parents or caregivers do not have the time, capacity or knowledge to support their children sufficiently. We found some evidence that parents supported children's controlled exposure through soft surveillance of their digital play and by actively engaging children in reflective conversations about their experiences. For example, parents used the opportunities presented by advertising and in-game purchasing mechanisms to help children develop a critical understanding about how adverts work and what they are for, and how to make informed decisions about purchasing.

Designers might look to the kind of interventions carried out by parents in the family case studies for inspiration on how to mitigate these kinds of risks – building in design features that help children to reflect on the risks associated with digital play is an idea that designers could actively explore. For example, as well as building in structural features to prevent children from sharing personal details with strangers online, designers might consider making critical awareness of the risk of interaction with strangers a feature of games themselves (for example, through in-game events or the innovative use of artificial intelligence or developer-led fan communities around games).

While our research also showed several examples of how digital games allow children to construct, experiment and express identities, which is closely linked with conversations about how games should support diversity, equity and inclusion, the evidence for this was mostly evident in the family case studies and not the other two studies. This is likely due to our research design and because we may not have included the kinds of games that allow children to more comprehensively explore and express identities and experience diversity in the experimental research or the psychophysiological research. Even so, it

was clear in our work that children's identities influence their engagement with digital games and that digital play, in return, can play a role in children's exploration of identities.

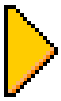
Addressing diversity, equity and inclusion represents a significant economic opportunity for the digital games industry, as it will allow companies to create content and experiences that appeal to a wider user base. Designers of digital games should continue to support children's safe identity exploration through digital play by including design features that support experimentation and expression, for example by allowing children to play or customize avatars that represent children from all parts of the world, all ages and genders. There is also a practical element which includes building products that are accessible, especially for families living in low-resourced settings, being mindful of internet access, data costs, in-app purchases, in-game currencies and pricing, to ensure all children in a community can participate on equal terms. To achieve these goals, the digital games industry must consider who is in the room when games are developed and product decisions are made, to ensure that different viewpoints and experiences are represented and heard. This includes reflecting on the appeal that both products and promotional materials have for potentially new and diverse markets, rather than targeting a narrow segment (UNICEF, 2020).[4]

Importantly, not all children were found to respond to the same games, and same game elements, in the same way. Moreover, not all games were found to impact the same aspects of well-being.

In this sense, no single game can be all things to all children. The updated RITEC-8 framework is a tool that can be used to inform design decisions about digital play, making it more likely that games will have a positive impact on children's well-being. The framework is useful for designers as they consider what they want their games to do for children and how to achieve it through particular in-game features and mechanics. These insights need to be embedded in future reforms for the digital games industry and implemented into streamlined and actionable instruments for product development and guidance for designers.

4 Further guidance on how to achieve better inclusion and representation can be found in: United Nations Children's Fund, *Recommendations for the Online Gaming Industry on Assessing Impact on Children*, UNICEF, Geneva, 2020, <https://sites.unicef.org/csr/css/Recommendations_for_Online_Gaming_Industry.pdf>.

THE FRAMEWORK



Start here

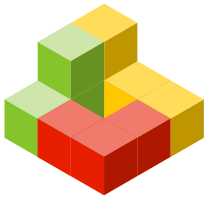
1

Autonomy

2

Competence

3

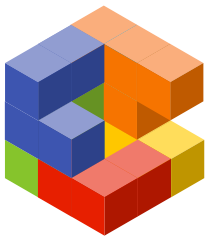


Emotions

4

Relationships

5

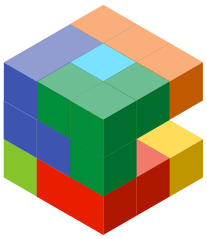


Creativity

6

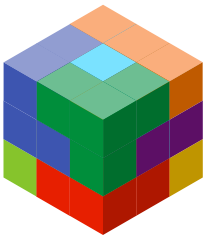
Identities

7



Diversity, equity and inclusion

8



Safety and security

Safety and security

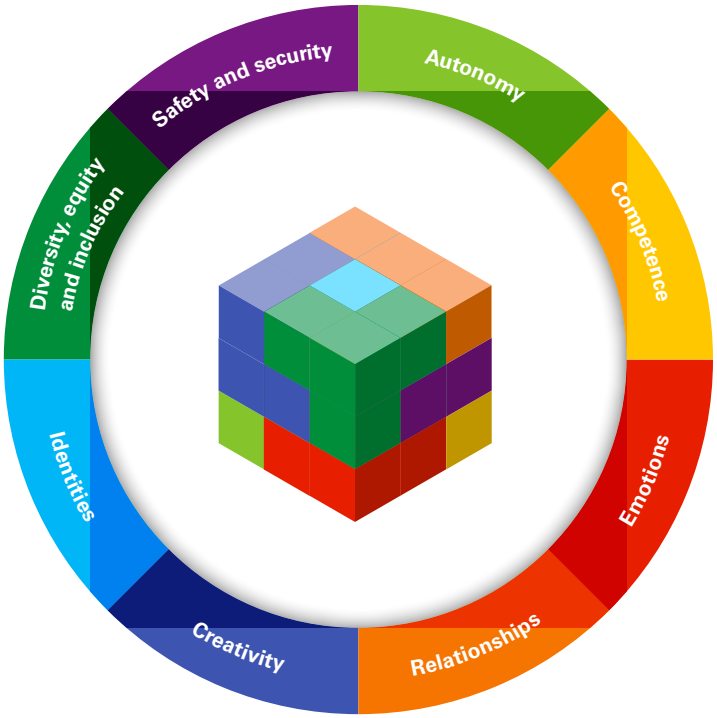
Children feel safe and are kept safe while engaging in digital play.

Autonomy

Children freely choose how to engage with digital play, and experience feelings of agency, choice and freedom while playing.

Diversity, equity and inclusion

Digital play experiences are designed to represent diverse children and childhoods and serve the access needs of as many different children as possible.



Competence

Digital play experiences contribute positively towards children's perceptions of their effectiveness, ability and skills, facilitating a sense of mastery.

Identities

Digital play experiences provide children with opportunities to explore, construct and express facets of themselves and others.

Emotions

Digital play experiences allow children to experience and recognize a range of emotions, and provides opportunities to learn how to regulate them.

Creativity

Digital play experiences encourage children to engage curiously and use their imagination to build, invent and experiment.

Relationships

Digital play experiences facilitate social connection with others and a sense of belonging.

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And we never give up.

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About RITEC project

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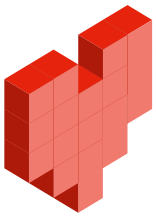

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