

Ahead of the game:

Why play is the key to children's future success

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Key points

- An ideal way to support children's brain growth and the acquisition of key cognitive skills is through play.
- High-quality, creative play is fostered through warm and responsive adult-child engagement beginning at birth.
- Structured and unstructured (free) play have different and complementary benefits for children's development. Inexpensive everyday objects and natural resources provide a wide variety of play opportunities.
- Many aspects of modern society threaten children's ability to play such as limited access to safe outdoor spaces, high living costs and associated demands on parents and societal pressures to take part in adult-directed extracurricular activities.
- To protect children's play families and whānau need both reassurance around its benefits as well as supportive social policies including paid parental leave, mental health support and affordable housing.
- Outside the home it is vital New Zealand schools and childcare centres retain a focus on play in their curricula. Policy makers should ensure early childhood education is affordable, play opportunities are not compromised in higher-density housing areas and priority is given to investment in play-promoting community initiatives.

Equipping children for success

Children growing up in 21st-century Aotearoa New Zealand need the skills to succeed in a rapidly changing world. It is crucial they be equipped to think critically, be creative and be able to innovate. These skills are essential to thrive in a world of climate change, pandemics, resource depletion and growing social inequities.¹ Children also need well developed social skills, adaptability and resilience to flourish in the face of such challenges.

The foundations for these skills are laid during a child's early years. During this time of rapid growth, the brain makes trillions of connections to form a network of pathways that at age three is denser than at any other point in life.²⁻⁴ The child's experiences during this time influence the growth and shaping of their brain as connections used repeatedly are strengthened and those that are not used are pruned.^{3, 4} This process of blooming followed by pruning means the stimulation a child receives during early childhood shapes their ability to learn and interact with the world throughout life (Figure 1).

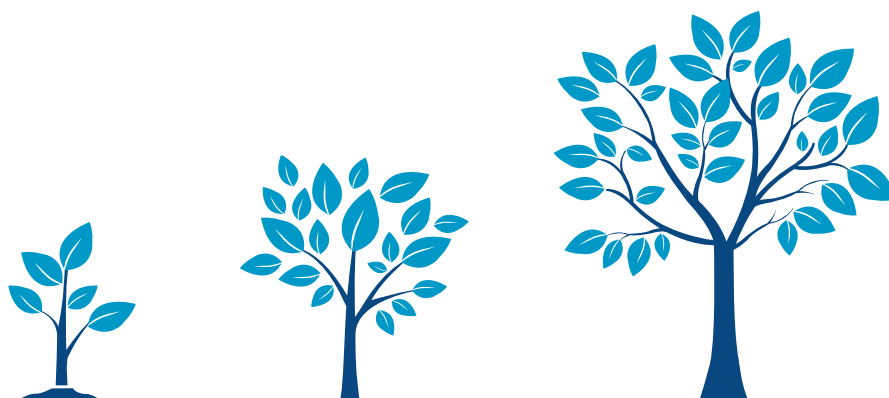


Figure 1: Optimal play experiences drive brain growth and shape brain development in ways that enhance children's potential for future learning and success. This occurs through a process of pruning and strengthening of network connections.

Building brains through play

A well-established body of evidence has shown the ideal way to prime a child's growing brain for creative thinking is through play. Play can take many forms; it can be solitary or social, physical, verbal or imaginary.^{5, 6} Play is found throughout the animal kingdom from bees, cats and dolphins to great apes. This leads scientists to theorise that play has an evolutionary role in helping young animals gain the skills needed for adulthood.⁶

Animal research has demonstrated that play drives brain growth and function. Play in rats appears to create lasting changes in areas of the brain relating to thinking and social interactions.^{6, 7} It stimulates the production of new brain cells and the connections between them. Rats raised in toy-filled cages have bigger brains with a thicker outer layer and a more mature network of connections than with those raised without toys. Rats denied play have brains that are physically less mature, and their ability to interact socially with other rats and solve problems is impaired.⁶

Although it is difficult to replicate such tightly controlled research in people, small brain imaging studies have shown associations between play and children's brain development. For example, two studies of babies and preschoolers demonstrated that being played with by a sensitive and responsive parent was associated with increased grey matter volume.^{8, 9} Another study of six-month-old babies found play with a responsive parent was associated with increased volume and connectivity in areas of the brain relating to managing emotions and flexible thinking, although it had the opposite effect for areas relating to memory.¹⁰ One study found that when listening to stories, children aged four to six who experienced more verbal interactions in daily life showed greater activation in areas of the brain involved in language, memory and cognition on MRI scans.¹¹ These imaging studies are strongly supported by numerous other reports showing positive outcomes in various measures of brain function and child behaviour, as will be discussed later.

More broadly, play has key characteristics that help children's brains develop and strengthen the connections needed for learning (Figure 2).

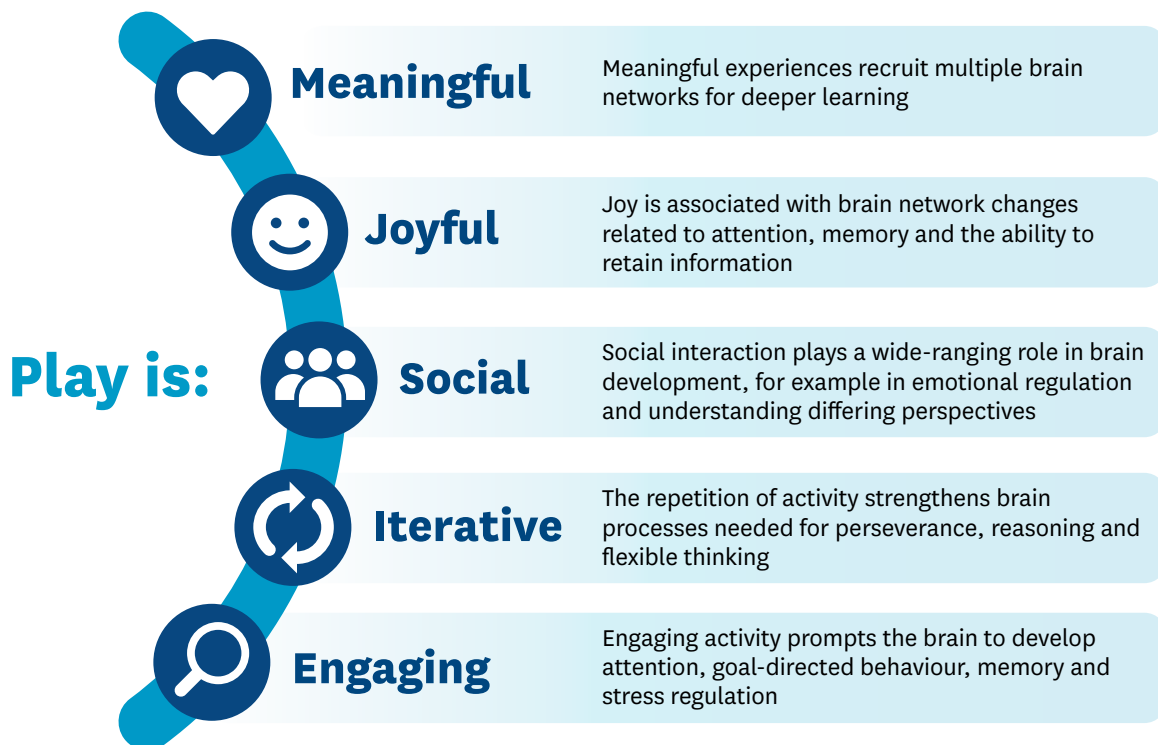


Figure 2: Five characteristics of play that help the brain develop for future learning. Adapted from The LEGO Foundation.¹²

Play and lifelong skills

A well-developed brain has well-developed executive functionsⁱ. Executive functions are prerequisites for the complex skills needed for 21st-century success. Consistent benefits have been found from interactive parent-child play, physical and outdoor play, rough and tumble and pretend and imaginary play.¹⁵⁻²⁴ For example, responsive parent-child play such as telling stories was linked with higher levels of self-control in New Zealand babies and preschoolers in the Growing Up in New Zealand study.¹⁸

Beyond executive functions, play has a fundamental role in children's development (Figure 3).^{6, 25-28} For instance, pretend play and make-believe teach children to collaborate, co-operate and negotiate, to have empathy for others, and to practice real-life scenarios (such as pretending to be a doctor and patient and playing out the social rules and expectations associated with each role).^{19, 28-30} Solitary play such as reading or doing a puzzle allows children to develop their own interests and preferences, fostering independence and self-esteem. Initiative, persistence and self-confidence are promoted when children practise finding solutions to things on their own.³¹

Physical play lets children explore how their bodies move, encourages healthy exercise habits and exposes them to natural forces such as gravity and friction.²¹ Early exposure to such concepts as gravity helps children make sense of abstract ideas they will be introduced to later in their education. Adventurous play such as climbing, jumping and balancing teaches children to prepare for the unexpected, to know their limits and to take appropriate risks. This develops children's autonomy, confidence and sense of agency as well as improving physical skills. Riskier play also exposes children to emotions such as exhilaration, fear and frustration when, for example, they fall off a balance beam or cannot reach a desired tree branch. It therefore gives children space in which to learn how to deal with these kinds of emotions, which are often encountered in learning and life.³²

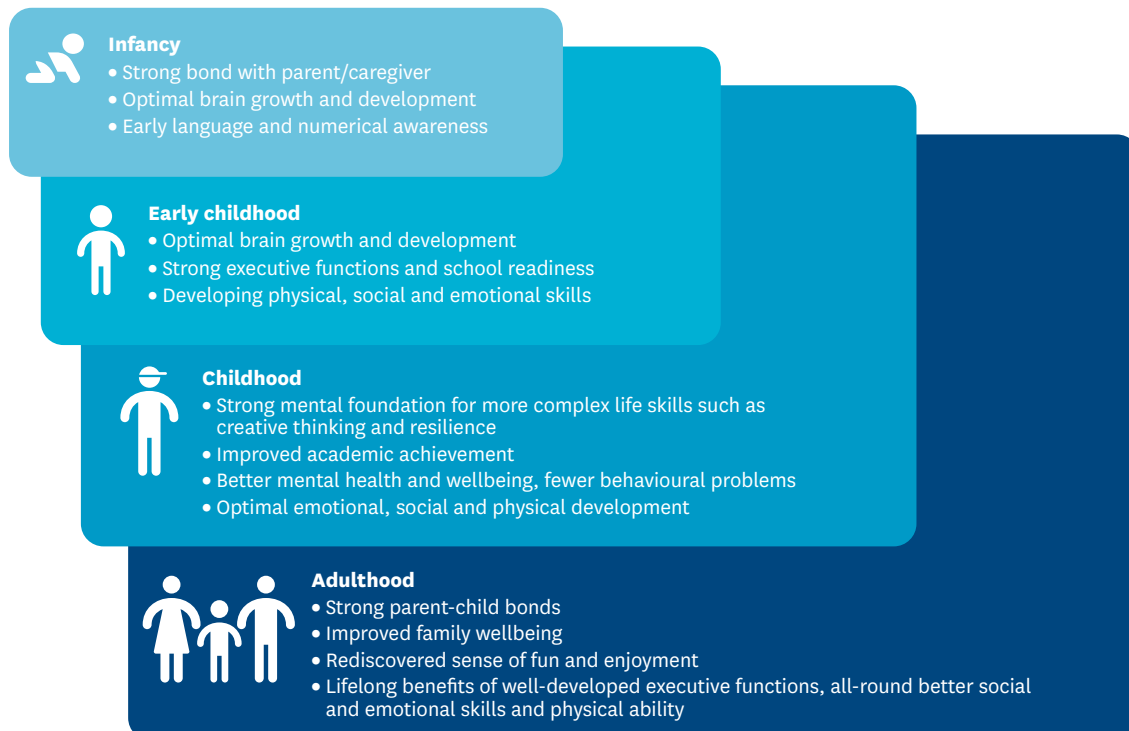


Figure 3: Some of the key ways childhood play affects a person throughout their life course.

i Executive functions are a specific and vital set of cognitive and emotional processes that enable us to work towards a goal. The skills involved include planning and organisation, flexible thinking, focusing attention, using information in our working memory and being able to inhibit impulsive behaviours. These are essential for learning, planning and problem-solving. Executive functions are highly predictive of school readiness and academic achievement and have lifelong and intergenerational effects on health, social relationships, employment and wider wellbeing.^{13, 14}

Play and educational achievement

Play sets children up for educational achievement in three key ways. First, it develops the executive functions that are critical for learning and school readiness.^{33, 34} Second, play is fun. By making otherwise serious schoolwork seem pleasant, children are more likely to be motivated and engaged and to seek out learning opportunities.^{5, 35} For example, in a study of over 550 children aged three to six, those who engaged in interactive peer play demonstrated higher levels of motivation, attention and a positivity towards learning than those less engaged in play.³⁶ Conversely, preschool-aged children who are pushed academically are more anxious and less motivated.²⁹

Third, play directly enhances early literacy and numeracy. Exposing young children to words helps their brain develop the networks needed for awareness of the sounds of language.³⁷ Word play, such as songs, nursery rhymes and book reading is strongly linked to oral language development. For example, studies have shown when mothers use more language when playing with babies (such as imitating sounds or describing actions), children achieve language milestones earlier and have better language skills at preschool age.^{38, 39} Similarly, including ‘theme-related’ reading and writing materials (such as a prescription pad and pen when pretending to be a doctor) during play is linked with early reading and writing ability.³⁷ In terms of numeracy, positive effects on early number concepts have been seen in children as young as two years old.⁴⁰ Play with toys such as blocks, puzzles and shape games assists the development of spatial skills, which help children to visualise and mentally manipulate information. Spatial skills strengthen thinking and problem-solving abilities in all domains and are especially important for success in the STEM (science, technology, engineering and mathematics) fields.⁴¹ For example, children who were more proficient at playing with blocks when preschool-age showed better mathematics achievement in intermediate and high school.⁴²

Play, wellbeing and family life

Play gives children a safe and relaxed space to express themselves, solve problems and learn to regulate their emotions. In a survey of more than 57,000 parents and children from 35 countries, 95% of children said play helped them relax.⁴³ Play has been shown to directly reduce stress. For example, a 15-minute session of free play effectively reduced signs of anxiety in very nervous children on their first day of school.²⁶ Children playing outdoors in nature can recognise and describe wellbeing benefits such as feeling happier and more relaxed.⁴⁴

In early life, most play takes place between the child and their parent or main caregiver. Playful interaction with a warm, responsive, happy parent is associated with fewer internalising (such as anxiety or reclusiveness) and externalising (such as aggression or hyperactivity) behavioural problems.^{25, 45, 46} Many studies focus on mother-child play but father-child play, which tends to be more physical in nature, is also associated with positive social, emotional and cognitive outcomes.^{16, 17}

Play also benefits parents and wider whānau (Figure 3). In the same large survey mentioned earlier, 87% of adults said play helps them relax and 95% felt it improved family wellbeing and created stronger family bonds.⁴³ Playful adults report lower stress levels and are more likely to use effective, adaptive coping strategies than less-playful people.⁴⁵

Structured and unstructured play

Play falls into two overarching categories: structured and unstructured. Structured play may be (but is not always) led by an adult and typically involves following directions and/or reaching an objective. Examples include playing sports and board games, completing a puzzle or performing a written piece of music. Adults may join in and extend children’s learning by asking questions or making suggestions.²¹ Unstructured or

free play is self-directed and has no predetermined outcome – the child simply and freely follows their own desires. Drawing, building with blocks and exploring the outdoors are examples of unstructured play.

Structured and unstructured activities differ in terms of the developmental skills they accentuate in the child. Structured play is useful for teaching children focus and self-control as well as how to follow rules and reach a set goal. For instance, playing a game like Simon Says requires children to pay careful attention and resist the urge to move unless instructed to do so.⁴⁷ Unstructured play gives children control over their actions and promotes autonomy and self-confidence. It allows children to test their limits and make mistakes and is particularly beneficial for developing creativity and imagination because it provides exposure to a variety of materials, situations and ideas and leads children to encounter the unexpected, explore new options and figure out how things work.^{5, 21}

Structured and unstructured play serve complementary functions. Therefore, high-quality play is facilitated through the inclusion of both types of activity. Alongside this children’s experiences can be enriched for optimal benefit by following several basic principles (see the Appendix).

Risks to play

The right of a child to play is protected in the United Nations Rights of the Child, which was ratified by New Zealand in 1993.^{48, 49} However, there are many risks to play in today’s society (Figure 4). These particularly impact parent-child play and opportunities for unstructured play and outdoor exploration.

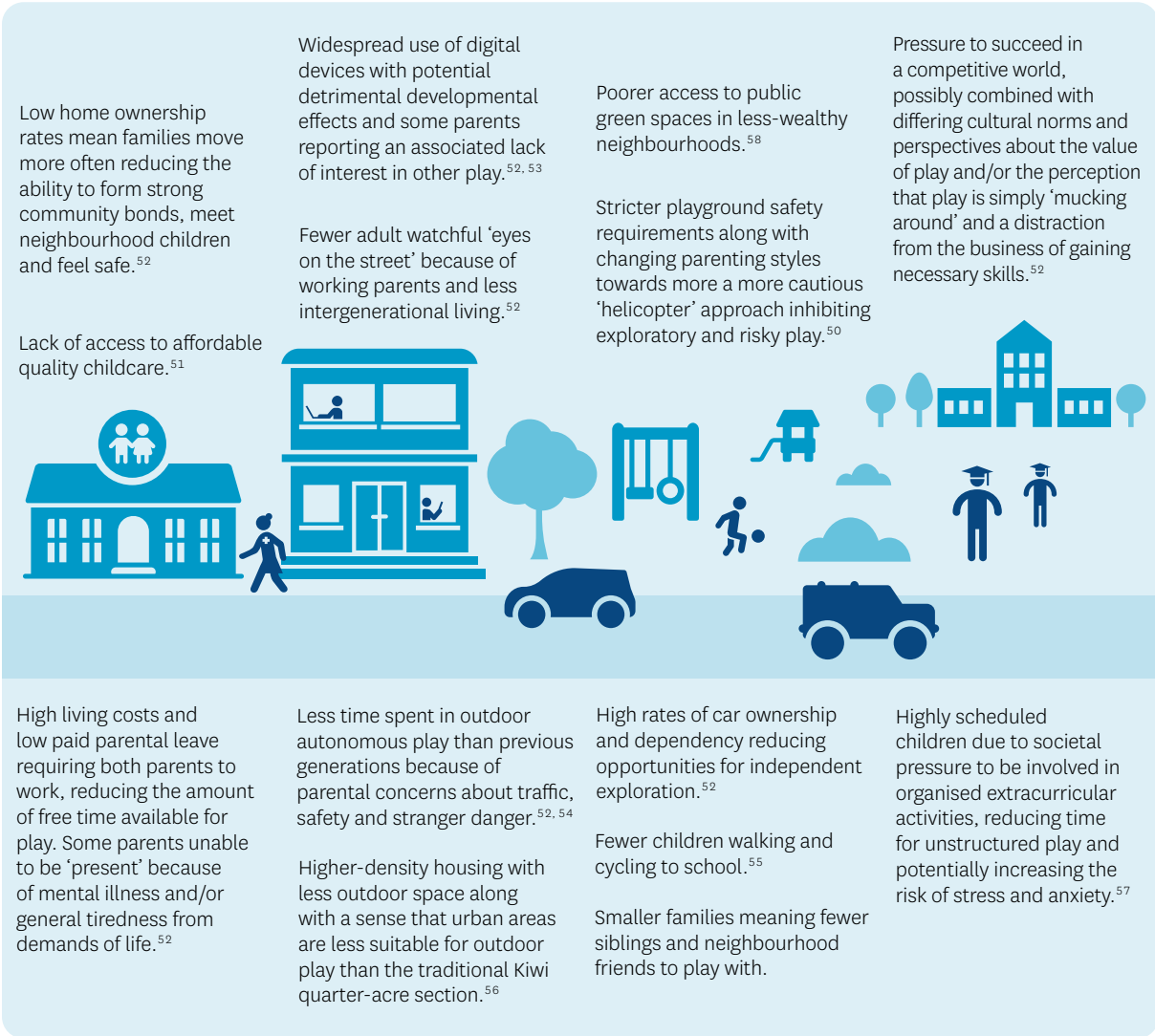


Figure 4: Multiple factors ranging from parental through to systemic pose a risk to children’s play in contemporary New Zealand society.

Recommendations for decision-makers

Changes in family lifestyles, the wider environment and society are threatening children's ability to play and enjoy its wide-ranging and lifelong benefits. However, there are several ways by which play opportunities may be preserved or maximised.

At the family and whānau level:

Valuing play

It is essential that play is valued as a key way to learn, develop and succeed, especially for families and whānau concerned about the competitive nature of modern society, including a number for whom a focus on play may not be a cultural norm.

Healthcare practitioners such as Well Child providers may have a role in reassuring families that play is an ideal way to help their children learn. Advice that high-quality play involves both structured and unstructured activity and a wide range of inexpensive play opportunities exists may be helpful (see the Appendix for a list of suggestions for facilitating high-quality play).

Facilitating play

Caregivers should be advised that time spent actively and warmly engaging with their child in play has a direct and positive effect on their child's development. Three areas of social policy have the potential to greatly assist families with play:

1. Paid parental leave

Improvements to paid parental leaveⁱⁱ would give caregivers the opportunity to stay home with their young children or work fewer hours to have more time and energy for play.⁶⁰ A third of parents worldwide feel they don't play enough because they need to work and lack time.⁴³ In New Zealand, mothers take on most child care⁵⁹ but many are also in paid work. In 2014 around 43% of women with a child aged under two and 59% of those with a child aged three to four were employed.⁶¹ The most common reason given by mothers in the Growing Up in New Zealand study for returning to work was needing the money.⁶² Both mothers and fathers in the study reported wanting to take more parental leave than they anticipated being able to.⁶² This suggests many parents would choose to stay home with their babies for longer if finances allowed. Improvements to parental leave policy could include more weeks of paid leave, higher payments and the provision of separate paid leave entitlements for both parents or caregivers.

2. Mental health support

Better access to mental health treatment and support would assist affected parents to bond and actively engage with their children. High levels of stress, anxiety or depression are likely to adversely affect a parent's ability to bond optimally with their child.⁶⁰ Mental distress during the perinatal period (from conception through pregnancy to one year after birth) is thought to affect at least 15% of New Zealand women, although rates can reach 30% for women of Māori, Asian and Pacific ethnicity. When women whose symptoms fall just below the threshold of clinical detection are also considered, some degree of mental distress may affect nearly half of all pregnant and postnatal women.⁶³ As many as 10% of fathers also develop depression during the perinatal period.⁶⁴ Access to support is hindered by overstretched and insufficiently staffed services, long wait times and inequitable service provision especially for Māori, Asian and Pacific women.⁶⁵

ii Currently, upon meeting certain conditions primary caregivers are eligible for up to 26 weeks of paid parental leave capped at \$661.12 a week before tax. Partners are not entitled to any paid leave, but primary caregivers can transfer some or all of their entitlement to their partner. Paid parental leave is almost always taken by mothers; uptake by fathers is less than 1%.⁵⁹

Te Whatu Ora Health New Zealand identified maternal mental health as a priority area under its Maternity Action Plan for 2021-2023.⁶⁶ It is essential this ongoing work is preserved and prioritised in future government Budgets.

3. Affordable housing

Increasing home ownership rates would allow families to settle in an area and build community bonds. Housing quality and affordability is a significant national issue. In 2018, home ownership rates were at their lowest since the 1950s. People living in houses they did not own moved more often than owner-occupiers and were much less likely to have lived in their house for long periods. This group included 120,000 children aged under five.⁶⁷ A significant number of families are therefore facing housing-related barriers to play such as not staying in one place long enough to get to know their neighbours, form play groups with local whānau or feel safe letting their children play outside.^{52, 54} Additionally, one in nine New Zealanders live in crowded housing,⁶⁷ which could reduce available space for play (as well as increase the risk of illness). The importance of stable housing in facilitating play further reinforces the need for continued policy attention on the high cost of homes in New Zealand.

Outside the home:

Early childhood education costs

The high costs of early childhood education (ECE) must be addressed. Centre-based ECE in New Zealand provides a play-rich environment: the national early childhood curriculum Te Whāriki values play as meaningful learning and recognises the importance of spontaneous unstructured play.⁶⁸ However, early childhood education in New Zealand is among the least affordable in the world.^{51, 69} There is no provision of free ECE for children aged under two⁷⁰ so families face significant periods when their paid parental leave entitlements have run out and their child is not eligible for funded careⁱⁱⁱ.

Most of the New Zealand ECE sector is for-profit and there is concern attempts to curb unaffordability through tax rebates or subsidy increases may see ECE centres raise fees in response.⁷¹ Alternative policy actions to address high ECE costs could include universal public funding, the extension of the 20 hours funded ECE scheme for children aged two to five to include infants and one-year-olds and addressing the balance of for-profit and not-for-profit providers.

Play-based curricula

It is vital New Zealand schools and early childhood centres retain a focus on play in their curricula. The New Zealand school curriculum includes brief mentions of play as a learning technique for drama and science for levels 1 and 2 (which roughly translates to school years 1 to 5). However, it is not referred to for older learners in these subjects or for students of any age learning English or mathematics and statistics.⁷² Since play is vital in the acquisition of language and spatial skills, the school curriculum could be improved by explicitly including play as a tool for students in all subjects and age groups.

In addition, concern about declining academic performance has led some countries to counterproductively remove or reduce play times at school. For example, since the mid-2000s 40% of United States school districts have reduced or removed recess.⁷³ In a climate of increasing concern about falling literacy and numeracy rates New Zealand must avoid this same misstep. Schools should also avoid removing playground equipment or excessively limiting activities during recess out of fear of injury. Schools may naturally be prone to caution due to safety concerns but embracing risky and unstructured play has benefits for both

iii The 20 Hours ECE Subsidy is currently available for children aged three to five years. In May 2023 the government announced that Subsidy will be extended to include two-year-olds as part of Budget 2023. This policy should be preserved irrespective of the Election 2023 outcome.

staff and students. For example, eight primary schools in Auckland and Otago took part in a two-year study in which staff relaxed playground rules and allowed more risky play such as tree climbing and rough-and-tumble. A wide range of benefits were reported including better behaviour, higher confidence levels, greater co-operation and more imaginative play.⁵⁰

Public spaces that protect and promote play

National and local government should make efforts to lessen the effect of higher-density housing on play. Smaller (or non-existent) gardens, busier roads and fewer public green spaces limit play, particularly for city-centre dwelling children whose parents have concerns about outdoor safety.⁷⁴ During the planning stage of new developments, steps should be taken to ensure the provision of public spaces suitable for outdoor play and safe walking and cycling.

Community-based initiatives that protect and promote play in public areas must also be supported. One such initiative is Play Streets, where streets or other public areas such as car parks are temporarily closed to provide safe play spaces. Overseas, Play Streets have been shown to improve physical activity, social cohesion and community connectedness and trust.⁷⁵ Locally, the Healthy Families initiative has used Play Streets to promote play and improve community support and resilience in West and South Auckland. Healthy Families has also been successful in amplifying community voices in Christchurch, Invercargill, East Cape and the Hutt Valley, where local councils have heard the call for more play opportunities and taken steps to revitalise play mindsets and environments.⁷⁶ In April 2023 Auckland's first Play Festival had over 5000 participants in multicultural games and festivities.⁷⁷ It is essential these types of initiatives receive the support and funding needed to continue their valuable work. Lastly, continued investment in community hubs like public libraries, which can be used for social play activities like parent and baby groups, will ensure a valuable source of support for whānau and benefit society.

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Appendix: Facilitating play

Children are geared to find play opportunities in almost any circumstances. Their play experiences can be enriched for optimal benefit through the following:

- **Responsive adult engagement.** Responsive play begins at birth in the form of serve and return interactions. Serve and return is focused, two-way communication where one player ‘serves’ – using cues such as sounds, smiles and gestures – and the other person responds in the same way, thus ‘returning the serve’. Babies serve as well as return and both parties are equally interested in each other.⁷⁸ Adults should slow down and spend time simply ‘being’ with the child in order to notice their cues. Simple games such as peekaboo, nursery rhymes or songs/waiata can be incorporated.^{17, 47}
- **Continuing to follow children’s leads** as they get older. Adult participation that acknowledges and builds on toddlers’ own play fosters more creative play than adult direction.⁷⁹ Children allowed to freely explore toys by themselves find more functions and imaginative ways to use them than children who are shown how a toy works.^{80, 81}
- Creative and engaging play is possible with **inexpensive toys and everyday objects** such as blocks, balls, pots and pans, pencils and paper.⁶ ‘Loose parts’ with no obvious play direction such as crates and boxes, and natural objects like pine cones and branches, stimulate children’s intrinsic motivation to play and explore.^{50, 82} Old clothes and household objects can be props for imaginative play. Opportunities can be found in everyday activities such as baking. Having lots of toys is unnecessary with fewer toys promoting longer and better-quality play with each item.⁸³
- Children should be given plenty of opportunities for **unstructured play and exploration**, along with more structured activities. Structured, rule-based play such as ball games or Simon Says are especially helpful for focusing attention and working towards a set goal.⁴⁷ Unstructured or free play is particularly important for creativity and imagination, autonomy and self-confidence.^{5, 21} A mix of solitary and social play should be encouraged.
- **Verbal play** should be incorporated for language development. Babies benefit from ‘parentese’, which uses real words said slowly, with shorter phrases and a higher pitch. Adults can repeat and expand on what toddlers say and ask older children to tell or write their own stories or act them out. Books, songs, legends or prayer/karakia can be used.⁸⁴
- Indoor activities (including screen time) should be balanced with **outdoor play**. Outdoor play can include elements of risky or adventurous play, which is physically challenging without being dangerous or reckless.³²
- **Educational forms of digital play** should be chosen for preschoolers and interactive ones prioritised for older children. Passive screen time should be avoided in children under two and adults should join in with children of all ages wherever possible.⁵³



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