

The LEGO Foundation



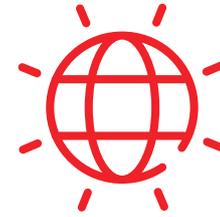
What we mean by:  
**Learning through play**

Version 1.2  
June 2017

**“ Rather than pushing children to think like adults, we might do better to remember that they are great learners and to try harder to be more like them.**

Seymour Papert (1928-2016)  
LEGO® Professor of Learning Research  
MIT Media Lab





# Contents

**Introduction** • 4

**Children as creative,  
engaged, lifelong learners** • 7

Children learn through play • 8

**Re-defining play** • 11

Characteristics of playful experiences • 12

**Re-imagining learning** • 17

Skills for holistic development • 18

**The power of play** • 20

Acknowledgements • 22

References • 22

# Introduction

***The aim of the LEGO Foundation is to re-define play and re-imagine learning. We want to build a future where learning through play empowers children to become creative, engaged, lifelong learners. This ambition is more critical than ever. Children grow up facing rapid change, global challenges and a highly interconnected world, all of which affect their future prospects.***

In this leaflet, we share our view of play as an important vehicle for children's learning and about how playful experiences support children in developing the skills to serve them, their communities and society through a lifetime. What reality looks like for children differs dramatically across time, cultures and contexts but the deep understanding that comes from effective learning experiences will no doubt help prepare them for navigating the future.

Our hope is to bring together voices across the wider community of passionate advocates and partners promoting learning through play in children's lives. Together, we can create a powerful platform for advocating about learning through play globally.





# Children as creative, engaged, lifelong learners

The world of today and tomorrow is one of challenges but also of tremendous opportunity. An increasingly interconnected and dynamic world means children today will find themselves changing jobs several times during their lives, and they will have to invent most of those jobs and the job profiles involved. They will face continuous re-skilling and a need for lifelong learning. Many children also face hardship in the shape of stress, poverty and conflict. They need positive experiences and coping skills that can counterbalance negative factors in their lives, and support their confidence and opportunity for making a difference.

The LEGO Foundation firmly believes that promoting children's drive and motivation to learn, their ability to come up with ideas and imagine alternatives, as well as to connect with others and their surroundings in positive ways, is essential in a 21st-century reality. Through active engagement with ideas and knowledge, and also with the world at large, children are better prepared to deal with tomorrow's reality – a reality of their own making. In short, we see learning through play as crucial for children's positive development, regardless of their situation.

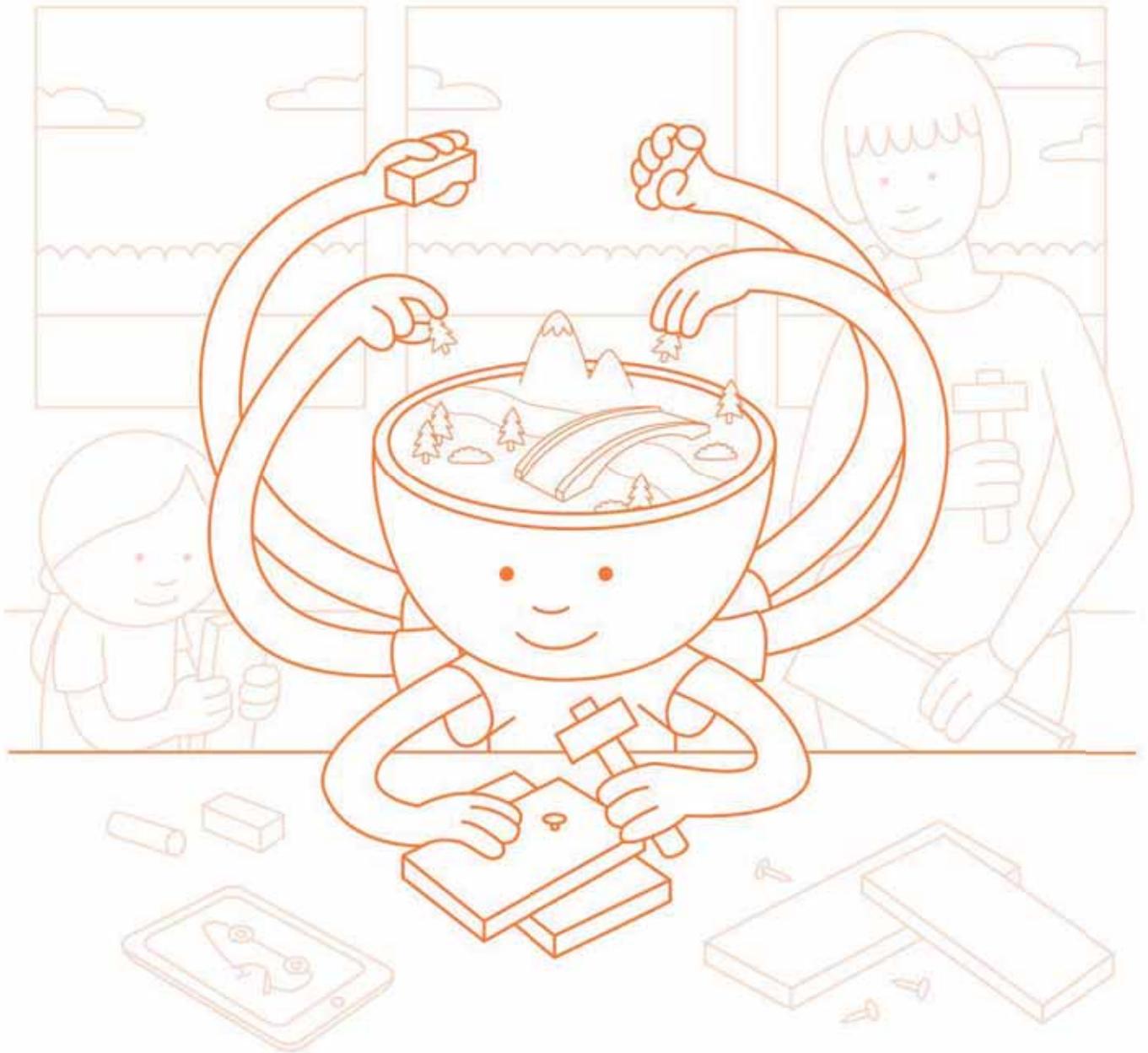
# Children learn through play

*Though learning happens right from birth, you may wonder how we build more complex, higher-order skills such as creativity, critical thinking, collaboration and problem-solving. One approach – often overlooked – is play!*

Right from the earliest moments of infancy, children have an amazing natural potential to learn about the world through play. In recent decades, the scientific community has found increasing evidence that infants and children are constantly learning, connecting and engaging with their surroundings through positive playful experiences.

A baby only a few hours old prefers to listen to human voices over any other sound, and very young children's

way of discovering is strikingly similar to much learning and thinking in science. These natural-born skills are the same capabilities that enable children to become creative, engaged, lifelong learners. But in order to fully flourish, these skills also need to be nurtured, supported and developed as children grow.







# Re-defining play

From moments pretending to discover a new country in one's own home to the hours spent building a tree house in the garden, play and childhood go hand in hand. Research has repeatedly shown that play experiences are not merely fun – play also has a critical and crucial role in learning and in preparing children for challenges in childhood and throughout adulthood.

While play features in many early childhood policies, practice often lags behind, just as the importance of learning through play is often less recognised, both at home and in school, as children grow older. That's

**Play and learning are like the two wings of a butterfly – one cannot exist without the other.**

**Carla Rinaldi**  
President of Reggio Children

why we need to redefine play as a central arena for learning in the minds and actions of those influencing children's lives.

When we say "play", this can mean many kinds of experiences, from play that gives children the freedom to explore and discover with minimal constraints, to play that is more guided or structured. Our environments (including the materials available when playing in a home, in a yard, in urban environments, in rural environments, etc.) also frame play, as do the peers, adults and other people we engage with. Play is also constantly influenced by the particular culture, values and beliefs in the home as well as in the community at large.

Regardless of whether a play activity falls closer to free play, guided play or games with a particular learning goal, a critical requirement is that **children must experience agency** and be supported rather than directed. This means seeing children as capable, and providing opportunities to exert their thinking and actions in a social context where others have the same rights. For example, are children's interests listened to? What choices do they have in the play activity? Do they initiate and invite adults to join the play?

# Characteristics of playful experiences

*The five characteristics listed below draw on extensive conversations with experts in the field, as well as reviews of the literature on play and learning. We do not view them as providing any formal definition of play, but they do help unfold how playful experiences lead to deeper learning.*

We say learning through play happens when the activity (1) is experienced as joyful, (2) helps children find meaning in what they are doing or learning, (3) involves active, engaged, minds-on thinking, (4) as well as iterative thinking (experimentation, hypothesis testing, etc.), and (5) social interaction.

These five characteristics draw on evidence for how children learn best (the Science of Learning) and how to foster a playful mindset.

## **Joyful**

Joy is at the heart of play - both enjoying a task for its own sake and the momentary thrill of surprise, insight, or success after overcoming challenges.

Recent research shows how curiosity and positive experiences are linked to learning; for example, infants show more learning after a surprising event than after one that is expected.

## **Actively Engaging**

Learning through play also involves being actively engaged. Imagine a child who's fully absorbed in playing with a set of building blocks. She is actively imagining how the pieces will go together and is so engrossed that she fails to hear her father call her for dinner. This mental immersion and ability to stay focused are especially powerful in the context of learning through play.

**Meaningful**

**Joyful**

**Socially  
interactive**

**Actively  
engaging**

**Iterative**



### **Meaningful**

Meaningful is when the child can relate new experiences to something already known. In play, children often explore what they have seen and done, or noticed others do, as a way of grasping what it means. By doing so, they can express and expand their understanding through a variety of media, symbols and tools.

### **Iterative**

From a toddler trying different ways to build a high tower with blocks, to a young child discovering that the angle of a slide impacts how far a marble will shoot across a room, iteration – trying out possibilities, revising hypotheses and discovering the next question – leads to increased learning.

### **Socially Interactive**

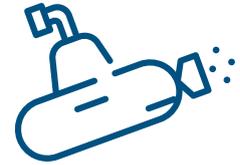
Social interaction is a powerful tool for both learning and play. By communicating their thoughts, understanding others through direct interaction and sharing ideas, children are not only able to enjoy being with others, but also to build deeper understanding and more powerful relationships.

These five characteristics ebb and flow as children are engaged in learning through play activities and all five are not necessary all the time. But over time, children should experience moments of joy and surprise, a meaningful connection, be active and absorbed, iterate and engage with others.









# Re-imagining learning

*Theorists, researchers and practitioners in child development and education have done an excellent job of extending the view of learning to go beyond memorising academic content, by highlighting that **children need to develop a breadth of skills. A holistic approach which also includes their physical, social, emotional, cognitive and creative skills is essential.***

Research shows that these different skills and aspects of development are not silos as much as they are interconnected gears: development in one influences development in another. For example, a whole new world opens to a toddler who learns to walk instead of crawl - now he can go in search of his caregiver, gaining access to new language, interactions, and play. Social competence and emotion regulation in turn underpin children's cognitive skills, and language helps children interact with peers in positive ways. Studies looking across the span of childhood find that infants who are more physically active and explore more at the age of 5 months show more success in school at age 14.

Knowing how to read, write and do maths is still important for children to take part in the world. But it is vital to apply a holistic approach to children's learning and development, recognising a broader set of skills that underpin learning for life.

# Skills for holistic development

*Because child development is beautifully complex, we take a holistic view and highlight the importance of children's physical, social, cognitive, creative and emotional skills and how these complement and interact with one another.*

## **Emotional skills**

Understand, manage and express emotions by building self-awareness and handling impulses, as well as staying motivated and confident in the face of difficulties.

## **Cognitive skills**

Concentration, problem solving and flexible thinking by learning to tackle complex tasks and building effective strategies to identify solutions.

## **Physical skills**

Being physically active, understanding movement and space through practicing sensory-motor skills,

developing spatial understanding and nurturing an active and healthy body.

## **Social skills**

Collaborate, communicate and understand other people's perspectives through sharing ideas, negotiating rules and building empathy.

## **Creative skills**

Coming up with ideas, expressing them and transforming them into reality by creating associations, symbolising and representing ideas and providing meaningful experiences for others.

Physical

Social

Cognitive

Emotional

Creative



# The power of play

Longitudinal studies underscore this need for supporting a breadth of skills in children. Their ability to share ideas and resources, be helpful and listen to others all help predict their level of education and job situation. The same is true for important aspects such as attention and focus, confidence, perseverance, spatial understanding and explorative behaviour.

Play has a key role in developing, encouraging and promoting these holistic skills from birth and throughout life. The nature of a child's play activities will vary – depending on age, context and culture – and their skills will increase in complexity. However, the basic structures of these skills are present right from early infancy, and are supported and strengthened by high-quality play experiences.

## Playful experiences in the early years allow you to acquire...

From the early indicators of...

- Attention
- Self-control
- Spatial understanding
- Motivation and confidence
- Problem-solving and reflection



# ....the critical skills for learning throughout a lifetime

...to a successful adulthood

- Education
- Innovation
- Health
- Job



# Acknowledgements

The text in this leaflet is based on the white paper 'Learning through play: a review of the evidence', written by researchers Jennifer Zosh (Pennsylvania State University), Emily Hopkins and Kathy Hirsh-Pasek (Temple University), Claire Liu and Lynneth Solis (Harvard University), Dave Neale and David Whitebread (University of Cambridge), and Hanne Jensen (LEGO Foundation Centre for Creativity, Play and Learning).

Warm thanks go to our many colleagues and partners who have contributed with invaluable input.



# References

## Introduction

Golinkoff, R. M., & Hirsh-Pasek, K. (2016). *Becoming brilliant: What science tells us about raising successful children*.

Ito, J., & Howe, J. (2016). *Whiplash: How to Survive Our Faster Future*. Hachette UK.

Winthrop, R., & McGivney, E. (2016). *Skills for a Changing World: Advancing Quality Learning for Vibrant Societies*. Center for Universal Education at Brookings.

Children as creative, engaged, lifelong learners

Gray, A. Jan 27 2017, What does the future of jobs look like? This is what experts think, World Economic Forum.

National Scientific Council on the Developing Child (2015). *Supportive Relationships and Active Skill-Building Strengthen the Foundations of Resilience: Working Paper 13*.

Sacks, G. (ed.) (2016). *The learning generation: Investing in education for a changing world*. The International Commission on Financing Global Education Opportunity.

UNESCO (2015). *Global Citizenship Education: Topics and Learning Objectives*.

## Children learn through play

Gopnik, A. (2012). Scientific Thinking in Young Children: Theoretical Advances, Empirical Research, and Policy Implications. *Science*, 337(6102), 1623–1627. <http://doi.org/10.1126/science.1223416>

Vouloumanos, A., & Werker, J. F. (2007). Listening to language at birth: Evidence for a bias for speech in neonates. *Developmental science*, 10(2), 159-164.

### Re-defining play

Copple, C., & Bredekamp, S. (eds.). (2009). *Developmentally appropriate practice in early childhood programs serving children from birth through age 8* (3rd ed.). Washington, DC: National Association for the Education of Young Children.

Josephson, K. (November 08 2016). Is the ECD community ready for a rapidly changing education landscape? Blog post retrieved from: <http://www.educationinnovations.org/blog/ecd-community-ready-rapidly-changing-education-landscape>

Sinclair, R. (2004). Participation in practice: making it meaningful, effective and sustainable. *Children & Society*, 18(2), 106–118.

Weisberg, D. S., Hirsh-Pasek, K., Golinkoff, R. M., Kittredge, A. K., & Klahr, D. (2016). Guided play: principles and practices. *Current Directions in Psychological Science*, 25(3), 177–182.

Whitebread, D., Basilio, M., Kvalja, M. & Verma, M. (2012). *The importance of play: a report on the value of children's play with a series of policy recommendations*. Brussels, Belgium: Toys Industries for Europe.

### Characteristics of playful experiences

Burghardt, Gordon M. 2011. "Defining and Recognizing Play." In *The Oxford Handbook of the Development of Play*, edited by Anthony D. Pellegrini, 9–18.

Hirsh-Pasek, K., Zosh, J. M., Golinkoff, R. M., Gray, J. H., Robb, M. B., & Kaufman, J. (2015). Putting education in "educational" apps: lessons from the science of learning. *Psychological Science in the Public Interest*, 16(1), 3–34.

National Research Council. (2000). *How people learn: Brain, mind, experience, and school: Expanded edition*. National Academies Press.

Pellegrini, Anthony D. 2009. *The Role of Play in Human Development*.

Pellegrini, A. D., Dupuis, D., & Smith, P. K. (2007). Play in evolution and development. *Developmental Review*, 27(2), 261–276. <http://doi.org/10.1016/j.dr.2006.09.001>

Stahl, A. E. & Feigenson, L. (2015). Observing the unexpected enhances infants' learning and exploration. *Science*, 348(6230), 91–94.

Tomasello, M., & Rakoczy, H. (2003). What makes human cognition unique? From individual to shared to collective intentionality. *Mind & Language*, 18(2), 121–147.

Toub, T. S., Rajan, V., Golinkoff, R. M., & Hirsh-Pasek, K. (2016). *Guided Play: A Solution to the Play Versus Learning Dichotomy*. In *Evolutionary Perspectives on Child Development and Education* (Evolutionary Psychology) (pp. 117–141).

Weisberg, D. S., Hirsh-Pasek, K., & Golinkoff, R. M. (2013). Guided play: Where curricular goals meet a playful pedagogy. *Mind, Brain, and Education*, 7(2), 104–112.

Verdine, B. N., Golinkoff, R. M., Hirsh-Pasek, K., & Newcombe, N. S. (2014). Finding the missing piece: Blocks, puzzles, and shapes fuel school readiness. *Trends in Neuroscience and Education*, 3(1), 7–13.

### Re-imagining learning

Bornstein, M. H., Hahn, C.-S., & Suwalsky, J. T. D. (2013). Physically developed and exploratory young infants contribute to their own long-term academic achievement. *Psychological Science*, 24(10), 1906–17. <http://doi.org/10.1177/0956797613479974>

McClelland, M. M., Acock, A. C., & Morrison, F. J. (2006). The impact of kindergarten learning-related skills on academic trajectories at the end of elementary school. *Early Childhood Research Quarterly*, 21(4), 471–490. <http://doi.org/10.1016/j.ecresq.2006.09.003>

Sommerville, J. A., Woodward, A. L., & Needham, A. (2005). Action experience alters 3-month-old infants' perception of others' actions. *Cognition*, 96(1), B1–B11.

Vallotton, C., & Ayoub, C. (2011). Use your words: The role of language in the development of toddlers' self-regulation. *Early Childhood Research Quarterly*, 26(2), 169–181. <http://doi.org/10.1016/j.ecresq.2010.09.002>

### Skills for holistic development

UNICEF (2017). *Content Analysis of Early Learning and Development Standards*.

Winthrop, R., & McGivney, E. (2016). *Skills for a Changing World: Advancing Quality Learning for Vibrant Societies*. Center for Universal Education at Brookings.

### Emotional abilities

Pajares, F. (2002). Gender and Perceived Self-Efficacy in Self-Regulated Learning. *Theory Into Practice*, 41(2), 116–125. [http://doi.org/10.1207/s15430421tip4102\\_8](http://doi.org/10.1207/s15430421tip4102_8)

Razza, R. A., Martin, A., & Brooks-Gunn, J. (2012). The implications of early attentional regulation for school success among low-income children. *Journal of Applied Developmental Psychology*, 33(6), 311–319. <http://doi.org/10.1016/j.appdev.2012.07.005>  
von Salisch, M., Haenel, M., & Denham, S. A. (2015). Self-Regulation, Language Skills, and Emotion Knowledge in Young Children From Northern Germany. *Early Education and Development*, 26(5–6), 792–806. <http://doi.org/10.1080/10409289.2015.994465>

### Cognitive abilities

Cole, P., Duncan, L. G., & Blaye, A. (2014). Cognitive flexibility predicts early reading skills. *Frontiers in Psychology*, 5 (June), 1–8. <http://doi.org/10.3389/fpsyg.2014.00565>

Engel de Abreu, P. M. J., Abreu, N., Nikaedo, C. C., Puglisi, M. L., Tourinho, C. J., Miranda, M. C., ... Martin, R. (2014). Executive functioning and reading achievement in school: a study of Brazilian children assessed by their teachers as 'poor readers'. *Frontiers in Psychology*, 5(10), 1–14. <http://doi.org/10.3389/fpsyg.2014.00550>

Moffitt, T. E., Arseneault, L., Belsky, D., Dickson, N., Hancox, R. J., Harrington, H., ... Caspi, A. (2011). A gradient of childhood

self-control predicts health, wealth, and public safety. *Proceedings of the National Academy of Sciences of the United States of America*, 108(7), 2693–8. <http://doi.org/10.1073/pnas.1010076108>

### Physical abilities

Bornstein, M. H., Hahn, C.-S., & Suwalsky, J. T. D. (2013). Physically developed and exploratory young infants contribute to their own long-term academic achievement. *Psychological Science*, 24(10), 1906–17. <http://doi.org/10.1177/0956797613479974>

Cheng, Y.-L., & Mix, K. S. (2014). Spatial Training Improves Children's Mathematics Ability. *Journal of Cognition and Development*, 15(1), 2–11. <http://doi.org/10.1080/15248372.2012.725186>



Verdine, B. N., Golinkoff, R. M., Hirsh-Pasek, K., & Newcombe, N. S. (2014). Finding the missing piece: Blocks, puzzles, and shapes fuel school readiness. *Trends in Neuroscience and Education*, 3(1), 7–13. <http://doi.org/10.1016/j.tine.2014.02.005>

### Social abilities

Caprara, Gian Vittorio, Barbaranelli, Claudio, Pastorelli, Conceta, Bandura, Albert, and Zimbardo, P. (2000). Prosocial Foundations of Children's Academic Achievement. *Psychological Science*, 11(4), 302–306. <http://doi.org/10.1177/1469787405057750>

Jones, D. E., Greenberg, M., Crowley, M., & Damon E. Jones, Mark Greenberg, and M. C. (2015, July 16). Early Social-Emotional Functioning and Public Health: The Relationship Between Kindergarten Social Competence and Future Wellness.

Sabol, T. J., & Pianta, R. C. (2011). Patterns of School Readiness Forecast Achievement and Socioemotional Development at the End of Elementary School. *Child Development*, 83(1), 282–299. <http://doi.org/10.1111/j.1467-8624.2011.01678.x>

### Creative abilities

Runco, M. a., Millar, G., Acar, S., & Cramond, B. (2010). Torrance tests of creative thinking as predictors of personal and public achievement: A fifty-year follow-up. *Creativity Research Journal*, 22(4), 361–368. <http://doi.org/10.1080/10400419.2010.523393>



Handwriting practice lines consisting of 20 horizontal dotted lines.



# Together, we champion learning through play

Get to know us better at [LEGOFoundation.com](http://LEGOFoundation.com)  
Like us on [Facebook.com/LEGOFoundation](https://www.facebook.com/LEGOFoundation)  
Follow us on Twitter [@LEGOFoundation](https://twitter.com/LEGOFoundation)  
Email us at [LEGOFoundation@LEGO.com](mailto:LEGOFoundation@LEGO.com)

LEGO and DUPLO are trademarks of the LEGO Group  
©2017 The LEGO Group

LEGO Fonden  
Koldingvej 2, DK-7190 Billund  
CVR number: 12 45 83 39

