# A call to action on teaching and learning through play

#### **Dr Bo Stjerne Thomsen**

Learning through Play at the LEGO Foundation

#### **Rachel Parker**

Australian Council for Educational Research

https://doi.org/10.37517/978-1-74286-715-1-3

Dr Bo Stjerne Thomsen is the Chair of Learning through Play for the LEGO Foundation. As Chair and senior expert on how children and adults learn through play, he leads the research and learning agenda of the LEGO Foundation, and provides consultation at a bilateral, regional and multilateral level to international partners and leaders. Bo Stjerne has published widely on creativity, play and learning, most recently on the integrated role of technologies in everyday life, and the systems-change needed in schools and education to achieve equitable outcomes with learning through play. He is a frequent contributor and advisor to international governments and forums such as the OECD, the United Nations General Assembly and the World Economic Forum. Bo Stjerne completed his masters degree in design, architecture and engineering, and his PhD on performative technologies and learning environments. He has been a visiting scholar at the MIT Media Lab, Harvard University and Tufts University, studied research management and leadership at Copenhagen Business School and IMD in Switzerland, and is an advisor to various international research organisations.

Rachel Parker is a Senior Research Fellow at the Australian Council for Educational Research. In recent years she has led 2 major longitudinal studies – the first, on the impact of learning through play on primary school teachers and students for the LEGO Foundation, Ukraine; and the second, on the factors that impact achievement and growth in the first 5 years of school for UNICEF, Philippines. Rachel draws on 20 years' experience leading educational research and development programs in more than 15 countries for a range of partners. These experiences inform her understanding of education quality in different contexts.

#### **Abstract**

Learning through play has emerged as an important strategy to promote student engagement, inclusion and holistic skills development beyond the preschool years. If we want to build an education system preparing children for lifelong learning, we can use these strategies and achieve a balance of academic growth, holistic skills and a joy of learning. This presentation addresses the disconnect between policy, research and practice by summarising 5 key findings from international studies and 4 challenges to connecting policy and practice. The evidence that play supports learning is considerable, and a new framework can create continuity between the early years learning contexts and implementation in schools.

Research Conference 2023

#### Introduction

Learning through play at school is at risk of demise, due to an increased global focus on catching up on the 'lost learning' of 'core skills', attributed to extended school closures during the COVID-19 pandemic. Multilateral organisations are endorsing accelerated learning programs that prioritise 'teaching the fundamentals' such as literacy and numeracy via structured pedagogies, tutoring and expanded learning time (World Bank et al., 2022, p. 65). Education stakeholders acknowledge the impact of COVID-19 on teacher and student wellbeing and social-emotional learning (World Bank et al., 2022); however, intervention strategies lack detail and appropriate measures, and are often peripheral to the classroom (UNICEF, 2022). In the rush to address the problem – a significant learning gap that in fact predates the pandemic – international frameworks and policies appear to sideline social-emotional learning (and other so-called 21st-century skills) from classrooms as 'noncore'.

Social-emotional skills are, however, the foundations for learning. Before a child can learn; that is, demonstrate the resilience required to try something new, they must feel mentally and physically well, safe, secure, and have a sense of belonging (Merritt et al., 2012). Social-emotional skills are significant predictors of achievement across a range of age cohorts and subjects (Organisation For Economic Co-operation and Development [OECD], 2021). Research points to learning through play as an appropriate pedagogy to foster social-emotional skills in the classroom (Parker & Thomsen, 2019). Playful approaches to teaching and learning prioritise the whole child, and view education holistically (Bubikova-Moan et al., 2019). A single playful classroom activity can be leveraged to foster a range of skills including literacy, numeracy, and also prosocial skills such as perspective and turn-taking, relating to others, playing fairly and regulating emotions.

Multilateral donors are proposing that systems narrow their focus on a small set of skills when the circumstances after COVID-19 – and beyond – call for broader skill sets and applied ways of thinking and doing to meet children's needs for a future where they are safe and well, are employable with skills reflecting the future of work (World Economic Forum [WEF], 2023), and live on a habitable planet.

Instead of confining our vision for education, we must expand our view to include the whole picture.

We call on all education systems and policymakers to consider the evidence on the value and benefits of learning through play for children, teachers, schools, systems and communities.

### What is learning through play?

Learning through play is a pedagogy where play is the context for learning via a range of meaningful, joyful and engaging interactions and experiences in pursuit of holistic learning outcomes (Parker et al., 2022). Learning through play is not leaving children alone to discover for themselves, nor is it always directed by teachers; both approaches have been proven solely ineffective for learning (Marbina et al., 2011; Mayer, 2004). Playful learning in primary school is often called active, experiential, inquiry or problem-based learning, which are seen as more palatable terms for the 'serious business of school'; however, these strategies have much in common with learning through play considering their foundations in constructivism, holistic outcomes and markers of quality (Parker & Thomsen, 2019).

#### Children of all ages benefit from learning through play

In our white paper (Parker & Thomsen, 2019), we established that playful teaching and learning is relevant to and occurs in primary schools in many countries, to a significant extent, and can be highly effective in fostering literacy, mathematics, social-emotional, creative and physical skills. Effectiveness is predicated on certain conditions, and these include teacher, school, system and community factors such as skills, confidence, time, resources, support and understanding, and valuing playful teaching and learning. Contextual factors must be considered when attempting to scale-up success.

# Children who learn through play achieve highly in both 'core' and 21st-century skills

Children who learn through play have enhanced problem-solving, communication, decision-making and creative skills (Zosh et al., 2022). They have positive relationships with their teachers and peers (Vancraeyveldt et al., 2022), and they are resourceful, critical, and inventive users of information and materials (OECD, 2023). Studies have shown that children learning through play achieve as highly as children in traditional learning environments on writing skills such as spelling and punctuation, but higher in creativity of responses (Lillard & Else-Quest, 2006). Further, children learning mathematics through play were able to solve more difficult problems than children in non-playful contexts (Cotič & Zuljan, 2009) and were able to transfer their newly acquired mathematical skills to novel problems (Purpura et al., 2016).

These findings may suggest that integrating playful learning is a good value-for- money investment considering the quality and range of outcomes.

Children themselves associate quality teaching with guided play. Subjects that are 'exciting' to children are experiential and embed social-emotional learning and opportunities to practise and develop communication skills (OECD, 2021). Children who participated in the 2023 Mandag Morgen & LEGO Foundation study The Good Life – According to Children, said:

A good teacher is someone who helps you, whose lessons are fun and interesting, and if anyone gets angry, the teacher helps them to become friends again. Ebbe, [age] 11 (p. 57)

Last Friday we had a social studies subject which the whole class thought was really exciting. Especially as we didn't just sit and write notes, but everyone was able to speak and contribute their views.' Cecilie, [age] 13 (p. 58)

However, as children grow, play declines, with 47% of children in grades 7–10 reporting that they no longer play compared with only 5% in grades 4–6 (Mandag Morgen & LEGO Foundation, 2023). Furthermore, for girls, play declines sooner with fewer girls reporting playing in grades 8 and 9 compared with boys (Mandag Morgen & LEGO Foundation, 2023). These trends align with children's enjoyment of school, with younger children enjoying school most, and the older cohorts enjoying school the least (Mandag Morgen & LEGO Foundation, 2023). Zhao and Gibson (2022) found play to be a protective factor against later emotional, peer and conduct problems, providing further evidence regarding the value of play to learning, achievement and development.

An opportunity exists to support children to learn through play at school for longer, promoting improved social-emotional learning, and mental health and wellbeing.

#### Autonomous teachers foster agentic empowered students

When we place demands and constraints on our teachers, we also apply them to our students.

We know that what teachers do matters most for student learning (Hattie, 2008), but our efforts to capitalise on teachers' influence has put them under greater pressure than ever before. Requirements for planning, differentiation, reporting and assessment have increased substantially over time, ever expanding teachers' roles and responsibilities (Appel, 2020). Teachers around the world are reeling from the impact of the global pandemic on their profession and students. They have been tasked with addressing the great learning loss 'casualty' (Patrinos et al., 2023), and are leaving or planning to leave the profession in unprecedented numbers (Dilberti et al., 2021).

One key stressor for teachers is low job autonomy, a factor associated with emotional exhaustion and burnout (Schonert-Reichl, 2017; Skaalvik & Skaalvik, 2020). Teachers experience high levels of stress when circumstances change, and they have no control or power to influence decisions (Schonert-Reichl, 2017). Conversely, teachers in higher autonomy teaching and learning environments report higher job satisfaction and self-efficacy (Skaalvik & Skaalvik, 2020; Worth & Van den Brande, 2020). Further, teaching practice autonomy was a wellbeing protective factor during COVID-19 (Chan et al., 2021).

## The benefits of choice and agency for teachers extend to students

When systems support teachers to choose their teaching methods and practices, they in turn foster high-choice learning environments for students (Henriksen, 2012). In Parker and Thomsen (2019), student agency is typified by learners having a say in what they do, and how they do it, and is associated with increased motivation and engagement in learning. Student agency has been described a 'critical requirement' for learning through play (Zosh et al., 2017, p. 14), based on constructivist learning theories that emphasise an active mind as optimal for the creation of knowledge (Piaget, 1954). Parker and Thomsen (2019) identify 9 features of highly effective playful pedagogies relating to learner agency, clearly establishing the connection between these factors.

#### On autonomy and agency, teachers say:

I am glad that I have been given the opportunity to give ideas on school decision-making. I feel proud that my idea was recognized. (Teacher, Malaysia, in Khun-inkeeree et al., 2021, p. 567)

My team and I created the best thing possible for our students [during the pandemic]. I think we needed the freedom to make that happen. (Teacher, United States, in Chan et al., 2021, p. 537)

... I work to promote autonomy as I provide activities to challenge children and encourage them to be risk-takers in their own learning. (Teacher, United States, in Castle, 2006, p. 1102)

When teachers are part of the decisions that impact them, benefits include improved job satisfaction, wellbeing, higher retention, improved student behaviour and improved student agentic skills such as creativity, decision-making and problem-solving.

# Teachers need time and support to experiment with playful pedagogies

Australian teachers of Kindergarten (Foundation) to grade 3 have said that play-based teaching is a top or the most important priority in the early years (91%), and there should be more play-based learning in class; however expectations for assessment and the National Assessment Program – Literacy and Numeracy (NAPLAN) affect decisions around increasing or improving play-based learning. In addition, teachers reported that pedagogical decisions were largely out of their control (Hesterman, 2019). Teachers need time and support to make pedagogical choices that are appropriate for their students, and opportunities to trial, reflect on and evaluate the success of their learning through play practice.

Changes to knowledge, behaviours and practices takes time; there are no 'quick fixes' in education. Researchers have found that more impactful teacher professional learning programs are sustained over time, allowing for ongoing professional experimentation and a cyclical model of reflective professional inquiry (Borko et al., 2010). Short-term training might result in 'temporary compliance', but enduring changes require long-term support (Kennedy, 2016, p. 951). Another key quality feature of high-quality professional learning is collaboration (Borko et al., 2010). When teachers are supported by colleagues and leaders in professional learning communities, shared understandings, interpretations and applications of new knowledge are more consistent and cohesive (Darling-Hammond et al., 2017).

Commitment to investing in learning through play must be evidence informed, sustained over time, oriented in practice, and supported by communities of practice.

#### Schools can foster play-supportive environments

When school leaders and teaching teams dedicate sufficient time and resources to playful teaching and learning via school-wide approaches, benefits include improved student behaviour, staff retention and learner growth across a range of areas (Grissom et al., 2021). These results were seen at East Derwent Primary School (EDPS), Tasmania, a school with 80% of its students from the bottom quarter of socio-educational disadvantage (ACARA, 2023), where leaders and teachers adopted a play- and inquiry-based, student-centred, and needs-responsive approach to teaching and learning. Features included unconditional positive regard for learners as capable and confident, capitalising on support staff and teaching assistants to differentiate and support all learners, and time; 'holding the line' over the years that cultural change takes (Russell, 2020).

Lindfield Learning Village (LLV) in New South Wales takes a similar approach. The government-funded newly created school adopted an unconventional flexible and individualised model with an ambitious vision to 'create a school which changes the educational landscape and influences global educational thinking' (Lindfield Learning Village, n.d). Features of the educational model include 'stage not age' learning, which is supported by evidence about the wide distribution of ability in classes (Masters, 2021). It also includes flexible timetables, transdisciplinary learning, and fostering collaboration, creativity, empathy and resilience. Importantly, LLV's Strategic Improvement Plan includes improvement measures for literacy and numeracy, and also fostering an adaptive culture of optimism and improvement (Lindfield Learning Village, n.d.).

Key to the success of these schools is focusing on what matters. EDPS staff consistently describe a shift to focusing on learning (Russell, 2020). Further, some researchers have argued that doing fewer things and doing them well and 'de-implementing' – that is, discontinuing – the initiatives or programs that no longer meet the needs of schools and students is one solution to reduce workload, cost and time pressures (Wang et al., 2018; DeWitt, 2022). School leaders occupy an influential position when leading playful learning at school. Both schools described are led by dedicated,

knowledgeable, skilled and experienced principals. School leaders can positively influence student learning, instructional quality, staff retention and job satisfaction, and school culture (Grissom et al., 2021).

School leaders can cultivate a culture of high-quality learning through play within their school communities by fostering a shared language and focusing on what matters.

### Systems can support playful teaching and learning

System transformation to enhance playful teaching and learning for 21st-century learning is based on alignment of purpose, pedagogy and position (Sengeh & Winthrop, 2022). Systems can provide aligned and targeted support to schools and teachers to meet their strategic goals to foster inquiry-based learning, as was the case for EDPS. As a participating school in the Education Department's Refocus Teaching and Learning Initiative, Tasmania, EDPS was supported to strengthen early years pedagogical practice in accordance with the Tasmanian Education Act. Experienced coaches worked alongside teachers to foster a culture of play and inquiry, with associated targets and measures (Russell, 2020).

Education systems have an important role to play in promoting curricula that prioritise a breadth of skills over narrow conceptualisations of learning. They can create policy and frameworks that articulate how, where, why and when holistic skills development is prioritised at school. They can actively support deep learning, take a developmental view of learning, and provide guidance on ways to implement and measure the impact of playful approaches to teaching and learning.

Systems and researchers can support schools and teachers with empirical evidence and frameworks that describe how to implement and measure learning-through-play outcomes, experiences, facilitation and design, which can be adapted to their setting.

### Recommendations

We maintain that playful approaches can be integrated into and complement current teaching practices to an extent appropriate for the setting, which will enhance holistic learning. We recommend:

- 1. Children's holistic skills development in the classroom is prioritised, and fostered in ways that are meaningful and enjoyable to them. Further, useful and relevant evidence is gathered in appropriate ways about the impact of learning through play on holistic skills, namely, cognitive, social-emotional, creative and physical skills.
- 2. Systems strive to prioritise children's voices and preferences to learn through play at school for longer, promoting improved social-emotional learning and mental health and wellbeing, and enjoyment of school.
- 3. Teachers participate in decisions about pedagogic practice. Professional learning should be characterised by collaboration, not control, and used to 'improve practice and drive change rather than to standardise practice (Sachs, 2016)' (Appel, 2020).
- 4. Schools and systems work towards increasing teachers' autonomy over their professional development goals (Wiliam, 2016), with a focus on empowering teachers to effectively integrate playful pedagogies to improve student learning.
- 5. Systems and schools empower and equip teachers to foster a culture, language and practice of differentiated teaching and learning to respond to individual learning needs by balancing instruction with guidance and open-ended inquiry (Parker et al., 2022).

#### References

- Appel, M. (2020). Performativity and the demise of the teaching profession: The need for rebalancing in Australia. *Asia-Pacific Journal of Teacher Education*, 48(3), 1–15. https://doi.org/10.1080/135986 6X.2019.1644611
- Australian Curriculum, Assessment and Reporting Authority (ACARA). (2023). *JRLF East Derwent Primary School*, Bridgewater, TAS. https://www.myschool.edu.au/school/50326
- Borko, H., Jacobs, J., & Koellner, K. (2010). Contemporary approaches to teacher professional development. In P. Peterson, E. Baker, & B. McGaw (Eds.), *International encyclopedia of education* (pp. 548–556). Elsevier. https://doi.org/10.1016/B978-0-08-044894-7.00654-0
- Bubikova-Moan, J., Næss Hjetland, H., & Wollscheid, S. (2019). ECE teachers' views on play-based learning: A systematic review. *European Early Childhood Education Research Journal*, 27(6), 776–800. https://doi.org/10.1080/1350293X.2019.1678717
- Castle, K. (2006). Autonomy through pedagogical research. *Teaching and Teacher Education*, 22(8), 1094–1103.
- Chan, M.-K., Sharkey, J. D., Lawrie, S. I., Arch, D. A. N., & Nylund-Gibson, K. (2021). Elementary school teacher well-being and supportive measures amid COVID-19: An exploratory study. *School Psychology*, *36*(6), 533–545. https://doi.org/10.1037/spq0000441
- Cotič, M., & Zuljan, M. V. (2009). Problem-based instruction in mathematics and its impact on the cognitive results of the students and on affective-motivational aspects. *Educational Studies*, *35*(3), 297–310. https://doi.org/10.1080/03055690802648085
- Darling-Hammond, L., Hyler, M. E., & Gardner, M. (2017). *Effective teacher professional development*. Learning Policy Institute.
- DeWitt, P. M. (2022). De-implementation: Creating the space to focus on what works. Sage Publications.
- Dilberti, M.K., Schwartz, H.L., & Grant, D. (2021). Stress topped the reasons why public school teachers quit, even before COVID-19. Rand Corporation. https://www.rand.org/content/dam/rand/pubs/research\_reports/RRA1100/RRA1121-2/RAND\_RRA1121-2.pdf
- Grissom, J. A., Egalite, A. J., & Lindsay, C. A. (2021). *How principals affect students and schools:* A systematic synthesis of two decades of research. The Wallace Foundation. http://www.wallacefoundation.org/principalsynthesis.
- Hattie, J. A. C. (2008). Visible learning: A synthesis of over 800 meta-analyses relating to achievement. https://doi.org/10.4324/9780203887332
- Henriksen, H. (2012). Om metodefriheden og dens fjender [About methodological freedom and its enemies]. Saxo.
- Hesterman, S. (2019). A report on the state of play-based learning in Western Australian Schools. The State School Teachers' Union of W.A. https://researchportal.murdoch.edu.au/esploro/outputs/991005545545707891
- Kennedy, M. M. (2016). How does professional development improve teaching? *Review of Educational Research*, 86(4), 945–980. https://doi.org/10.3102/0034654315626800

- Khun-inkeeree, H., Yaakob, M. F. M., WanHanafi, W., Yusof, M. R., & Omar-Fauzee, M.S. (2021). Working on perception of primary school teacher on organizational climate and their job satisfactions. *International Journal of Instruction*, *14*(3), 567–582. https://doi.org/10.29333/iji.2021.14333
- Lillard A., & Else-Quest, N. (2006). The early years: Evaluating Montessori education. *Science*, 313(5795), 1893–1894. https://doi.org/10.1126/science.1132362
- Lindfield Learning Village. (n.d). School vision. https://lindfieldlearningvillage.schools.nsw.gov.au/
- Mandag Morgen & LEGO Foundation. (2023). *The good life according to children*. LEGO Foundation and Tænketanken Mandag Morgen. https://cms.learningthroughplay.com/media/r4nd0vq4/tmm-det-gode-b%C3%B8rneliv\_en\_gb\_lowres.pdf
- Marbina, L., Church, A., & Tayler, C. (2011). Victorian Early Years Learning and Development Framework: Evidence paper: Practice principle 6: Integrated teaching and learning approaches. https://www.education.vic.gov.au/Documents/childhood/providers/edcare/eviintegteac.pdf
- Masters, G. (2021). Why the curriculum should be based on students' readiness, not their age. *The Conversation*. https://theconversation.com/why-the-curriculum-should-be-based-on-students-readiness-not-their-age-155549
- Mayer, R. E. (2004). Should there be a three-strikes rule against pure discovery learning? The case for guided methods of instruction. *American Psychologist*, *59*(1), 14–19. https://doi.org/10.1037/0003-066X.59.1.14
- Merritt, E. G., Wanless, S. B., Rimm-Kaufman, S. E., Cameron, C., & Peugh, J. L. (2012). The contribution of teachers' emotional support to children's social behaviors and self-regulatory skills in first grade. *School Psychology Review, 41*(2), 141–159.
- Organisation for Economic Co-operation and Development. (2021). Beyond academic learning: First results from the Survey of Social and Emotional Skills. https://doi.org/10.1787/92a11084-en
- Organisation for Economic Co-operation and Development. (2023). Supporting students to think creatively. https://issuu.com/oecd.publishing/docs/supporting\_students\_to\_think\_creatively\_web\_1\_?fr=sMGE0ZjYxMjMxNTE
- Parker R., Thomsen B. S., and Berry A. (2022). Learning through play at school A framework for policy and practice. *Frontiers in Education*, *7*, 751801. https://doi.org/10.3389/feduc.2022.751801
- Parker, R., & Thomsen, B. S., (2019). Learning through play at school: A study of playful integrated pedagogies that foster children's holistic skills devleopment in the primary school classroom. The LEGO Foundation. https://cms.learningthroughplay.com/media/nihnouvc/learning-through-play-school.pdf
- Patrinos, H. A., Gajderowiczmaciej, T., & Jakubowski. M. (2023). *Learning loss: A Covid-19 mass casualty*. https://blogs.worldbank.org/developmenttalk/learning-loss-covid-19-mass-casualty
- Piaget, J. (1954). The construction of reality in the child. (M. Cook, Trans.). Basic Books. https://doi.org/10.1037/11168-000
- Purpura, D., Baroody, A., Eiland, M., & Reid, E. (2016). Fostering first graders' reasoning strategies with basic sums: The value of guided instruction. *The Elementary School Journal, 117* (1), 72–100. https://doi.org/10.1086/687809
- Russell, D. (Host). (2020, October 15). School improvement: Refocusing teaching and learning (No. 28) [Audio podcast episode] *Teacher magazine*. https://www.teachermagazine.com/au\_en/articles/school-improvement-episode-28-refocusing-teaching-and-learning

- Schonert-Reichl, K. A. (2017). Social and emotional learning and teachers. *The Future of Children*, 27(1), 137–155. http://www.jstor.org/stable/44219025
- Sengeh, D., & Winthrop, R. (2022). *Transforming education systems: Why, what, and how.* The Brookings Institution. https://www.brookings.edu/wp-content/uploads/2022/06/Transforming-education-systems\_Brief\_FINAL.pdf
- Skaalvik. E. M., & Skaalvik, S. (2020) Teacher burnout: Relations between dimensions of burnout, perceived school context, job satisfaction and motivation for teaching. A longitudinal study, *Teachers and Teaching*, 26(7–8), 602–616. https://doi.org/10.1080/13540602.2021.1913404
- United Nations Children's Fund. (2022). Where are we on education recovery? https://www.unicef.org/media/117626/file/Where%20are%20we%20in%20Education%20Recovery?.pdf
- Vancraeyveldt, C., Barros Araújo, S., Boland, A., Grofčíková, S., Klimentova, A., Oenema-Mostert, I., & Sanches-Ferreira, M. (2022). Learning to play-2-gether. Building positive relationships with children through play. In E. Loizou & J. Trawick-Smith (Eds.), *Teacher education and play pedagogy*. Routledge. https://doi.org/10.4324/9781003149668
- Wang, V. M., Maciejewski, M.L., Helfrich, C. D., & Weiner, B. J. (2018). Working smarter not harder: Coupling implementation to de-implementation. *HealthCare*, *6*, 104–107. https://www.sciencedirect.com/science/article/abs/pii/S2213076417302142
- Wiliam, D. (2016). Leadership [for] teacher learning: Creating a culture where all teachers improve so that all students succeed. Hawker Brownlow.
- World Bank, the Bill & Melinda Gates Foundation, FCDO, UNESCO, UNICEF, & USAID. (2022). Guide for learning recovery and acceleration: Using the RAPID Framework to address COVID-19 learning losses and build forward better. World Bank. https://www.worldbank.org/en/topic/education/publication/the-rapid-framework-and-a-quide-for-learning-recovery-and-acceleration
- World Economic Forum. (2023). *Future of jobs report 2023*. https://www3.weforum.org/docs/WEF\_Future\_of\_Jobs\_2023.pdf
- Worth, J., & Van den Brande, J. (2020). *Teacher autonomy: How does it relate to job satisfaction and retention?* NFER.
- Zhao, Y.V., & Gibson, J.L. (2022). Evidence for protective effects of peer play in the early years: Better peer play ability at age 3 years predicts lower risks of externalising and internalising problems at age 7 years in a longitudinal cohort analysis. *Child Psychiatry & Human Development*. https://doi.org/10.1007/s10578-022-01368-x
- Zosh, J. M., Hopkins, E. J., Jensen, H., Liu, C., Neale, D., Hirsh-Pasek, K., Solis, S. L., & Whitebread, D. (2017). *Learning through play: A review of the evidence*. The Lego Foundation. https://www.legofoundation.com/media/1063/learning-through-play\_web.pdf
- Zosh, J., Hassinger-Das, B., & Laurie, M. (2022). Learning through play and the development of holistic skills across childhood. The LEGO Foundation. https://cms.learningthroughplay.com/media/kell5mft/hs\_white\_paper\_008-digital-version.pdf