Playful Learning Landscapes for children and caregivers

Behaviour change in everyday spaces that stimulates STEM, literacy and 21st-century skills

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In discussions about how to close educational gaps, most of the emphasis is on schools. However, over the course of their childhood children spend only 20% of their waking hours in school. Playful Learning Landscapes (PLL) is a culturally adaptable and sustainable way to augment learning opportunities in the time that children spend outside school, with their families and communities.

Research shows that PLL promotes caregiver–child communication in ways that support behavioural outcomes for both caregiver and child – for example, it enhances language learning and relationship building, encouraging children's talk about numbers and letters and their spatial skills (Bustamante et al., 2019; Hassinger-Das et al., 2021). Such behaviour changes in young children have been shown to improve outcomes in school and beyond (Gunderson & Levine, 2011; Pruden et al., 2011; Sheridan et al., 2011).

PLL uses a three-part equation to embed playful learning principles and design elements in everyday spaces such as bus stops, parks and supermarkets – transforming them into enriching, social spaces for families.

Part 1 Engaging communities in placemaking and playful learning

PLL captures the voice, values and culture of each community through human-centred co-design, drawing on community-based participatory action research (CBPR). The use of a CBPR framework builds on a community's funds of knowledge and ensures that any design is welcoming to caregivers and children (Collins et al., 2018). When a community has ownership of a place, its members are more likely to participate in activities in that place with children and neighbours. Behaviour is more likely to change.

Urban Thinkscape, for example, transformed an abandoned lot next to a bus stop in West Philadelphia. Behavioural scientists and community members worked together to design and install puzzle benches and modified hopscotch games at a bus stop that stood on the site where Martin Luther King once gave a Freedom March speech.

In Santa Ana, California, researchers partnered with Latine caregivers originally from Mexico to create community spaces that represent their cultural values and practices (Bermudez et al., forthcoming). They co-designed a giant abacus at a bus stop to prompt caregivers and children to count and talk about numbers while waiting for the bus. The concept was selected by caregivers who had learned maths with an abacus. Feedback from community members was solicited throughout the design process, including the creation of prototypes for families to play-test.

Part 2 Playful learning principles

The second part of the PLL equation captures *how* children learn. PLL is built on the scientific basis of "playful learning", a theory fusing play – in particular, guided play – and learning. Playful learning is currently gaining wider momentum, with other initiatives including the LEGO Foundation's Build a World of Play Challenge, KABOOM! and Urban95. It offers a set of characteristics that, when woven into playful structures, encourages intentional and thoughtful behaviours and interactions that build social and academic capital.

Guided play sits at the middle of a spectrum anchored by free play (directed and initiated by children) and direct instruction (directed and initiated by adults). Guided play is inspired by adults but led by children as they work towards a learning goal – which could be in vocabulary, science, technology, engineering or maths. Adults curate opportunities for children with a learning goal in mind. Community members easily learn the characteristics that support guided play, and work with the team to create builds that weave science into the design.

Part 3 The Six Cs

The third part of the PLL equation captures *what* children need to learn in order to thrive in an ever-changing world. PLL focuses on six characteristics that directly relate to behaviour changes in child outcomes. The Six Cs – collaboration, communication, content, critical thinking, creative innovation, and confidence – are rooted in the science of learning and are also highlighted by business executives as important for career development in later life (Golinkoff & Hirsh-Pasek, 2016; Hirsh-Pasek et al., 2022).

Taken together, these characteristics embedded in PLL installations spark quality caregiver–child interactions that are engaging, meaningful, socially interactive, iterative and joyful (Hirsh-Pasek et al., 2015; Zosh et al., 2018). Our research demonstrates conclusively that intentional design *can* change behaviour in ways known to foster positive outcomes for children.

For example, in "Jumping Feet" – an activity included in the Urban Thinkscape intervention – designs on a series of stones show either one shoe print or two, and signage encourages the child to put one foot where they see two and vice versa. This twist on hopscotch is based on a task used by

↓ Urban Thinkscape in Philadelphia, Pennsylvania: the game "Jumping Feet" is a variation of hopscotch that develops children's memory and attention

Photo: Sahar Coston-Hardy

developmental researchers to gauge children's memory and attention. It targets executive function skills, such as focus and impulse control, which are better predictors of reading and maths outcomes than IQ scores (Zelazo et al., 2016). Jumping Feet also prompts caregiver behaviour such as working together to solve problems and targeted question asking (Gaudreau et al., 2021), another key way to enhance child outcomes.

To date, communities have been enthusiastic about PLL and the reach is now at more than 50 cities around the globe. Showing examples of what can achieve behaviour change inspires communities to embrace the PLL movement and come up with their own ideas for altering neighbourhood spaces in educationally rich ways.

Measuring behaviour change and impact: the evidence

The Brookings Institution and the Playful Learning Landscapes Action Network developed the "Playful Learning Landscapes metrics framework" to evaluate the impact of pilot projects on behavioural interaction and community cohesion, and to guide iteration, scaling and adaptation to future sites (Hadani et al., 2021). PLL works with members of the communities to evaluate projects: in Urban Thinkscape, Hassinger-Das et al. (2020) recruited, trained and paid neighbourhood members to collect data.

Our research found that Urban Thinkscape led to a significant increase in quality caregiver–child interactions, including conversations around language, literacy and STEM. The proportion of caregivers using language relating to numbers, colours and letters, for example, rose from 2% before the intervention to 36% after. The installation was also found to have heightened the community's sense of pride and civic engagement, which discourages undesirable behaviours. Since installation, this site has been free from graffiti and maintained by the community (Hassinger-Das et al., 2020).

Photos: South Africa Partners

"Our research demonstrates conclusively that intentional design can change behaviour in ways known to foster positive outcomes for children."

← Supermarket Speak turned grocery stores in low-income neighbourhoods in Johannesburg, South Africa into playful learning spaces using colourful signs to promote caregiver–child conversation

Such results offer proof-of-concept that using the science of learning to design public spaces in low-income neighbourhoods can have a transformative impact on how caregivers and children engage (Hassinger-Das et al., 2021). An increasing number of children are growing up in communities that are under-resourced and socially, economically and racially stratified. In such communities, PLL is a promising way to engage families and build community cohesion while promoting behaviour changes in everyday spaces, stimulating STEM, literacy and 21st-century skills.

> "The science of learning to design public spaces in low-income neighbourhoods can have a transformative impact on how caregivers and children engage."

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References

Bermudez, V. N., Bustamante, A. S., Ahn, J., Hirsh-Pasek, K., Ochoa, K., Pesch, A., Salazar, J., Garcia, L., & Roldan, W. (Forthcoming). Designing culturally situated playful environments for early STEM learning in a Latine community.

Bustamante, A. S., Hassinger-Das, B., Hirsh-Pasek, K., & Golinkoff, R. M. (2019). Learning landscapes: Where the science of learning meets architectural design. *Child development perspectives, 13*(1), 34–40.

Collins, S. E., Clifasefi, S. L., Stanton, J., Straits, K. J., Gil-Kashiwabara, E., Rodriguez Espinosa, P., Nicasio, A. V., Andrasik, M. P., Hawes, S. M., Miller, K. A., & Nelson, L. A. (2018). Community-based participatory research (CBPR): Towards equitable involvement of community in psychology research. *American psychologist, 73*(7), 884.

Gaudreau, C., Bustamante, A., Hirsh-Pasek, K., & Golinkoff, R. M. (2021). Questions in a life-sized board game: Comparing caregivers and children's question-asking across STEM museum exhibits. *Mind, brain, and education*, 199–210. https://doi.org/10.1111/mbe.12283

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

Gunderson, E. A. & Levine, S. C. (2011). Some types of parent number talk count more than others: Relations between parents' input and children's cardinal-number knowledge. *Developmental science, 14*(5), 1021–1032.

Hadani, H. S., Vey, J. S., Parvathy, S., & Hirsh-Pasek, K. (2021). *Understanding child-friendly urban design.* The Brookings Institution. https://www.brookings.edu/research/understanding-child-friendly-urban-design/

Hassinger-Das, B., Palti, I., Golinkoff, R. M., & Hirsh-Pasek, K. (2020). Urban Thinkscape: Infusing public spaces with STEM conversation and interaction opportunities. *Journal of cognition and development, 21*(1), 125–147.

Hassinger-Das, B., Zosh, J. M., Bustamante, A. S., Golinkoff, R. M. & Hirsh-Pasek, K. (2021). Translating cognitive science in the public square. *Trends in cognitive sciences, 25*(10), 816–818.

Hirsh-Pasek, K., Adamson, L. B., Bakeman, R., Owen, M. T., Golinkoff, R. M., Pace, A., Yust, P. K., & Suma, K. (2015). The contribution of early communication quality to low-income children's language success. *Psychological science, 26*(7), 1071–1083.

Hirsh-Pasek, K., Golinkoff, R. M., Nesbitt, K., Lautenbach, C. J., Blinkoff, E., & Fifer, G. (2022). *Making schools work: Bringing the science of learning to joyful classroom practice.* Teachers College Press.

Pruden, S. M., Levine, S. C., & Huttenlocher, J. (2011). Children's spatial thinking: Does talk about the spatial world matter? *Developmental science, 14*(6), 1417–1430.

Sheridan, S. M., Knoche, L. L., Kupzyk, K. A., Edwards, C. P., & Marvin, C. A. (2011). A randomized trial examining the effects of parent engagement on early language and literacy: The Getting Ready intervention. *Journal of school psychology, 49*(3), 361–383.

Zelazo, P. D., Blair, C. B., & Willoughby, M. T. (2016). *Executive function: Implications for education. (NCER 2017–2000).* National Center for Education Research.

Zosh, J. M., Hirsh-Pasek, K., Hopkins, E. J., Jensen, H., Liu, C., Neale, D., Solis, S. L., & Whitebread, D. (2018). Accessing the inaccessible: Redefining play as a spectrum. *Frontiers in psychology, 9*, 1124.