

Reimagining Urban Design for Play and Learning

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Abstract

Playful Learning Landscapes is a bold initiative that melds architectural design with the latest science in how children learn. Co-designing with community partners, public and shared spaces like bus stops, sidewalks, grocery stores and parks become launch pads for children and families to explore, question, and learn together through culturally relevant, accessible and equitable opportunities for all. Creating intergenerational family interactions that are active, engaging, meaningful, socially interactive, and joyful fosters urban revitalization, civic pride, and has demonstrated impacts on caregiver-child interactions known to promote learning and positive development. Here we not only share our design principles, but also our scaling and sustainability plans crafted in partnership with the Brookings Institution to enable this type of city rejuvenation on a global scale.

Reimagining Urban Design for Play and Learning

By 2050, 70% of families are expected to live in cities (World Bank, 2020). Though these numbers fluctuated slightly in the aftermath of the pandemic, it is imperative that urban areas become more family friendly and inviting. At the same time, cities often present enormous divides in opportunities for young children representing some of the most and least resourced environments to nurture growing minds (Berube, 2018). Playful Learning Landscapes (playfullearninglandscapes.com; Hassinger-Das et al., 2018; Bustamante, et al. 2019) is a tested and visionary movement that addresses both of these needs.

Installations are crafted on a set of scientific pillars that represent both *how* children learn and *what* they need to learn to thrive in school and beyond. Playful Learning Landscapes are designed to create intergenerational family interactions that are active, engaging, meaningful, iterative, socially interactive, and joyful; key elements of high-quality early learning environments (Hirsh-Pasek et al., 2015). We offer these principles, as a checklist, to guide the design of future public infrastructure to promote playful learning. Several examples make clear how we knit together aspects of learning outcomes with design.

Playful Learning Landscapes Prototypes

Our first example is Parkopolis—the life size board game for math and science learning. In Parkopolis, children roll giant dice that display whole-numbers and fractions (allowing them to roll a two and a half or three and three quarters) and advance around a 30-square foot game board. The spaces on the board are divided into quarters so children receive an embodied learning experience walking down the spaces on the board that represents a number line. Indeed, number line training offers an evidence-based approach for improving children’s conceptual

understanding of fractions and whole numbers (Link et al., 2013; Siegler & Ramani, 2008). It is here that children see that walking 8 spaces is twice the distance as is walking 4 spaces. When children arrive to their space on the board, they are prompted to pick a card from a deck that includes activities pulled directly from research in education and child development. The cards also direct children to the various activity zones on the board; including the shape zone, a matrix of shapes on the ground that allows children to practice early geometry (e.g., jump on all of the triangles); the life size ruler, a giant ruler on the ground that challenges children to measure how tall they are or how far they can jump; the music pipes, four tubes of different heights and colors that prompt children to create and complete patterns—a fundamental early math skill (Rittle-Johnson et al., 2015); and executive function hopscotch, a random pattern of feet on the ground that children have to match or do the opposite (e.g., when you see two feet use one and when you see one foot use two), exercising the executive function skills of cognitive flexibility and inhibition—skills that research demonstrates helps children engage in learning (McClelland et al., 2014). In an evaluation study, Parkopolis successfully elicited caregivers and children to use numeracy language (fractions and whole numbers), pattern language, ask questions, make observations, engage in multiple conversational turns, engage in physical activity, and reduce time spent on cell phones (Bustamante et al, 2020). At a similar cost to traditional playground equipment, Parkopolis can provide children and families with high-quality playful learning opportunities that are deeply rooted in developmental science and freely available in a local park or playground. In our current work, we are iterating the Parkopolis design with Latino families in Southern California to draw explicit connections to the local culture and context. Parkopolis will feature culturally relevant games (e.g., “Loteria” a popular Spanish game similar to Bingo) and a

“Signature Square” on the board which will feature iconic images and activities from the local city or community.

Our next example is a more light-touch installation. Playwall was installed at a bus-stop in Philadelphia, PA, by painting a wall with chalk board paint and offering the prompt “When I was little, I loved to play...” and leaving chalk for families to share their favorite games and childhood memories. We observed families getting off the bus and enthusiastically recording their favorite games and explaining them to their children. In an analysis of the games and activities that families shared we found that they were most commonly outdoor, physically active, collaborative, and rich in learning opportunities (Schlesinger et al., 2020). Playwall activated the traditionally mundane space of a bus-stop with a simple prompt, providing opportunities for families to share their personal histories with their children and others in their community. These activities created culturally centered learning opportunities for children that build off the strengths of the local community.

The last example also reflects local community values, traditions, and history in design. In Santa Ana, CA, we partnered with 20 local mothers to create signage that promotes caregiver child conversation and interaction in the grocery store (Chew et al., 2021). This project extended a previous Playful Learning Landscapes initiative that increased caregiver-child interactions in the grocery store by 33% when the signs were up vs. down (Ridge et al., 2015). In Santa Ana, we asked mothers to tell stories about going to the grocery store or market growing up, and about bringing their children to the store now. These stories naturally centered their everyday experiences and cultural capital. For example, several mothers told stories about the passed-down techniques for finding the right fruit or vegetable. Whether it was scratching the side of a papaya or feeling the firmness of an avocado, families had techniques they learned from their

parents that involved using different senses to make observations and test hypotheses. From this theme in the stories, we designed a sign to hang in the produce section of the grocery store that says, “Why did you pick me?” and follow up prompts that say “How do you find the best fruit or vegetable? What are you looking for? And why?” and “What senses do you use to find the best ones? Seeing? Hearing? Smelling? Touching? Tasting?” The sign also leaves blank space, markers, and the following prompt “Share your tips and tricks with others to find the best fruit or vegetable!” This sign encourages caregivers to engage their children in the science process skill of making observations, facilitates caregivers passing down traditions for selecting food to their children, and creates a community space for people to share familial knowledge with each other. The signs are also displayed in Spanish and English to offer opportunities for language development.

Each of these examples were vetted against our six principles of learning; they are *active* in that they invite children to act on them; *engaging* meaning they are hands-on and minds-on; *meaningful* in that they center families’ everyday experiences and culture; *iterative* in that each time a family returns to an installation they can use it in a new way; *socially interactive* in that they invite caregivers and children to play and converse together; and *joyful* in that they are fun and children and caregivers want to play with them. These projects also require a variety of stakeholders including architects to design them safely and creatively, urban planners to integrate them into city infrastructure, researchers to connect them with the science of learning, and community members to contribute their unique culture, values, and local knowledge. Playful Learning Landscapes has the potential to advance urban revitalization, civic pride, and has demonstrated impacts on caregiver-child interactions that are known to promote learning and positive development.

Dissemination and Sustainability

The examples presented here are but a fraction of the kinds of learning environments that have been created and what is possible. Indeed, “Playbooks” for design and community engagement are already available in English and Spanish (playfulllearninglandscapes.com).

The importance of designing informal learning spaces cannot be understated. Children only spend 20% of their waking time in school (Meltzoff et al., 2009). Playful Learning Landscapes offers an opportunity to enrich the other 80% of their waking time. It also offers a plan for rejuvenating cities and rural areas worldwide that is culturally situated, accessible, and equitable. Given that cities already have budgets for parks, bus stops, and sidewalks, our vision is that cities incorporate beautiful and joyfully enriching spaces into the natural design of their work. Doing that, however, requires plans for scaling the projects and sustaining them. A joint initiative at the Brookings Institution with the Center for Universal Education and the Bass Center for Transformative Placemaking has provided a path forward for scaling (Hadani & Vey, 2020) and sustaining the initiative (Perlman Robinson, 2019). Brookings is also leading the way towards the creation of a larger network of cities to enable a mindset shift among government and city-level leaders and agencies to embed evidence-based playful learning approaches into urban planning and city-wide strategies.

It is possible to marry architectural design and city planning. It is possible to rethink the way we design park benches, city sidewalks, and rural trails so that they are both beautiful and educationally ripe with opportunities for all to engage. Imagine what can be done to narrow opportunity gaps while beautifying neighborhoods in concert with the communities. The possibilities are endless.

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