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Designing Everyday Spaces for Playful Learning

By Jennifer Vey and Juanita Morales

The most disruptive impacts of the COVID-19 pandemic may have finally receded, but the lingering effects on children and families are unfortunately still very much with us. Children's learning suffered significantly due to the pandemic. Data from the National Center for Education Statistics shows that school closures and remote learning erased more than two decades of progress in reading and math for nine-year-old students. The losses were particularly acute among Black and Hispanic students and those attending schools with a large share of students from poor families (Mervosh 2022a, 2022b). These losses exacerbated the pre-pandemic achievement gap between low-income children and their higher-income peers.

Outside of school, the pandemic also magnified long-standing geographic and racial inequities in economic opportunity and overall health and well-being. A 2020 report from the Initiative for a Competitive Inner City (ICIC) found that approximately 78 percent of high-poverty neighborhoods in the United States—communities of color in particular—were highly vulnerable to the pandemic's early economic impacts, including loss of jobs and income, compared to just 15 percent of low-poverty neighborhoods (Eberhardt et al. 2020). These disparities were hardly new, nor are they surprising: according to research by Economic Innovation Group, in the years from 2016 to 2020, nearly a quarter of the 48 million people living in the most distressed fifth of neighborhoods—based on a range of employment, educational attainment, housing, and related indicators—lived below the poverty line, compared to just five percent of those living in the most prosperous communities (Economic Innovation Group 2023).

These challenges highlight the importance of investing in the urban realm in ways that better support children and families and improve overall quality of life for all city residents.

One initiative adopted by numerous cities across the United States and abroad aims to do just that. Playful Learning Landscapes (PLL) addresses learning inequalities that exist outside of the classroom by marrying the science of learning with urban design and placemaking (Figure 1). By embedding educational opportunities in places where families regularly go—such as bus stops, supermarkets, libraries, and parks—PLL strives to advance and scale evidence-based approaches for creating vibrant public spaces that foster learning and caregiver interaction, bring people together, and generate a sense of community ownership and pride.

Figure 1. Playful Learning Landscapes marry the science of learning with urban design and placemaking (Sahar Coston-Hardy)

In 2019, the Brookings Institution established a joint venture between its Center for Universal Education and the Bass Center for Transformative Placemaking to advance the policy implementation and scaling of PLL. Brookings works alongside an interdisciplinary group of scholars and practitioners from Temple University's Infant and Child Lab and the Playful Learning Landscapes Action Network (PLLAN), which collaborates directly with neighborhoods to create PLL installations that reflect community desires and provide joyful learning opportunities for young children.

This *PAS Memo* explains Playful Learning Landscapes and its impact on learning, public space revitalization, and social and civic engagement. It highlights cities that lead on playful learning and the varied roles of the stakeholders within them, with a more in-depth focus on Urban Thinkscape in Philadelphia as an exemplary case study. The *Memo* concludes with guidance to help planners begin to implement playful learning throughout the communities in which they work.

Playful Learning Landscapes: Where Learning Science Meets Placemaking

As early as age three, low-income children lag behind their more affluent peers in language and spatial skills (Golinkoff et al. 2019). To address gaps in school readiness and achievement, policy makers have largely focused on formal learning environments. But these efforts neither address nor harness the 80 percent of time young children spend outside of the classroom with their families.

PLL fills this gap and offers an innovative way to help reduce education inequality and promote individual and community development—all key factors for an effective learning society. By integrating PLL installations into public spaces where families regularly go, cities can improve outcomes for children, families, and the broader community.

Research shows that learning through play uniquely supports children's cognitive and social development, better preparing them to reach educational goals and interact with the world around them (Yogman et al. 2018). What makes PLL unique is the critical element of playful learning—a spectrum of child-directed play methods that include free play (no direct adult involvement), guided play (supported by adults), and games (rule-based activities with learning goals). The guided play supported by PLL allows children to "maintain agency during their play with the guidance of an adult to provide structure and focus the activity around a learning goal" (Hadani and Vey 2021). This type of play is particularly important for children living in communities where they have fewer extracurricular and enrichment opportunities than those living in wealthier areas.

A three-part equation guides the development of PLL installations and activities (Figure 2): (1) deep engagement with community members to distill their core values in design and implementation, combined with (2) the science of both how children learn (through social, meaningful, and joyful activities) and (3) the skills (the "6Cs") they need to learn to succeed in the 21st century (Pesch et al. 2022). The 6Cs—collaboration, communication, content, critical thinking, creative innovation, and confidence—are a suite of skills rooted in the science of learning that build on each other and allow children to engage in independent, lifelong learning. By merging urban design and placemaking with the science of learning, PLL transforms public spaces into engaging and enriched educational hubs.

Extensive research demonstrates that frequent, sustained, and high-quality caregiver-child interactions—particularly in specific content areas related to science, technology, engineering, and math (STEM) and literacy—are critical to children's development because they predict later cognitive, social, and academic outcomes (Bustamante et al. 2020). With more children growing up in socially, economically, and racially stratified neighborhoods, city and community leaders are increasingly looking to PLL as a way to co-design creative spaces and programs that promote these kinds of interactions.

These efforts are paying off. Multiple studies of existing PLL installations and activities indicate that well-designed efforts that meaningfully engage the community achieve the following outcomes (Hassinger-Das and Fletcher 2023):

- Increase caregivers' positive attitudes about the connection between play and learning
- Promote the kinds of caregiver–child communication that supports relationship building and language learning
- Encourage children's talk about numbers, letters, colors, and spatial relations
- Increase children's understanding of mathematical concepts, including fractions and decimal arithmetic

Moreover, as the PLL movement continues to grow, communities are recognizing that PLL also has the potential to support a broader array of community benefits beyond improving healthy child development and learning. We need to build on what we know about the value of public space investments to better understand how PLL installations can help improve the public realm, provide new opportunities for social interaction (among both children and adults), contribute to community cohesion, and even produce spillover economic benefits for local businesses, property owners, and residents in the surrounding community (Love and Kok 2021).

To this end, in 2021 Brookings developed a new metrics framework to aid researchers in measuring PLL's educational,

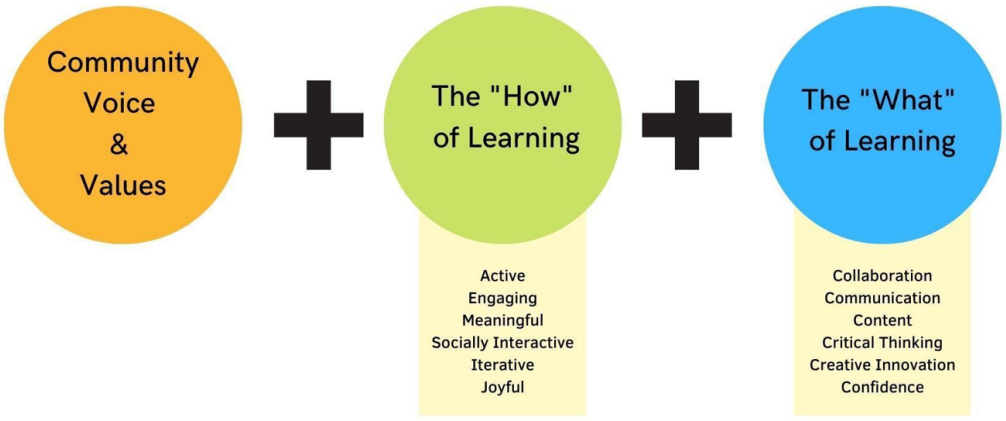

Figure 2. The three-part equation for creating PLL (Temple Infant and Child Lab)

social, physical, and economic impacts—information that PLL leaders can use both to improve PLL installations and to better advocate for more investment in them (Hadani, Vey, Parvathy et al. 2021). Members of the PLL City Network, described in the sidebar below, have noted that they are employing the framework as they develop and evaluate PLLs in their communities.

Playful Learning Leaders and the Importance of Community Engagement

Over the past decade, a growing number of U.S. and international cities have begun adopting PLL. Within the United States, several cities have emerged as leaders on playful learning initiatives.

Philadelphia has been the pioneer for PLL, as much of the related research and work grew out of Temple University's Infant and Child Lab. Thanks to robust cross-city collaboration between the public and nonprofit sectors, Philadelphia has continued to be the model city for PLL initiatives. Its primary supporters include the City of Philadelphia's Office of Parks and Recreation and Office of Children and Families, the Free Library of Philadelphia, the William Penn Foundation, and Temple researchers. This past year, the city created a "Playful Learning Fellow" position within their city government that is specifically designated to oversee and coordinate PLL projects in Philadelphia. This is the first position of its kind.

Although many of its PLL installations are still underway, Santa Ana, California, is also among those communities demonstrating effective cross-city collaboration in PLL projects. Its main actors include the City of Santa Ana, the Santa Ana Unified School District, and researchers at the University of California–Irvine.

Santa Ana is a leading city within the PLL movement for community engagement and co-creation, involving parents and community members in every aspect of their PLL design process. The researchers at UC Irvine engaged in community co-design projects with the help of the Santa Ana Early Learning Initiative (SAELI), a community-led partnership connecting parents and caregivers with nonprofit organizations. For its current projects, SAELI connected the researchers and implementors with other parents in the community, who participated and engaged in design workshops and continuously supported the process, even during the COVID-19 pandemic (Pesch et al. 2022).

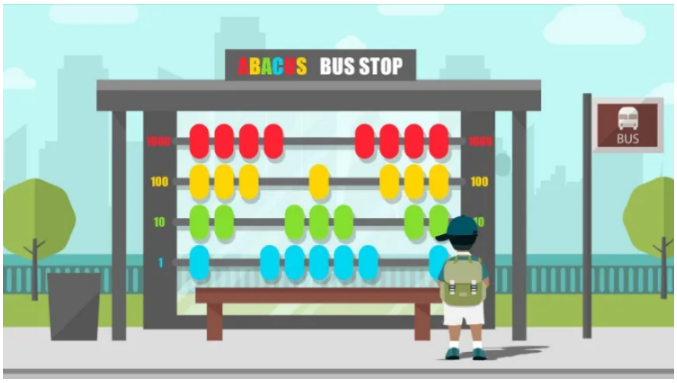

Figure 3. Santa Ana's Abacus Bus Stop draws on local Mexican culture to spark caregiver-child conversations and learning moments (University of California, Irvine; design by Brian Peterson)

As a result, Santa Ana's public installations were designed in a way that reflects the community's culture and values. For instance, Santa Ana's new I-Spy mural will feature notable landmarks and figures from the local community, as well as popular references to Mexican culture, which is prominent in the area. Further, the idea for the Abacus Bus Stop (Figure 3) emerged from conversations about how the parents learned to count as children in Mexico, and it was carefully designed to spark opportunities for caregiver-child conversations and learning moments as families wait for the bus.

PLL City Network: Cross-City Collaboration

Brookings launched the Playful Learning Landscapes City Network in late 2020 to bring together city-level decision makers and stakeholders in a community of practice for peer learning, knowledge building, and network strengthening (Hadani and Vey 2021). The network serves to advance the mission of PLL by creating a forum to collectively pool expertise, resources, and skills around a shared vision to reimagine the potential of cities as supportive ecosystems for children and families. It currently consists of four U.S. cities—Chicago, Philadelphia, Pittsburgh, and Santa Ana, California—and two international ones, Lima and Tel Aviv.

Each city team is composed of various city actors and stakeholders from the public sector, philanthropic organizations, and other nonprofits. Team members collaborate across their respective cities on PLL projects. For example, members of the Chicago team include city government leaders from the Chicago Department of Transportation; an early childhood education specialist from Enlace Chicago, a community organization in Little Village; and a representative of the Robert R. McCormick Foundation. Chicago's PLL initiatives focus on the neighborhood level with current installations in three areas: North Lawndale, Little Village, and Aurora. The Chicago Department of Transportation has two programs, Urban Streets and Make Way for People, that focus on the transformation of public places and urban streets, and through these programs has partnered with third parties to develop PLL installations in these three communities and other neighborhoods.

Urban Thinkscape—An Exemplary Model

Urban Thinkscape began with a community's dream to energize Philadelphia's Belmont neighborhood with playful learning. Designed and implemented through a multiorganizational collaboration of local nonprofit organizations and academic partners, with support from the William Penn Foundation and KABOOM!, Urban Thinkscape reimagines an everyday bus stop as an interaction zone instead of merely a place to wait for a ride. A hub for various activities, it encourages playful interactions between children and caregivers that feature content in math, science, and literacy, as well as collaboration and communication with peers, adults, and family members (Figure 4).

In 2016, the Belmont community chose a site for Urban Thinkscape that held significance for the neighborhood and its residents—a bus stop next to a vacant, grassy lot where Martin Luther King, Jr. gave a historic speech in 1965 as part of his "Freedom Now" tour. The most elaborate PLL to date, it comprises the following installations (PLLAN 2023):

- **Puzzle Wall:** The back wall of the bus stop challenges caregivers and children to complete the puzzle together while they wait for the bus. Puzzles like these promote children's math and spatial skills.
- **Jumping Feet:** Stepping stones with shoe prints encourage children to jump, while the changing pattern develops their ability to control impulses by making them think about their next step.
- **Hidden Figures:** Children's curiosity is activated by searching in the metalwork for images of food, animals, and any other objects they can find. Building this kind of curiosity helps children become strong problem solvers, while they also develop spatial skills by figuring out how the images are projected into the ground.
- **Stories:** Wooden ramps and peaks with painted narrative cues encourage children to physically move from one cue to another while making up their own story. This activity helps them (and their caregivers) build their narrative and reading skills.

Robust research has been conducted to evaluate the impact of Urban Thinkscape. The evidence shows that it has increased academic outcomes and caregiver-child discourse and engagement around public space; it also successfully involved community members and others, including parents and other caregivers, psychology researchers, architects, and community organizers, who had not worked together before. It was this element of collaboration "that created the foundation for a sustainable intervention" (Hassinger-Das et al. 2020).

This point was emphasized in a 2018 Harvard University article that highlighted how critical community involvement was in Urban Thinkscape's success. Researchers and designers partnered with a strong community group—the Belmont Alliance Civic Association—who advocated for the project and helped to engage community members from

Figure 4. Urban Thinkscape in Philadelphia's Belmont neighborhood (Sahar Coston-Hardy)

the onset; the project relied on their input and feedback during the entire design and construction process. After installation, community members worked to collect data and to evaluate the impact of the project on the neighborhood (CDC 2018). This level of engagement was essential to the community's feelings of ownership of the installation, which has likely contributed to the fact that since the site opened in 2017, it has remained free of vandalism and graffiti.

Due to several factors, Urban Thinkscape is currently in the process of being moved from its current location to a new park in West Philadelphia. The park will include numerous other features and amenities for the community, including Urban Thinkscape. Relocating the installation has only reinforced the importance of community engagement and buy-in—community members were adamant about retaining the installation, even when the original lot was no longer available to host it.

Other PLL Examples in the Public Realm

As the PLL movement continues to gain momentum, more cities across the country are adding PLL installations to their public spaces. From basketball courts with a math twist to interactive, life-sized board games, the installations foster active learning, bring people together, and generate a sense of community ownership and pride.

Fraction Ball (Santa Ana): Fraction Ball allows students to sharpen their math skills on the basketball court. The traditional three-point arc is converted into a one-point arc and smaller arcs closer to the basket represent 1/4-, 1/2-, and 3/4-point shots on one end of the court, and 1/3- and 2/3-point shots on the opposite end. The numbers are presented as fractions on one side of the court and as decimals on the other side, requiring students to convert between them. Along the side of the court, a number line with both fraction and decimal representations helps students keep track of their score.

PARK(ing) Day (Philadelphia): PARK(ing) Day is an annual event that reimagines the possibilities of 160 square feet of public space. The Philadelphia PLL team partnered with the Community Design Col laborative and children from a local recreation center to create for the event a customizable game board that allows kids to invent their own games that advance literacy and mathematical skills. The team later added an installation that included honeycomb screens, which could be configured in multiple ways to create spaces that provided opportunities for performances, reading nook activities, and social interaction.

Boulevard Math (Chicago): Boulevard Math (Figure 5) exists in green spaces along a pathway in the North Lawndale neighborhood. The boulevard provides a space to stop and play and that already has existing programming, creating ample foot traffic in the area. Community members selected where along the boulevard the installation would best be suited and what colors for the installation would best fit within the community. The math concepts highlighted in the installations include number sense, shapes and spatial relationships, measurement, and patterns, among others.

Parkopolis (Philadelphia): Parkopolis (Figure 6) builds ideas about numbers, measuring, and fractions into a life-size board game. Children roll "fraction dice" to skip around the board in 1/2 and 3/4 leaps and draw giant cards that engage them in play that is hands-on and "minds-on." Currently at the Please Touch Museum in Philadelphia (but replicable in a public space) and sponsored by New Profit, this board game encourages collaboration and cooperative game play, fosters innovation in the creation of new rules, and builds confidence to persist on challenging activities.

Figure 5. Boulevard Math in Chicago's North Lawndale neighborhood (Playful Learning Illinois)

Figure 6. Parkopolis at the Please Touch Museum in Philadelphia (Sahar Coston-Hardy)

What Planners Can Do: Action Steps for Scaling Playful Learning

As described above, numerous actors are involved in the design, implementation, and maintenance of PLL installations and activities. Planners and other public-sector officials should support these collaborative efforts where they exist while they also work to scale the concept by helping to bring playful learning opportunities to additional sites and neighborhoods throughout their cities and regions (Hadani and Vey 2020).

Such scaling of playful learning means a few things. First, children need a large enough "dose" of PLL to achieve its benefits. Upping the "dosage" entails the creation of a learning ecosystem spread across areas where children and their caregivers regularly spend time so that learning becomes part of their routine as they wait for the bus, shop at the grocery store, or walk to a local playground.

Scaling also means thinking about the different shapes and sizes of playful learning. This can include big outdoor installations like Urban Thinkscape, signs in supermarkets that prompt conversation, "seek and find" murals on local buses, or "thinking games" painted on sidewalks—to name just a few. As evidenced in the wide variety of PLL installations and activities implemented around the globe, the options are nearly limitless, so long as they adhere to the principles (represented in the three-part equation described above) that support learning outcomes.

Scaling playful learning does not necessarily require significant new resources. Rather, it demands that planners and local leaders get creative about infusing PLL principles and design elements into the mainstream practices of government, businesses, and other organizations. This involves a few key actions:

- **Learn about PLL principles and design elements.** A first step for planners wishing to support PLL efforts is to learn more about the broad benefits of playful learning and the design elements that make PLL installations successful. Brookings has published a range of articles on the "what" and "why" of playful learning landscapes that are targeted at policy makers and practitioners, while PLLAN has numerous resources focused on the "how to." These include case studies on PLL efforts (some of which are described briefly above), as well as the Playful Learning Landscapes Playbook, which offers a 10-step guide for creating PLL installations. Learning opportunities also come from abroad: the Urban 95 Academy, an initiative of the Bernard van Leer Foundation and the London School of Economics, is a six-week online program focused on helping city leaders around the world to design better communities for young children and their caregivers.
- **Collaborate with national (and even international) organizations, many of which are already deeply engaged with local philanthropic, civic, and neighborhood groups to support playful learning.** Several national organizations—such as the PLLAN, KABOOM!, and Too Small to Fail—support playful learning in a range of ways, working directly in cities and towns while also broadly advocating for children and families. These groups often partner with local philanthropic, civic, and private-sector groups and actors, many of which serve as trusted connectors to community residents. Cities wishing to scale playful learning should look for ways to learn from and collaborate with these organizations. For example, PLLAN has developed a Project Catalyst Tool to help planners and others interested in PLL to kick-start their efforts. The organization also recently developed a certification to identify those sites that adhere to the evidence-based playful learning model. Applicants can seek certification at the development stage for a site or after installation, but they must demonstrate that the project includes the core components of playful learning; they must also have a plan for maintenance or rejuvenation. Certified sites receive a plaque to display at the installation site, will have expanded access to other PLL peers and PLLAN resources, and will be featured on PLLAN's website.
- **Streamline and simplify processes to more seamlessly embed playful learning into planning and design decisions.** Playful learning is a relatively nascent field, and until the idea more fully takes hold, partnerships are formed, and local groups advocate for public support, most planners or other city agency staff are unlikely to know about best practice activities and strategies, let alone understand how to embed them in their programs and projects. Until they better understand PLL and commit to facilitate it, they can also inadvertently make the efforts of community groups or even other city agencies harder to implement through burdensome permitting requirements (e.g., to close down a road for a Play Street) or other regulations (e.g., that might limit the installation of playful signage at a transit stop). One way to overcome this challenge is for cities to train their planners and designers—whether public employees or private actors with whom cities might contract—on how to integrate playful learning elements into new plans (e.g., for revitalizing a vacant lot), public works or transportation projects (e.g., the upgrading of bus shelters), and temporary programs (e.g., a parks department-led summer camp) as they are being developed. By doing so, PLL will become more seamlessly integrated into a wide range of projects—and less likely to be viewed as an "extra" effort and cost. This training needs to involve child developmental specialists with expertise in translating research to practice. Partnerships with the national organizations listed above are good places to start.
- **Meaningfully engage with the community to understand their needs and preferences, foster neighborhood trust and cohesion, and ensure local buy-in.** Community involvement is a cornerstone of PLL. By meaningfully engaging with residents, leaders of community groups and churches, local businesses, and other stakeholders, planners and other agency officials looking to implement playful learning activities can understand community needs, spur interest and enthusiasm for projects, and develop designs that are relevant to the people

and place. Planners and other city leaders involved in designing and implementing playful learning efforts need to develop rigorous processes for involving communities in PLL projects from the design phase through to implementation—and beyond. Sustained partnerships with local groups provide opportunities to engage community members in site maintenance and evaluation, improve existing installations based on research and feedback, and implement new activities over time.

- **Coordinate efforts within and across city agencies to support the design and integration of playful learning efforts across programs and projects.** Truly scaling PLL at the city level is unlikely without the commitment of a mayor or someone in the mayor's office; it also requires institutionalization and coordination within and across multiple city agencies. Given the wide variety of potential PLL activities and locations, this could include not only the planning department, but also parks and rec, housing, transportation, health, and other offices. Only through broad implementation of playful learning across city agencies will PLL achieve the dosage and variation (in terms of size, scale, and learning topics) to have a broad-based impact on children and families.

As Helen Hadani and Jennifer Vey noted in a 2020 article on scaling PLL, "cities can engage in playful learning through many entry points—but they need to prioritize and socialize the idea, learn from (and partner with) existing organizations and efforts, and educate and support staff to grease the wheels."

Conclusion

As cities and regions look to address the dual—and related—challenges of learning loss and community disparities, they should do so with children and families at the forefront.

Playful Learning Landscapes (PLL) can be part of that effort, as it takes what researchers know about child development and the science of learning and embeds these insights into everyday spaces to promote child and caregiver interaction; foster learning of STEM, literacy, and spatial skills; nurture community engagement and cohesion; and enhance the vitality of neighborhoods. PLL capitalizes on a global momentum around placemaking and putting the user experience first in public space design. And its champions and implementors engage deeply with communities at nearly every turn in the process.

Planners and their colleagues across city government can be strong advocates for playful learning by considering opportunities to creatively infuse PLL installations and activities in their work, and for making it easy for community groups, businesses, developers, and others to do the same.

By infusing our cities with playful learning opportunities, we can make our cities more supportive of all families and children—and ultimately more vibrant and fun for everyone.

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