AUDIENCE DISCUSSION SUMMARY
NOTES RELATED TO ACCELERATING ADOPTION OF STORMWATER SCHOOLS IN SAN FRANCISCO AND BEYOND

FROM:

LIVING SCHOOLYARDS AS STORMWATER INFRASTRUCTURE
INSPIRING SCHOOL GROUNDS OF BERLIN

TECHNICAL TRAINING WORKSHOP AT THE SAN FRANCISCO PUBLIC UTILITIES COMMISSION
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This document is a summary of the small group discussion and brainstorming session held at the end of the Technical Training Workshop, following Birgit Teichmann's presentations about stormwater schoolyards in Berlin. The meeting organizers asked the assembled workshop audience to think about how the ideas Ms. Teichmann presented from her experience in Berlin could be applied in our context in San Francisco and across California. The summary below combines the individual and group responses from the audience, and is organized by theme.

The workshop audience included professionals from many fields including: landscape architecture, architecture, engineering, city planning, park management, education, and nonprofit management. It included staff from the San Francisco Public Utilities Commission, San Francisco Public Works Department, San Francisco Unified School District and other organizations and institutions.

The summary below holds key insights that will be helpful in considering future plans to accelerate the adoption of stormwater schoolyards in our city and state.

This summary was prepared by Sharon Danks, Executive Director, Green Schoolyards America.
Additional comments from Danks are noted in the text.

AUDIENCE DISCUSSION SUMMARY

HOW CAN WE USE GREEN INFRASTRUCTURE ON SCHOOL GROUNDS TO IMPROVE CHILDREN'S DAILY EXPERIENCES AT SCHOOL?

CHILDREN'S EDUCATION, DEVELOPMENT AND HEALTH
- Make infrastructure visible and use the grounds as a teaching tool, so children will learn outside as part of their curriculum. Use experiential education to help children be more engaged and gain more knowledge.
- Use green infrastructure to create a richer experience at school. A living environment is less sterile. It makes a more complex, diverse context that stimulates children's imagination.
- Use a green schoolyard to amplify STEM/STEAM education
- Add signage that explains ecological processes and green infrastructure at school
- Include edible gardens
- Meet public health needs using greener environment
- Connect schools with information about their watersheds. Create a standard program for watershed education.

COMMUNITY
- Use schoolyard greening to help achieve equity for students who don't have access to nature.
- Expand schoolyard space, e.g. like June Jordan School
- Green schoolyards can add beauty and art to neighborhoods.

LOCAL ENVIRONMENT
- Use green infrastructure to create safe habitats for children and other creatures at school.
- More plantings onsite will increase oxygen in the schoolyards.
- Use green infrastructure to seek multi-benefit outcomes. Create wildlife habitat and stormwater management at the same time. Improve biodiversity
- Use green infrastructure on school grounds to create more comfortable microclimates at school, and help to cool the nearby neighborhood.
- Involve students in stewardship at their schools. Encourage them to participate in operations and management with school credit.

WHAT DO WE NEED TO SCALE UP TO CREATE GREEN INFRASTRUCTURE ON ALL SCHOOL GROUNDS?

FUNDING
- Ways to convince funders of the benefits of creating green infrastructure on school grounds.
- Funding mitigation to manage any hazardous materials found on school sites during construction.
- Economic incentives to encourage wider engagement.
- More funding, overall, for this work.
- Big funders, like the San Francisco Foundation

SUCCESSFUL LOCAL EXAMPLES
- We need to develop successful pilot projects locally that we can refer to and use as examples for moving forward.

POLICY AND/OR STANDARDS CHANGE
- ADA standards are well intentioned but poorly written to allow green schoolyards to be developed here, as they are in Berlin. We need to reconcile ADA codes with green infrastructure design and design for children's nature play, so that we can achieve accessible environments that also provide challenge for children and green infrastructure functionality.

[Danks: Implementing primary pathways that are intentionally bumpy and unevenly textured are probably the most difficult component of Teichmann's design recommendations to implement in the USA. Berlin follows child development research that says children need challenge. We follow ADA compliance rules that require surfaces that are nearly perfectly smooth for wheelchair access.]

- Perceptions about risk and liability need to be addressed with the District insurer/play policy coordinator to allow and ensure "appropriate risk".

[Danks: Most of what is shown in Teichmann's images meets our design codes, or could with small changes. The multi-person swing design she showed is probably the only element that does not. Perceptions of liability are different from actual code compliance. Green schoolyards and nature play have lower rates of serious injuries than traditional playgrounds. Also, SFUSD is already onboard at the district level with the idea of promoting beneficial risk. The educational piece that is needed in the future comes into play at the school level. Each community that engages in this work will need professional development about child development needs, and the benefits of engaging in physical play opportunities.]

PROFESSIONAL DEVELOPMENT FOR EDUCATORS
- Provide professional development for educators to help them understand children's need for physical play and expand their play policies to allow beneficial risk.
- Provide teacher training and outreach to make teachers more comfortable teaching outside. This will make stormwater schoolyards successful.
- Nonprofit Education Outside is one successful model of outdoor academic science instruction to look to. *[Danks: Education Outside works with children directly, but hasn't generally trained teachers in the past.]*
- School ground development in Boston *[and Berlin]* show that schools need to want a green schoolyard for the renovation to be successful. Top down shifts and funding are not enough without interest from the schools.

COMMUNITY OUTREACH AND EDUCATION
- Change parenting style and culture around "safety". Provide training sessions for parents about child development needs and health through physical play in a manner that alleviates their safety concerns.
- Work on how to maintain momentum at a large scale over time. Increase community motivation and buy-in from parents, and individuals and groups in the community.

DESIGN AND ENGINEERING ENGAGEMENT
Create flexible design solutions for varied conditions on school sites
- Create design solutions to manage soil limitations, such as problems with infiltration
- Create standard designs and replicable strategies for designers that will also meet with OSHPOD approval (California Office of Statewide Health Planning and Development)

Engage and inspire creative designers and builders who are empowered to follow best practices
- We need contractors who know how to do "cool" new things!

Design advocacy outreach to the public
- Share why stormwater management is important.

CHANGES TO FACILITIES MANAGEMENT PRACTICES AT THE DISTRICT LEVEL
- Make maintenance and facilities management a priority. *[Danks: Help school districts to see that what they do on their grounds matters to children and the environment. SFUSD is already onboard.]*
- Create catalogues of structures, native plant palettes, and materials that all schools can use.

OUTDOOR CURRICULA
- Help to develop specific curricula for use outdoors

WHAT ARE THE BARRIERS AND HOW CAN WE OVERCOME THEM?

BUREAUCRACY
  – This paradigm shift needs a champion at a high level.
  – A strong "no" at every request. Need to learn how to compromise with bureaucracy.
  – *[Danks: Fragmented decision-making processes mean that approvals may be needed from many different agencies or departments, and they don't usually coordinate their outcomes or goals.]*

CODES THAT ARE NOT SET UP TO SOLVE FOR MULTI-BENEFIT OUTCOMES
  – ADA compliance (see above)
  – Stormwater contact standards and guidance strategies for day lighting/conveyance don't generally take children's needs into account.
  – Policy change for SFUSD. The district needs greywater systems that students can see and interact with.
  – *[Danks: It would be helpful is SFUSD would consider adopting sand and/or wood fiber as the primary fall zone materials, to increase permeability under play structures and improve safety for children. It would also be helpful if SFUSD considered how to infiltrate stormwater from school building rooftops to a much greater degree.]*

MAINTENANCE
  – Need to convince maintenance staff that green schoolyards are a good idea. Work on a cost comparison between green and grey schoolyards; Present multiple options with costs and benefits of each to promote buy-in; emphasize prevention of future problems
  – SFUSD system for operations and management is not set up for green infrastructure – design is driven by operations and management

SMALL PARCEL SIZE FOR EACH SCHOOLYARD
  – Urban school grounds in San Francisco are often very space constrained

LACK OF COST-BENEFIT DATA
  – Measure success! Long term and short term outcomes are important to document. More projects need thorough evaluation to quantify benefits/outcomes
  – Sustainable Sites Initiative might have cost/benefit data for green infrastructure on school grounds that could be helpful.

TRADITIONAL PROJECT STRUCTURE
  – Need additional operations and management funding to see these projects through beyond initial installation.
  – Ongoing funding is needed to be able to replant perennials and plants that succumb to heavy foot traffic.
  – Continuous education and re-building to help engage future generations and shifting communities
  – *[Danks: Our system is set up to think in terms of strictly divided capital investments and maintenance costs, rather than life cycle costs and upkeep of living systems. We need to plan for lifecycle costs and ongoing management to create and maintain green infrastructure on school grounds. Similarly, we think about professional development at the beginning of a project, but it needs to be ongoing, since communities and staffing changes over time.]*

CURRICULUM AND HEALTH
  – Current curriculum is focused on indoor education. Develop curriculum that makes it an "educational necessity" to go outside. Lobby curriculum decision makers.
  – Focus on children's minds and their bodies to improve health

RISK-AVERSE CULTURE
  – Cultural framework needs to shift regarding risk and insurance. *[See above]*
  – Tell children "do it safely" rather than "don't do that".

HOW CAN WE ALIGN EXISTING EFFORTS TO ACHIEVE MORE?

COLLABORATE ACROSS DIFFERENT FIELDS
- Dovetail green schoolyard efforts with urban agriculture funding
- Include leadership from the community
- Encourage SFEI (San Francisco Estuary Institute?) and "green planet master plan" to include schools

PARTNER WITH NONPROFITS
- Align with Trust for Public Land to develop more schoolyards

LEVERAGE COMMUNITY
- Leverage eco-lovers at school

USE EQUITY AS A UNIFYING THEME
- Discuss how to distribute greening equally: Some schoolyards are large, others are small; some neighborhoods are green, others are completely paved

PAY FOR NEW PROJECTS USING MULTIPLE SOURCES OF FUNDING
- Combine stormwater, art and education funding to achieve multiple benefits
- Need to mix funding streams from local, state, and federal efforts and grants to create outdoor classrooms
- Set a long term goal of aligning funding across agencies
- Engage Proposition E funding in San Francisco
- Use carbon offset funds for green infrastructure. It's a challenge for low-income areas to do this.
- Incentivize projects to build new examples

USE PUBLIC LAND MORE EFFECTIVELY
- Open school campuses after hours and on the weekend to expand community park space. Create more shared schoolyards.
- Look to NGOs for additional Operations and Management staffing/funding (e.g. Teen program through Friends of the Urban Forest)

STANDARDS AND POLICIES

OPPORTUNITIES

Education for children and youth
– Connect curriculum/state standards to the outdoor environment at school.
– Seek to connect more standards for teaching (science, in particular) to hands-on methodology on the school ground
– Create new standards for stormwater education
– Create edible schoolyards

Education for the public and decision makers
– Increase public outreach and education about the need for policies that support green schoolyards. Engage environmentally minded community members.
– Educate decision makers about the value of green infrastructure on school grounds
– Publicize pilot projects and models that have already been built successfully. Use them as a component of public education.

Design
– Create standard design guidelines for schoolyard greening. Include systemic ecological design that integrates hands-on learning and required regulations and design principles.
– Showcase case studies, demonstration programs, precedents
– Structure design policies/practices to make green infrastructure visible and educational/interactive
– Harness landscape architecture education/training philosophy that focuses on working with the site to bring out the best aspects of each location. Preserve and direct site design for the best use.
– Write design standards that encourage design creativity
– Private landscape architecture firms have designed green schoolyards so far, but the San Francisco Public Works Department's landscape architects have the experience to design them, too.

Standards and code compliance
– Use LEED standards and credits
– SMO(?) must incorporate stormwater fee
– MWELO guidelines for new construction – how to adapt to existing sites
– San Francisco Environmental codes have very strong stormwater requirements
– District scale codes and policies – e.g. at Willie Brown School, Zero Energy Schools
– Connect schools (permitted and overseen by the state) with city and community infrastructure
– SFPUC could use its standardized details and specifications to promote multi-benefit outcomes for green infrastructure on school grounds
– Consider how codes could be created/interpreted to generate opportunities rather than constraints
– Nature play standards

Leverage environmental plans and policies
– Better Roofs Plan
– Green infrastructure requirements (MRP)
– Climate Action Plans
– Urban greening efforts
– SFUSD's policies and plans created in its office of sustainability, green schoolyard department, and facilities department
– SFPUC Stormwater Management Ordinance
– Connect green city planning projects and environmental policies to the network of green schoolyards. Engage policies at the city, county and state levels

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Leverage new education policies and standards
- *Danks: Leverage the* Blueprint for Environmental Literacy*, that is reshaping hands-on environmental literacy education across California*
- *Danks: Leverage ACR-128, the Living Schoolyard Month resolution passed by Assemblymember Phil Ting of San Francisco, to reach farther into state education policy/funding*
- *Danks: Leverage new state science standards that now include hands-on outdoor learning as a key component and recommended teaching method.*

Specific stormwater policy ideas
- Increase onsite infiltration requirements
- Use stormwater fees to reduce runoff and stormwater impact with green infrastructure (like Berlin)
- Streamline the approval process for projects based on their scope and cost (like Berlin)
- Create new stormwater initiatives to bolster green schoolyard development

Funding
- Share resources
- Seek grant funding
- Use funding from Proposition E (500k)
- Use California ReLeaf funds and carbon credits

Professional interest
- Leverage the growing interest in this field from program administrators (e.g. SFUSD's green schoolyard department)
- Need detailed true cost/benefit analysis for sample projects to get wider buy in from facilities and maintenance departments

Use standards and policies to expand access to the public land on school grounds
- Design policies to encourage the community to use school grounds after hours, and increase the base of supporters for green schoolyards.
- Schools are land owners/managers. Encourage them to make decisions as such.

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CHALLENGES

Complexity, strictness and bureaucracy of existing policy environment
− Staying current with all the new legislation. Vast amount of existing policies and procedures.
− Lengthy and complicated approvals process (e.g. for SFUSD and others)
− Paperwork and bureaucracy
− Need to balance policies and standards and decide what to push and what to work with
− Very strict regulations for permitting green infrastructure, ADA and play

Single purpose regulations and funding, lacking coherence and interrelationship
− Often contradictory or competing goals between agencies.
− Rigid regulations and guidelines, often linked to funding
− ADA requirements, codes and compliance—This is one of the biggest challenges for green schoolyards.
    o How to design for everyone without reducing the experience for most people?
    o ADA codes for paths of travel, specifically for hand-built pathways using recycled, non-uniform materials, would be difficult to implement here as they do in Berlin. *[Danks: Codes in this area of ADA are in direct conflict with what international literature shows is best for child development. Children need textured pathways; ADA requires them to be smooth.]*
    o If all of a school site has to be accessible, it is difficult to create challenging experiences for children who need challenge—and difficult to leave much of the land unpaved and permeable.
    o *[Danks: ADA codes that require specific types of materials and angles for wheelchairs do a disservice to children with other protected needs. For example, the physical environment should be designed differently, with topographic variations and changes in ground surface materials to meet the needs of children with autism, blindness, etc. ADA's wheelchair standards to not take this into account. Note, too, that wheelchairs can access the pathways in Teichmann's designs. They meet wheelchair access standards in Germany.]*
− Earthquake requirements
− Health codes
− Safety codes for play. For example, ASTM rubber mat requirements for play structures is ill-conceived and detrimental to this work.
− PE guidelines and space needed for sports games
− Plumbing codes
− *[Danks: Fire lanes drawn on school ground site plans (and adopted by the fire department and school district) that are difficult to change and do not take into account site planning needs.]*

Specific stormwater-related challenges
− Policies related to the use of creek water need to be more flexible
− If impervious land is touched in a project, it might trigger whole-site compliance?
− Standing water may pose a problem for some schools *[Danks: SFUSD allows 15" of standing water on school grounds, without the need for a fence or gate.]*
− Need economic incentives based on stormwater discharge. We do not yet have a stormwater tax or water use bill. Model a future stormwater fee on Berlin.
− San Francisco's Plumbing Code does not allow direct discharge of roof water onto the ground.

Barriers of jurisdiction
− School ground land is permitted by the State vs. City jurisdiction of surrounding urban area – major barrier
− State architect not yet involved/on board

Time during the school day/school year (if not integrated into school's framework)
− Standardized testing – The school needs to be on board with greening to find the time to engage.
− Link play and greening

Risk-averse culture
- Risk perception; Protective parents need education about the benefits of being outside, and how to understand a hazard vs. a risk
- Liability concerns for adventure play and outdoor education. Kids' participation and using real tools. *[Danks: SFUSD is on board with beneficial risk at the district level. Concerns like these about perceived risks come out more at the school level.]*

Site management
- Teacher supervision
- Programming requirements for schools that require pavement *[Danks: I'm not aware of any "requirements" for pavement.]*
- Need better initial plant selection
- More education and training for maintenance staff is needed. The overall budget for maintenance is also an issue. Need more money for site management and staffing.
- Perceived aesthetics
- Building conditions; e.g. asbestos and other hazardous conditions
- School grounds closed to the public (e.g. due to problems related to homelessness, drugs, litter, etc.)

Site conditions
- Physical conditions of many school sites in San Francisco are complex and difficult to work with. E.g. steep slopes, groundwater and soil conditions might not be ideal; serpentine soils
- There are some physical and material barriers to accessing school grounds after hours.
- Need to allow sand on school grounds in San Francisco as a material to be used for play and stormwater

Training/professional development for a new paradigm
- The paradigm shift to this new type of school ground requires education/training on the benefits of green infrastructure/green schoolyards. Need to increase the knowledge base across the community.
- Need to shift teacher/adults' perspectives on the qualities that make a good schoolyard
- Frequent changes in leadership (e.g. principals and agency staff) make training difficult. It needs to be ongoing to include new individuals.
- Lack of city and state best management practices hinders development
- Lack of successful examples that can be easily accessed

Design
- Need to overcome standardized design and achieve site-specific design that's best for kids
- Ensure that the design works for all different needs and diverse communities
- *[Danks: Green infrastructure design on school grounds is a relatively new field in the USA. Implementing projects often requires design thinking and multiple iterations to perfect an installation, but this is difficult to do in the current regulatory environment that expects perfect implementation the first time. Cutting edge work takes some experimentation. How can we build that in to our policies and regulations?]*

Equity
- Equity is an issue in low-income school communities.
- *[Danks: Equity is an issue with regard to access to green space, but it's also true with regard to access to beneficial risks and a physically challenging, nature-rich play environment. Private schools and wealthier communities in the suburbs generally allow children to do more. Urban children are being left out of physically challenging play environments.]*

Prioritization
- How can we make green infrastructure on school grounds a priority for the public and decision makers?
- Some schools may just want to meet the requirements and don't see the opportunities for education.

FUNDING MECHANISMS

OPPORTUNITIES

Government and public agency funding sources are available at local, state, and federal levels

Local sources
- Use local green infrastructure funding (from all sources) for schoolyards.
- School district: SFUSD greening grant/bond is a major local source of funds. Increase the amount per school if possible in the future.
- City bonds might be a future source if school grounds/green infrastructure can be considered parks.
- SFPUC funding sources
    - Watershed Stewardship Grants
    - "Add Back" funding
    - Discharge/fine funding
    - Future: Stormwater fees similar to the Berlin model, based on the site's permeability
    - Future: Mitigation banking funds?
- San Francisco Planning Department's "Pavement to Parks" program
- San Francisco's Board of Supervisors
- San Francisco Department of Environment?
- Local taxes?
- Fee collection revenue (look to multiple agencies?)
- San Francisco's Public Works Department
- Community Challenge Grants for San Francisco
- San Francisco Parks Alliance
- Proposition E – Tree maintenance funding might be able to be applied to school grounds?

California state level sources
- Cap and Trade Funding – Greenhouse gas reduction funds and Urban Greening Grant Programs
- EPA funding?
- [Danks: Proposition 84 and other state funding sources]
- [Danks: Leverage CalFire funds for urban and community forestry]

Federal level funding
- [Danks: Federal level funding sources were not discussed, but might be available from agencies like EPA?]

Corporate sources
- Corporate sponsorships and partnerships
- Horticultural sponsorships for gardens
- Donations from sports institutions and teams
- San Francisco Small Business Contracts (Green Infrastructure Projects)

Foundation grants and donations from members of the public
- Foundation grants
- Community-based funding
- PTA funding
- Leveraging smaller grants for pilot projects
- Community sweat-equity; see hands-on stewardship contributed by the community as a cost savings and in-kind donation to green schoolyard management. Stewardship of school ground sites offsets some maintenance needs
- Involve students in site management tasks to teach stewardship and reduce costs

Other economic tools
- Rebates to schools that reach sustainability goals, to apply toward further greening
  [Danks: This is similar to SFUSD's current energy savings program.]

Strategies
- Create engaging concept designs and other visuals to increase the chances of securing funding
- Emphasize life cycle costs rather than looking at capital investment costs and maintenance needs
- Quantify multi-benefit outcomes; illustrate long-term savings of smart planning and long-term benefits to education and the community
- Align goals and share costs across multiple agencies. Encourage budget sharing and collaboration with organizations that have similar goals, e.g. botanical and horticultural groups

CHALLENGES

Finding life-cycle funding
- In an example from demonstration gardens in the East Bay, capital funds were easier to find to create the gardens but funding to pay for ongoing maintenance has been challenging.
- Need funding within SFUSD for work on school grounds that happens after the initial Proposition A Bond investment for capital improvements.
- Need more funding for site management throughout the life of the project. The lifespan of projects doesn't match the funding cycles available for them.

Not enough funding
- Proposition A Bond funding for green schoolyards in San Francisco is a good start, but $150,000 per school is not enough to change the infrastructure of the site. Need more capital investment for each school.
- Grants are at a smaller scale than the costs. There is not enough funding for all schools or school district.
- The funding that is available is not necessarily directed toward school property.
- Landscape design for school grounds is constrained by amount of available funds.
- San Francisco has serious equity issues, but often does not meet the state and federal standards for "low income" areas (due to high cost of living), so it's difficult to access more funding for areas that need it. Only small pockets in the southeast of the City qualify for these funds.

Need more funding for professional development and staff time
- We need more funding for green schoolyard educators, particularly at schools that don't have enough resources within their community to hire their own extra staff.
- *[Danks: There is yet not enough funding for the human aspects of the paradigm shift we are working on. We need to make a much bigger investment in funding professional development for teachers, principals, maintenance staff, recess supervisors, and others who make decisions about the ways that school grounds are designed, managed and used. We also need some transitional funding to provide staff time for an outdoor educator and/or schoolyard management coordinator who can play a role at each school in the transition from grey to green.]*

Structure of the funding
- Mixing public and private funding sources is complicated. Interagency funding is also complicated. Schools don't usually have the staff time to manage administrative or funding complexity.
- PTA funds can be flexible or constrained; they are also different from school to school, which poses equity issues
- Grant funding sources are usually too small to make a difference to school ground infrastructure. Often, only part of a project can be implemented at a time, and future phases aren't built.

Funding sources are not well publicized
- More work needs to be done to centralize/publicize the sources of funding that school grounds can access. Access to the funding needs more coordination.

Data and cost-benefit information
−   There is not enough clarity for funders that green infrastructure on school grounds is a cheaper and better solution. Not enough success stories have been published yet. There are not enough examples that have been measured yet in detail to explain the ecological and learning benefits. This is needed to justify more funding.

Timing
−   Funding timelines don't always match the needs of participatory design (which is time intensive)

Design
−   Custom, site-specific design work is more expensive than standardized details; every site is different. Green schoolyard design is based on the principle that every schoolyard should be different and reflect its place and school community.

COLLABORATIONS

OPPORTUNITIES

Multi-disciplinary partnerships
- Many potential partners with shared goals also have skills, ideas and resources they can combine.
- Teamwork between the school district and developers, engineers and landscape architects is important.
- Families and children should be involved.
- Nonprofits in many fields can be of assistance. Some mentioned during the workshop include: Trust for Public Land, Friends of the Urban Forest, Audubon Society, Save the Bay, Education Outside, Green Schoolyards America
- District level – There is existing/growing support in SFUSD for this work. This is great.
- City agency collaborations are important: SFPUC, Public Works, Recreation and Parks, and CalTrans can all partner with each other and SFUSD.

Information sharing
- Share best management practice knowledge across disciplines and between schools
- Utilize a collaborative design process that integrates required regulations
- Find synergy through collaborative problem solving design/grassroots

Educational value of the grounds
- Create partnerships between schools and natural resource/water specialists to connect curricula to site specific features on the grounds
- Convene wider partnerships to bring the possibilities of greater public exposure/PR to get the word out about excellent models/pilot projects

Potential to achieve multi-benefit outcomes
- Multi-benefit outcomes are possible through a skillful redesign of a paved schoolyard
- Collaboration generates more creative solutions; consensus builds community

Increased potential for better use of public land
- See parks, streets, and schools as a connected network. Include state property within city limits as part of this network of public land.
- Tactical urbanism is a tool that can be activated to engage underutilized urban spaces (like school grounds), particularly in neighborhoods that lack open space.
- Open up schoolyard access after hours
- Create community gardens and shared park spaces on school grounds

Some partnerships can help design, build and maintain school grounds
- Involve students of all ages in all phases of the design and building process. Ensure that all schools are designed with a process that focuses on real, open-ended participation from children.
- Involve teen stewardship programs in maintaining elementary school grounds.
- Partner with community organizations and parents to maintain the grounds when school is not in session.
- Engage environmental clubs as schoolyard stewards (clubs of children and adults)
- Ask classrooms to be responsible for maintenance and part of the initial installation, to increase "ownership"
- Landscape architects can lead a multi-disciplinary partnership during the design process, and coordinate the needs and desires of educators, students, families, neighborhood groups, artists, engineers, architects, city government, public agencies, etc.
- Experienced public space/playground designers might not know about nature play, so collaboration can help to extend their knowledge base.
- Experienced green infrastructure designers might not know about child development needs, so collaboration is helpful.

CONSTRAINTS

Communication between disciplines
- Getting designers, engineers, and developers to speak the same language
- Coordination between different fields is difficult
- Values and objectives of collaborating teams may vary
- It is important that collaborative teams keep cultural relevance in mind with project goals/outcomes

Intellectual property concerns
- Information sharing and project integration can introduce intellectual property issues for proprietary techniques and approaches
  [Danks: This is particularly true for design consultants who have to compete with one another to be awarded a job with a school.]

Consensus building challenges
- Resistance to change from old ideas; agencies' mentalities
- Differences of opinion about what's good for children/community
- The complexity of MOUs
- The difficulty/impossibility of meeting all needs; compromise is required.
  [Danks: How does that play out when meeting technical standards? For example, can stormwater goals be flexible if children's need require adaptation from stormwater planting palettes, etc.?]

Leadership and professional development
- Training for all professionals involved, and parents/students
- Leadership changes/turnover at school sites means that professional development must be ongoing
- Not all landscape architects have experience managing the type of interdisciplinary team that green schoolyards require; not all landscape architects have designed with children as clients.
- Leaders with big egos can prevent high quality collaborations

Shared liability for collaborative projects
- Liability concerns

Access to school sites for non-school personnel and community members
- Sometimes outside volunteers need to be fingerprinted if they will be onsite during school hours.
- It's difficult for outsiders to gain access to the classroom to help teach in their own areas of expertise. (Teachers don't know who to call for help. People who want to help don't know who needs it.)

Time
- Time constraints are real. It's often hard to find time to collaborate, even if interest is there.
- Teachers often lack time for professional development and lack time to develop and implement new curricula with their classes. (If outdoor lessons are standards-based, this is easier.)

Funding
- Siloed funding sources might be difficult for collaborating groups to access? (Although collaborations often mean that the group has access to more potential sources of funding?)