

# Outdoor Learning : The Intersection of Teaching, Design, and Community

Joint Designer / Superintendent Roundtable  
October 21, 2020



# Welcome / Agenda

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- Welcome
- Introduction
- Presenter: Kristin Metz
- Presenter: Kaki Martin
- Discussion / Q & A
- Closing Remarks



# Speakers

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*Facilitator*



**Anne Brockelman, AIA  
MSBA  
Perry Dean Rogers  
Partners Architects**

*Presenter*



**Kristin Metz  
Education Consultant  
Former Director of Education,  
Boston Schoolyard Initiative**

*Presenter*



**Kaki Martin, ASLA, PLA  
Klopfer Martin Design Group**





# Outdoor Learning



*Coolidge Corner  
School, Brookline.  
IBI Placemaking*





# Outdoor Learning







# Outdoor Learning

[GET A QUOTE](#)



**21' Wide x 20' Long Outdoor Classroom Structure For Additional Classroom Space**

## **FAST INSTALLATION AND EASY RELOCATION**

Fall is approaching fast. We understand school districts have little time to waste. Depending on your classroom or outdoor structure needs, we have complete building solutions that can be easily set up and safely anchored to virtually any level surface (including asphalt or concrete parking lots). High-quality materials and unmatched craftsmanship create long-lasting structures capable of being installed and left in place to support long-term classroom use, or easily taken down and relocated as needs change.

**OUTDOOR CLASSROOMS DESIGNED FOR SOCIAL DISTANCING**



# Outdoor Learning



*Sidwell Friends  
School, DC;  
Andropogon*



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# OUTDOOR LEARNING

at the intersection of teaching, design and community

Massachusetts School Building Authority

October 21, 2020



# NATURE CAN IMPROVE HEALTH AND WELLBEING

Spending time in nature provides children with a wide range of health benefits.

**HEALTHY BABIES**  
Nature exposure for mothers can promote:

- BETTER FETAL GROWTH<sup>1</sup>
- HEALTHIER BIRTH WEIGHTS<sup>1,2,3</sup>

**HEALTHY EYES AND VITAMIN D LEVELS**  
Time spent in bright sunlight can:

- REDUCE NEARSIGHTEDNESS<sup>4,5,6,7</sup>
- INCREASE VITAMIN D LEVELS<sup>8,9,10</sup>

**INCREASED PHYSICAL ACTIVITY**  
Access to parks and greenspace can foster:

- INCREASED PHYSICAL ACTIVITY<sup>11,12</sup>
- REDUCED RISK OF OBESITY<sup>13</sup>

**SOCIAL-EMOTIONAL WELLBEING**  
Learning in nature can support:

- IMPROVED RELATIONSHIP SKILLS<sup>14,15</sup>
- REDUCED STRESS<sup>16</sup>, ANGER<sup>17,18</sup> AND AGGRESSION<sup>19,20</sup>

**OUTDOOR PLAY**  
Increases the likelihood that girls will remain active into adolescence.<sup>21</sup>

Children are better able to cope with stress when they live near trees and other greenery.<sup>22,23</sup>

**NATURE CONTACT IS** especially beneficial for mothers of lower education and socio-economic levels.<sup>1,2,3</sup>

children nature NLC NATIONAL LEAGUE OF CITIES THE JBB FOUNDATION ADDITIONAL RESEARCH ON THE BENEFITS OF NATURE AVAILABLE AT [childrennature.org/research](http://childrennature.org/research)

**SUPPORTING RESEARCH**  
 Dubamko et al. (2014) Association between residential greenness and birth weight: Systematic review and meta-analysis. *Urban For Urban Green*, 12(4), 423-430.  
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CBMN recognizes that not all studies support causal statements.

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# NATURE CAN IMPROVE ACADEMIC OUTCOMES

Spending time in nature enhances educational outcomes by improving children's academic performance, focus, behavior and love of learning.

**BETTER ACADEMIC PERFORMANCE**  
Learning in natural environments can:

- BOOST PERFORMANCE in reading, writing, math, science and social studies.<sup>1,2,3,4,5</sup>
- ENHANCE creativity, critical thinking and problem solving.<sup>6</sup>

Seeing nature from school buildings can foster academic success.<sup>4,7,8</sup>

**ENHANCED ATTENTION**  
Spending time in nature can help children focus their attention:

- ↑ FOCUS AND ATTENTION<sup>9,10,11,12</sup>
- ↓ ADHD SYMPTOMS<sup>13,14</sup>

The greener the setting, the better the focus.<sup>11,12</sup>

**INCREASED ENGAGEMENT & ENTHUSIASM**  
Exploration and discovery through outdoor experiences can promote motivation to learn:

- ↑ INCREASED ENTHUSIASM FOR LEARNING<sup>15</sup>
- ↑ GREATER ENGAGEMENT WITH LEARNING<sup>16</sup>

**IMPROVED BEHAVIOR**  
Nature-based learning is associated with reduced aggression and fewer discipline problems:<sup>17,18</sup>

- ↑ MORE IMPULSE CONTROL<sup>19</sup>
- ↓ LESS DISRUPTIVE BEHAVIOR<sup>20</sup>

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educators look to the outdoors

**School Gardens** Education  
for Sustainability  
**Environmental Literacy**  
Community Engagement  
**Green Schools** **Forest**  
**Kindergartens** STEM:  
Science, Technology,  
Engineering & Math  
**Universal Design For**  
**Learning** **Project-based**  
**Learning** Educating the  
**Whole Child** **Student-**  
**centered learning**





“While evidence of the importance of nearby green spaces in children’s everyday lives is growing, opportunities for children to engage with natural environments, continue to decrease.”

(Ferguso, Cassells, MacAllister, & Evans, 2013; WHO 20170)

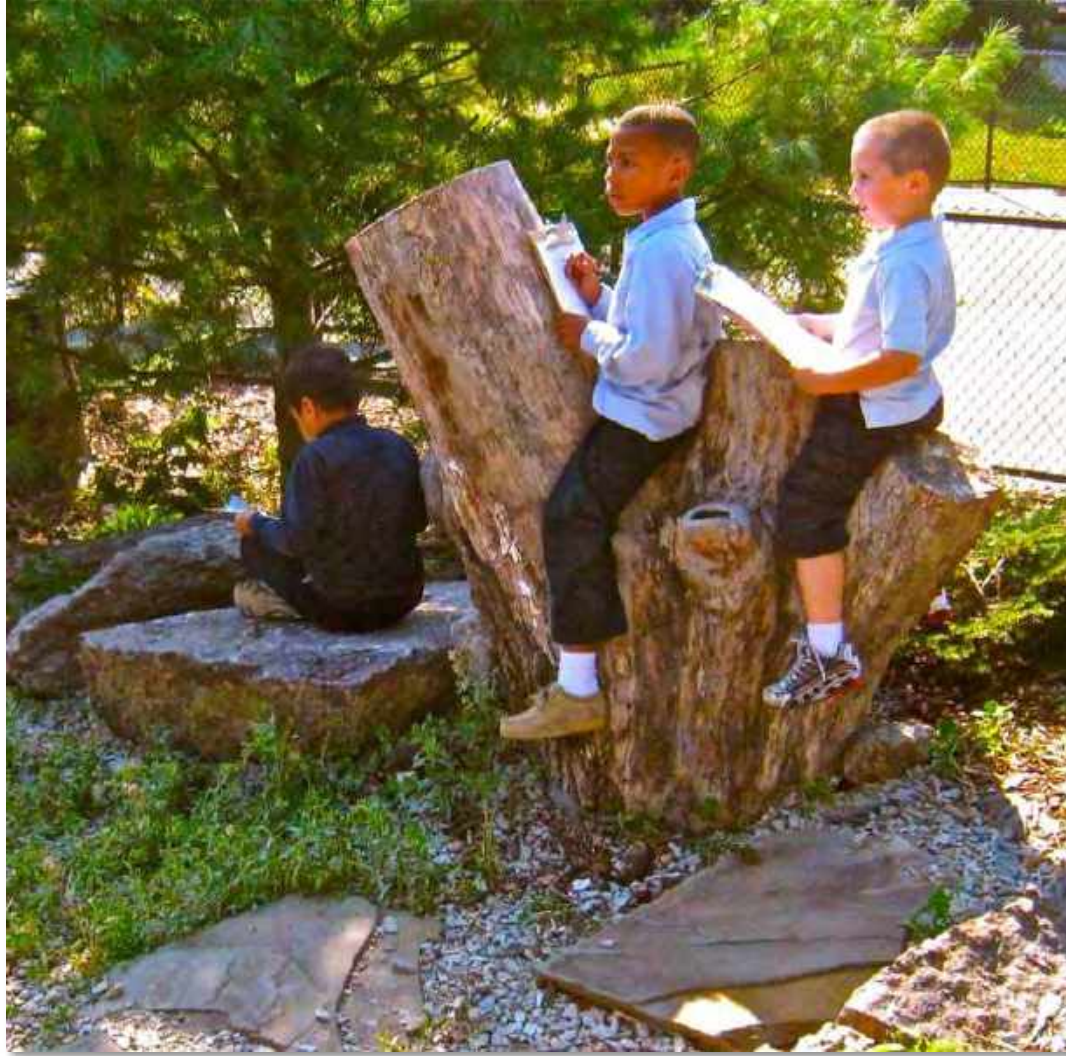




# ecotone

A region of transition between two biological communities.

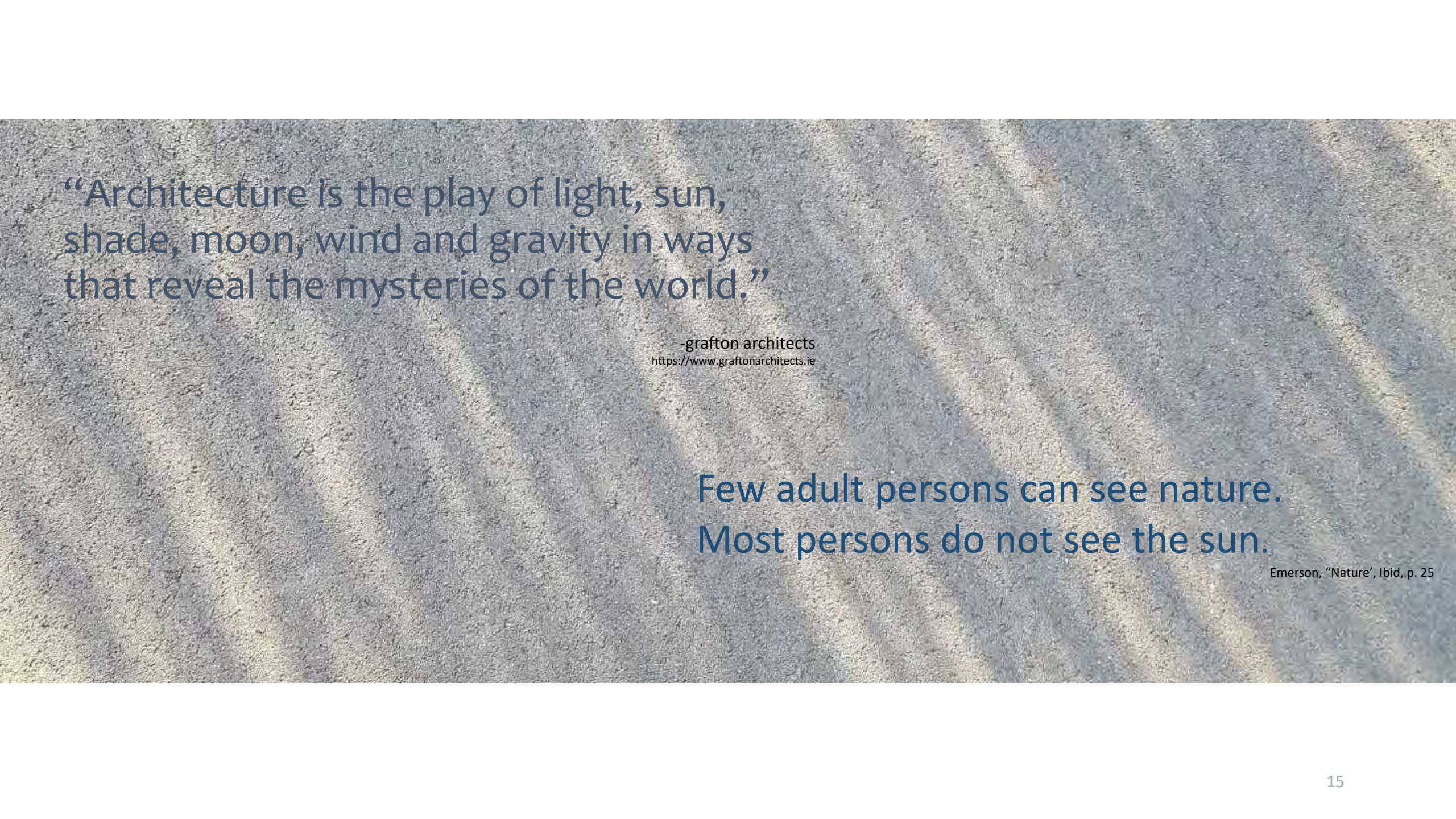
*'ecotones between two habitats are often richer in species than either'*



A place in-*between*

- school and home
- being alone and with others
- learning and play
- 'forest' and 'city'





“Architecture is the play of light, sun,  
shade, moon, wind and gravity in ways  
that reveal the mysteries of the world.”

-grafon architects  
<https://www.grafonarchitects.ie>

Few adult persons can see nature.  
Most persons do not see the sun.

Emerson, “Nature”, Ibid, p. 25





we're all learning

## National COVID-19 Outdoor Learning Initiative

Reopening Schools with Outdoor Learning





share what you learn

monthly zoom meetings:

[www.greenschoolyards.org/working-groups](http://www.greenschoolyards.org/working-groups)



use what you have









## Use the existing curriculum

Students are more likely to retain the new words they learn if they are exposed to them multiple times.

McKeown, & Kucan, 2002

<b>tranquil</b>	<b>soil</b>	<b>footprint</b>
<b>blustery</b>	fruit	<b>overcast</b>
<b>bury</b>	root	evergreen
<b>sprout</b>	ramp	<b>animals</b>
<b>fragile</b>	<b>harvest</b>	water
<b>growth</b>	<b>bumpy</b>	<b>warm</b>
<b>unfurl</b>	<b>smooth</b>	<b>above</b>
angle	cycle	<b>toward</b>
breeze	<b>wither</b>	<b>listen</b>
vine	tendrils	

Vocabulary from grade 3 reader

There should be a taller fence so balls can't get in. I believe we should have more wildlife. I want the rock wall to get upgraded. I think we should have a state flag on the flag pole. Teachers and students should be able to go in the lighthouse. We need to make signs that say Don't Pick the Flowers.





“We should bring the snails inside.”

- Predators might eat them.
- They might die outside.
- We can see them better.
- We can learn more about them.

“We should keep the snails outside.”

- Predators need them to eat.
- They need air.
- They need habitats like hollow logs.
- It's not damp in the classroom.

# Engage students in problem-solving

“relate student...experiences to real-world problems and decisions.”

“Recognize that technology is any modification of the natural or designed world done to fulfill human needs or wants.”

**K-ESS3-2.** Use information about weather forecasting to prepare for, different types of local weather.

**3.3-5-ETS1-2** Generate several possible solutions to a given design problem.

**7.MS-ETS1-2.** Evaluate competing solutions to a given design problem





21<sup>st</sup> century school  
design

Design Schools to Support a Variety  
of Learning Styles

Make Healthy, Comfortable and  
Flexible Learning Spaces

Consider Non-Traditional Options  
for School Facilities and Classrooms.



“A classroom for differentiated, integrated, culturally-responsive learning might have a variety of seating options.... no front or back of the classroom.

<https://www.bdcnetwork.com/blog/design-educational-equity>



# District Strategic Plans

- Equity, Inclusion & Diversity
  - Healthy Learning Environments
  - Social & Emotional Well-being
  - Academic Achievement
  - Family & Community Engagement
1. How does outdoor learning support these goals?
  2. What design elements support these goals?



## social well-being



Create learning environments that develop healthy, positive relationships.

Encourage learners to solve cooperate and resolve differences.

*“Going outdoors has made them a better group together. They’re kinder to each other and I think they’ve seen talents in one another that sometimes aren’t showcased in the classroom.”*



# emotional well-being

Create learning environments that encourage learners to :  
support everyone's physical, emotional and psychological well-being

increase self-awareness

*"I've seen students be nice to someone outdoors they've been bullying all day."*



- Quiet, alone time
- Feeling of "Being away"



# academic achievement

Require students to transfer and deepen skills and knowledge between contexts.

Give students agency.

Create opportunities for:  
problem-based learning,  
critical thinking,  
perseverance,  
collaboration, creativity,  
and risk-taking



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Facilitate learning in which the student does the vast majority of the cognitive work of the task.

Provide all students with access through multiple entry points.

Situate their learning in contexts that matter to them.

















# family and community engagement

How can we help schools  
Invite the community in?

will there be community access?  
culturally and linguistically accessible?  
connect to walking routes to school?  
gardening and stewardship?

contribute to the community?

- shared play space
- green space
- ecological services: shade, stormwater capture, biodiversity
- Students sharing information

Enhance  
opportunities for  
PK-12 students to  
take part in their  
community

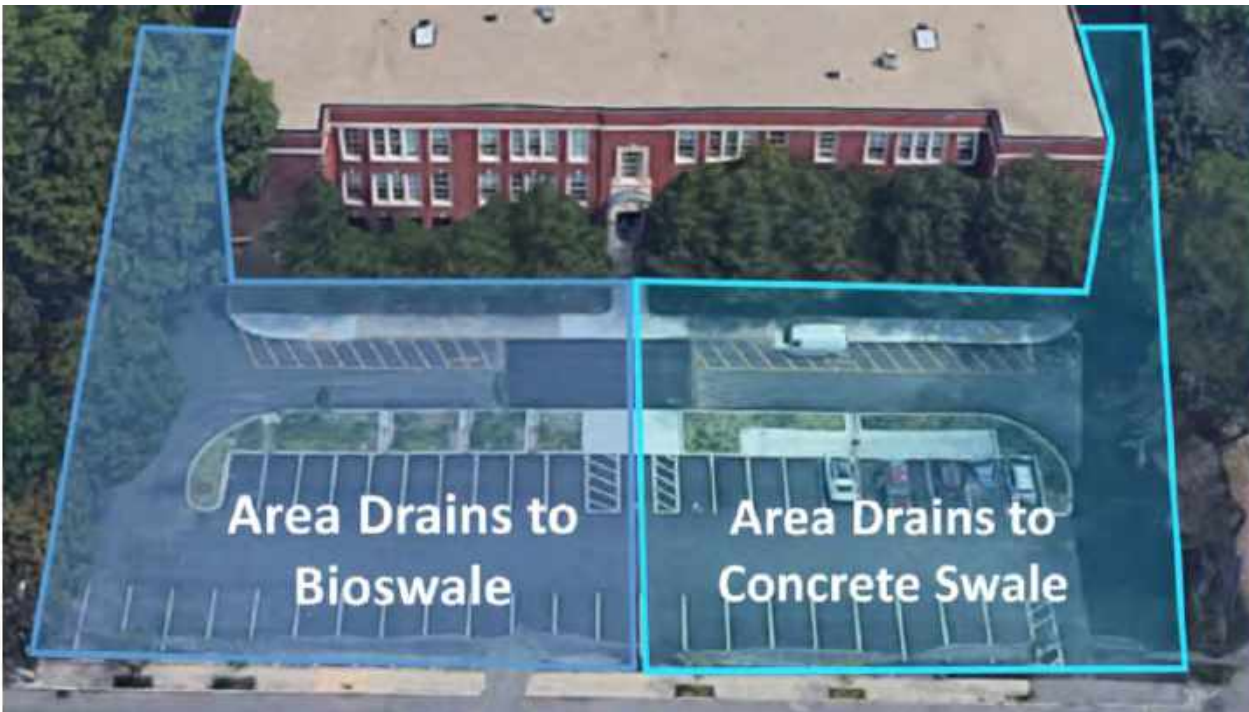








## Green vs. Gray Infrastructure - Bioswale and Concrete Swale



# Technology supports data collection





# Equity: extending the reach of the school site

## Stormwater and Green Infrastructure Curriculum for Boston Public Schools



### **Grade 5 | Does It Really Work? Investigating Claims about Green Infrastructure**

*Three schoolyard investigations in which students look for evidence in their schoolyard to support or refute claims about the impacts of Green Infrastructure. For schools with Green Infrastructure on-site.*

### **Grade 7 | Rain in Our Schoolyard and Water Quality in the Charles River: What's the Connection?**

*A 4-6 week science unit on stormwater and Green Infrastructure in which students investigate whether their schoolyard contributes to phosphorus pollution in the Charles River. If so, they explore what could be changed. If not, they investigate why not. For schools with or without Green Infrastructure on-site.*









# Lesson #1 | Create defined spaces

Outdoor learning spaces must be legible to teachers and students





# Lesson #2 | support instructional practices

Flexible learning: whole groups, small group and individual work





# Lesson #2 | support instructional practices

## teacher leadership is key

### Create ongoing opportunities:

- ❑ to learn outdoors as adults
- ❑ share experiences and build expertise with colleagues

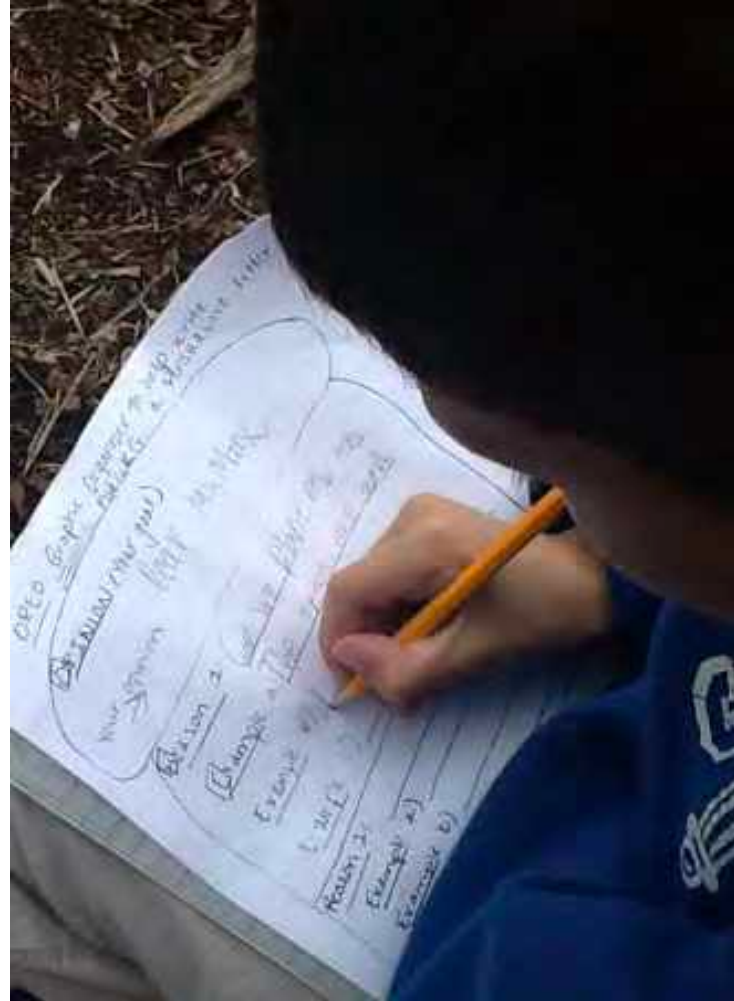
### Structures:

- ❑ a teacher leadership cohort
- ❑ time to collaboratively resolving challenges



## Lesson #3 | *Support* the curriculum

Key to post-occupancy use: outdoor teaching *begins* in the classroom





## Lesson #4 | stewardship

If green space is not maintained it won't be used, and if it's not used it won't be maintained.

“Bold design ideas are only as powerful as the quality of construction and sustained maintenance.”

C. Shepard, Citymaking





# Challenges

Sustainable opportunities for students to manipulate their environment?

Sustainable maintenance solutions

Sustainable teacher support





# OUTDOOR LEARNING: The Intersection of Teaching, Design, and Community

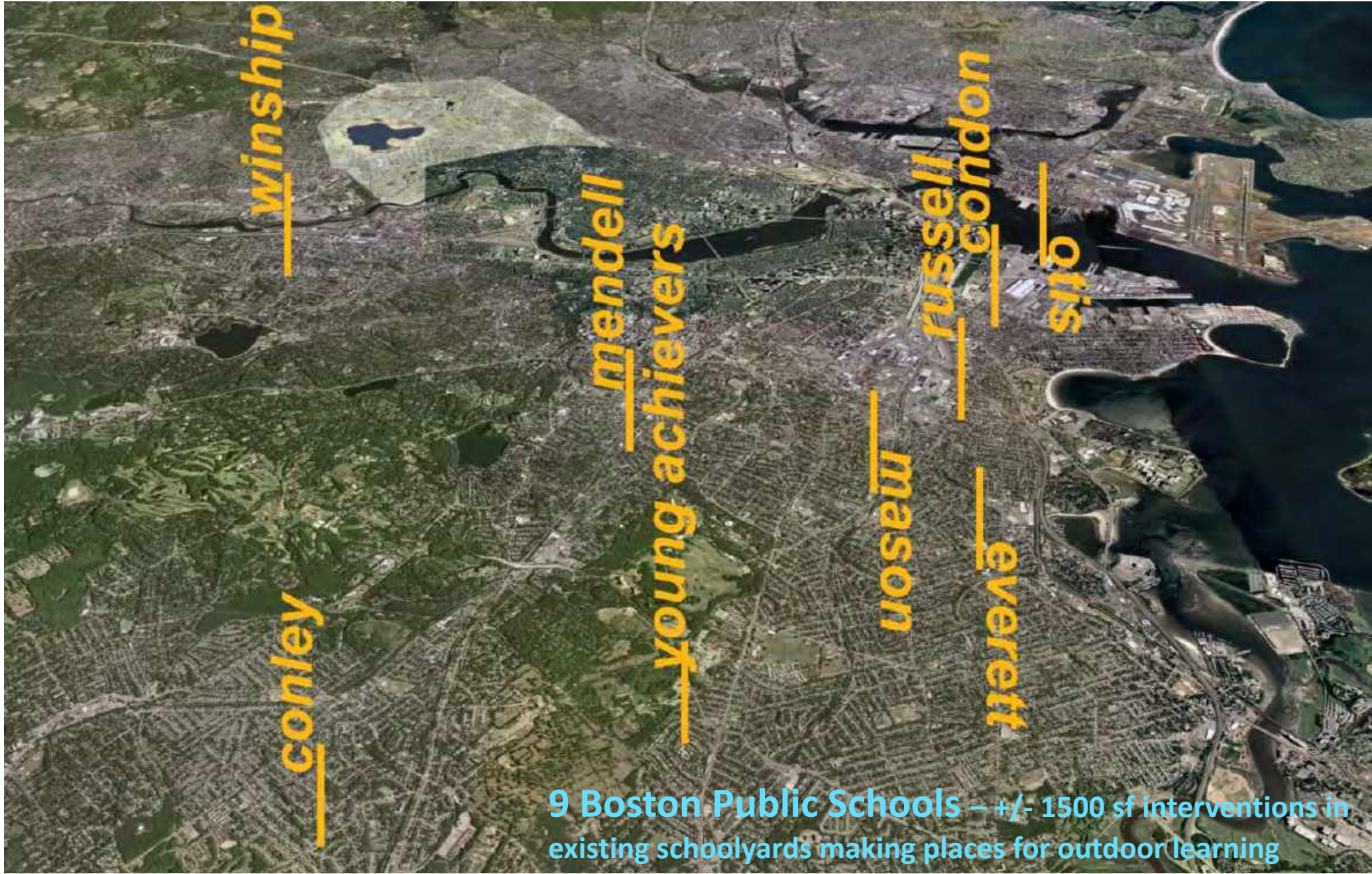
*a landscape architect's perspective*

October 21, 2020

## Case Study Approach K-8 in Boston

- Lessons can be applied to all types of schools and age ranges
- Transcend typical interior learning models and translate to exterior spaces – *embrace what the out-of-doors uniquely offers*
- Retro-fits and adaptations possible for all features and ideas





9 Boston Public Schools – +/- 1500 sf interventions in existing schoolyards making places for outdoor learning





EVERETT



MASON



CONLEY



CONDON



RUSSELL



MENDELL



WINSHIP

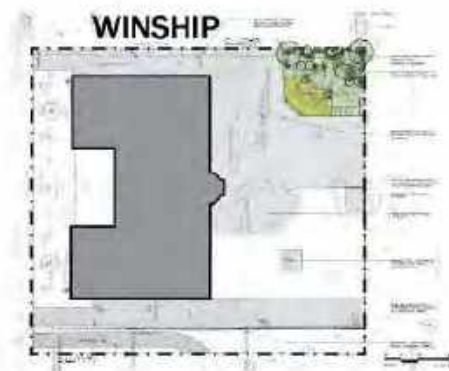
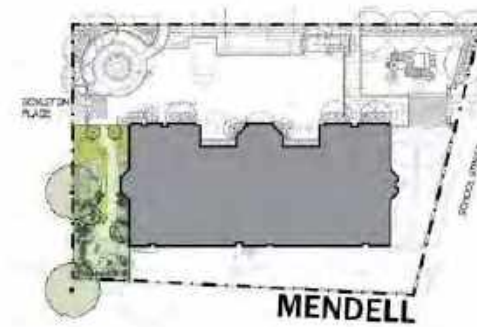
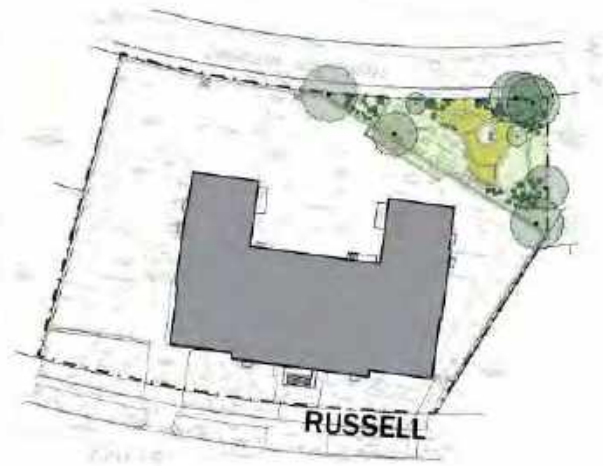
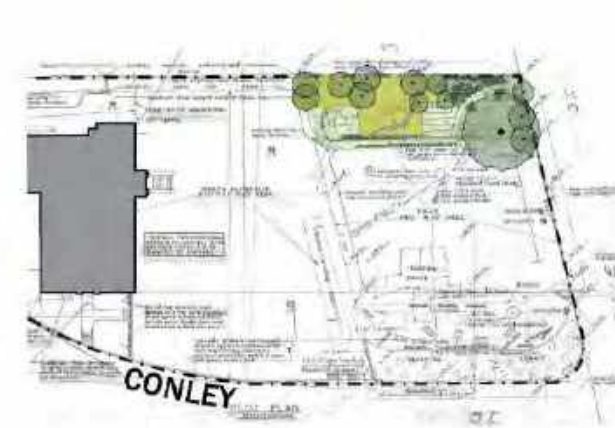
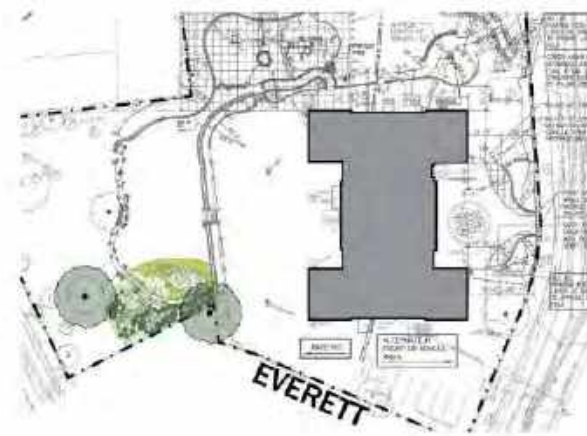


YOUNG ACHIEVERS



HENDERSON

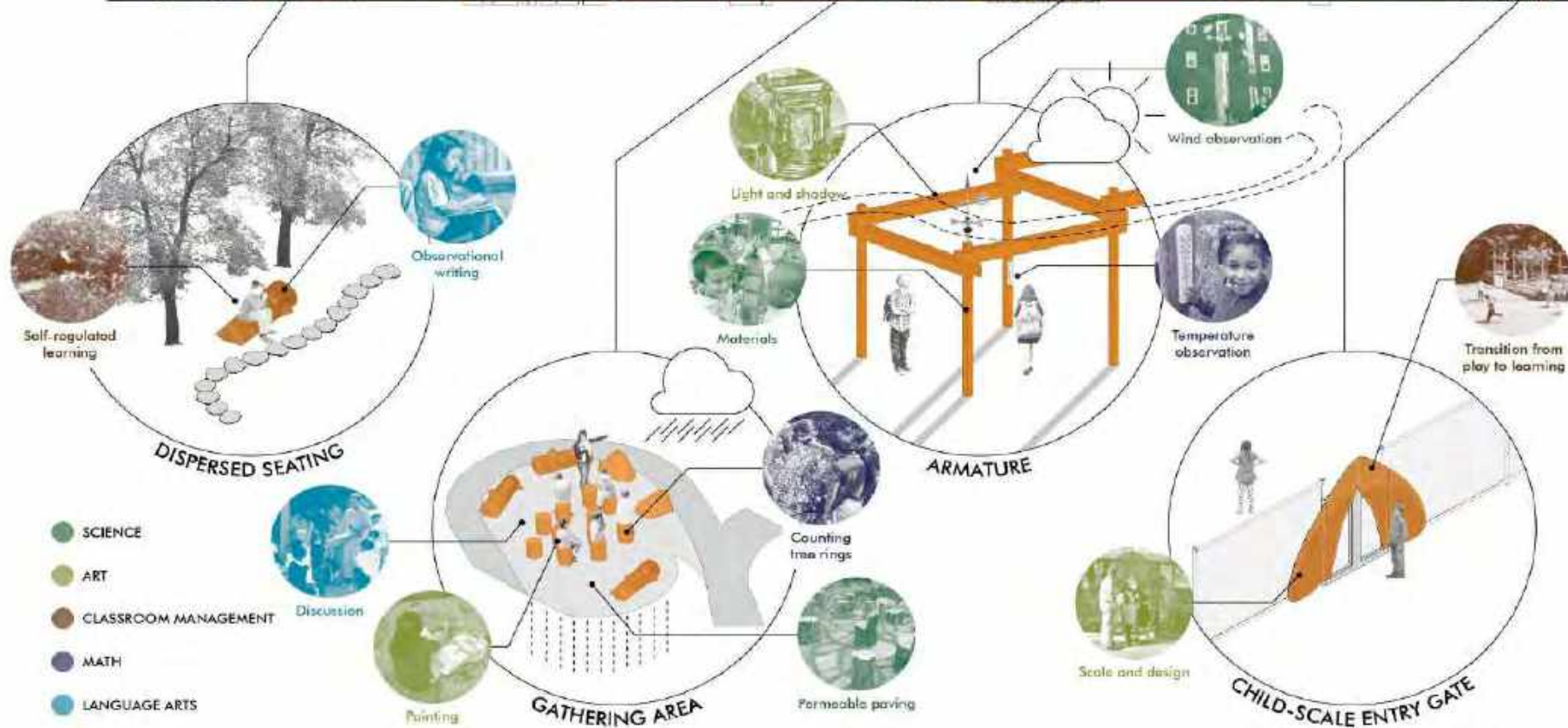
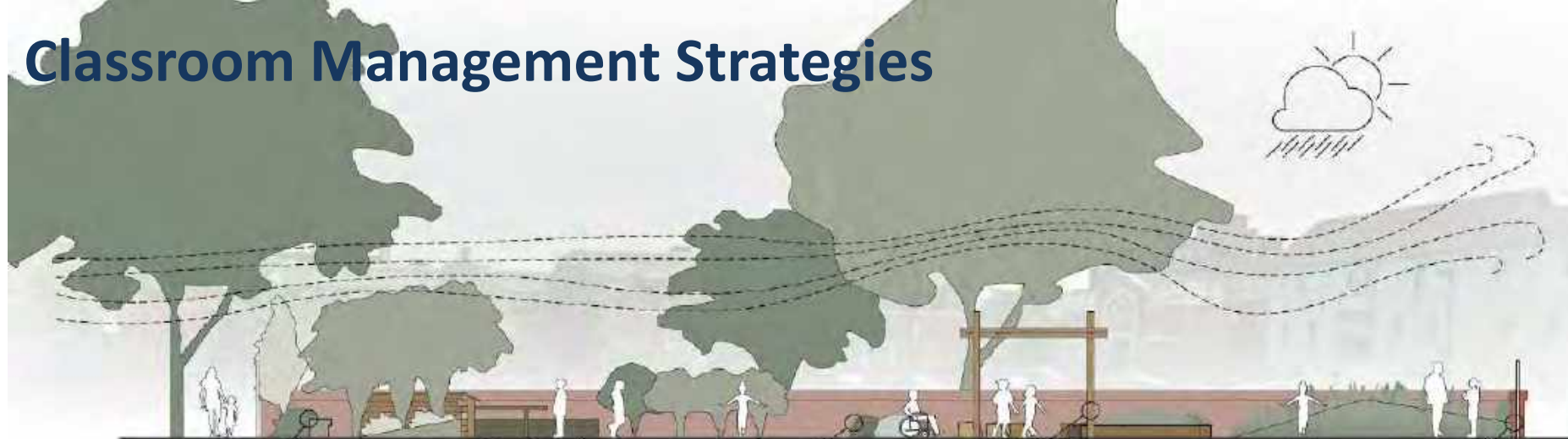




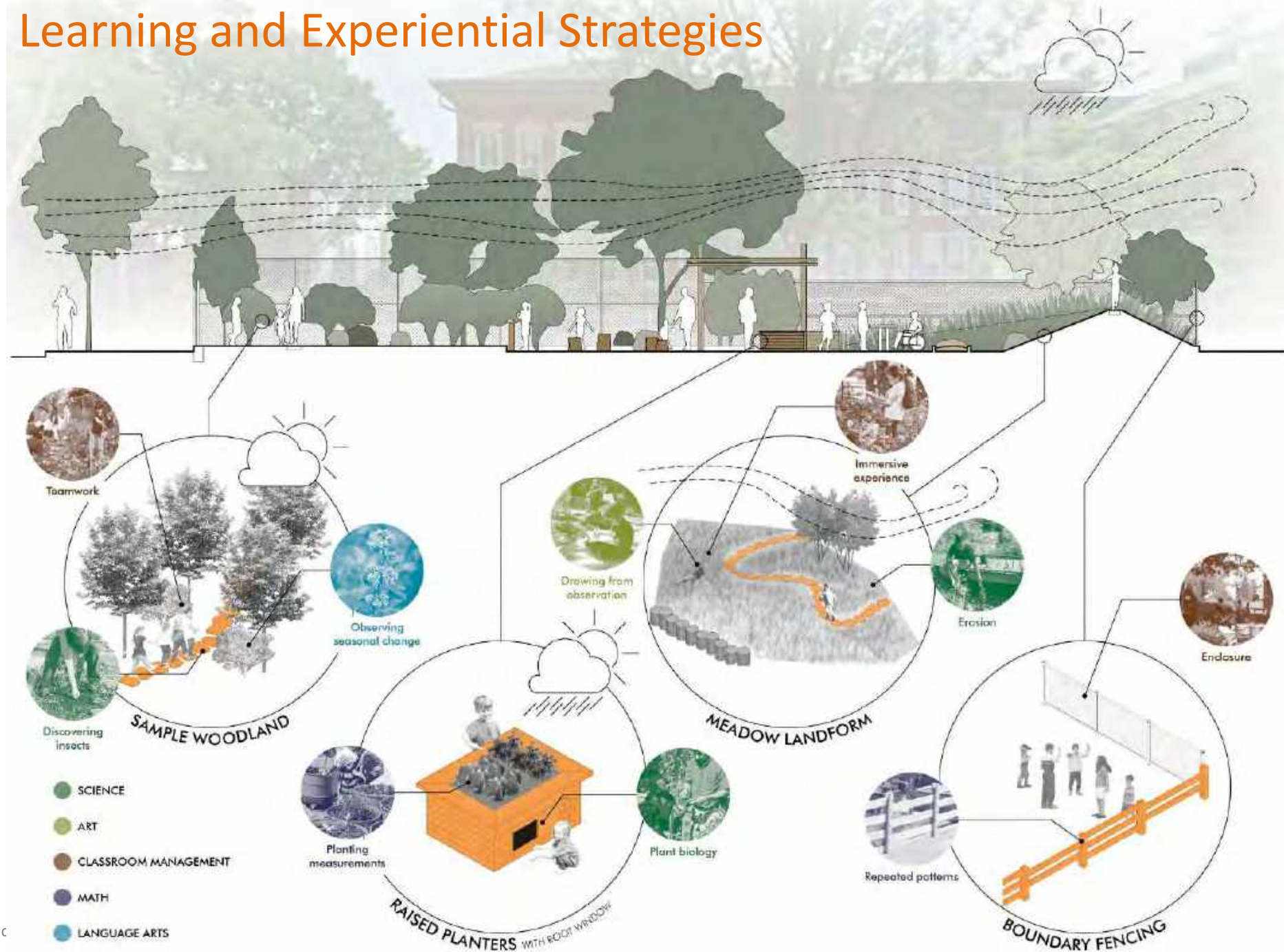




# Classroom Management Strategies



# Learning and Experiential Strategies





# Classroom Management Strategies

- Gate or clear point of entry
- Clear place to gather and return to
- Overhead or vertical structure or armature to add to over time
- Variety of seating options (group, small group, individual)
- Flat surface/table to gather around

## Learning and Experiential Strategies

- Exploratory Path/Loop
- Sample small planting areas (meadow, woodland, raised bed for growing)
- Change in topography

# Russell School, Dorchester







Russell

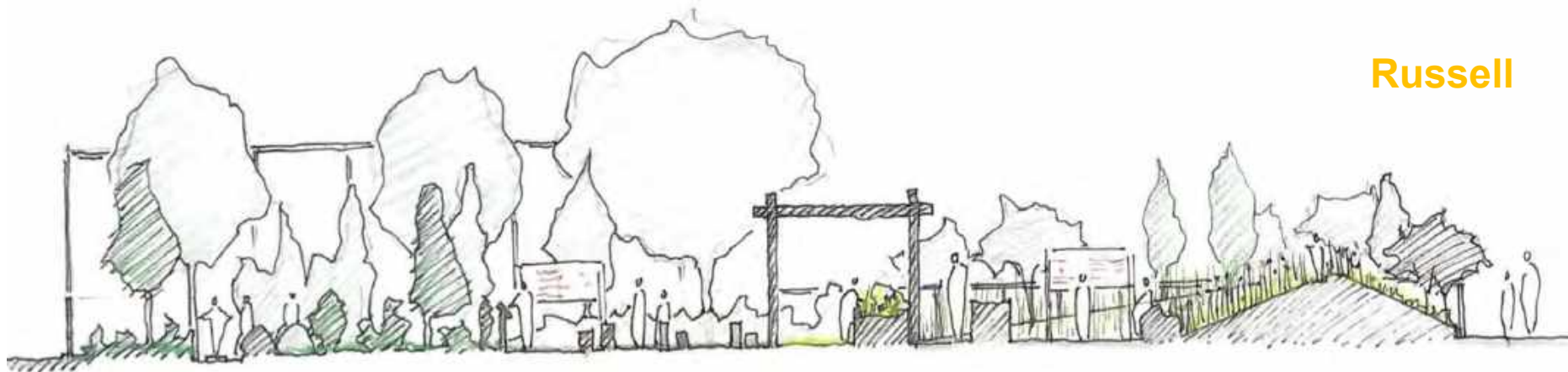








Russell





















## Winship School, Allston



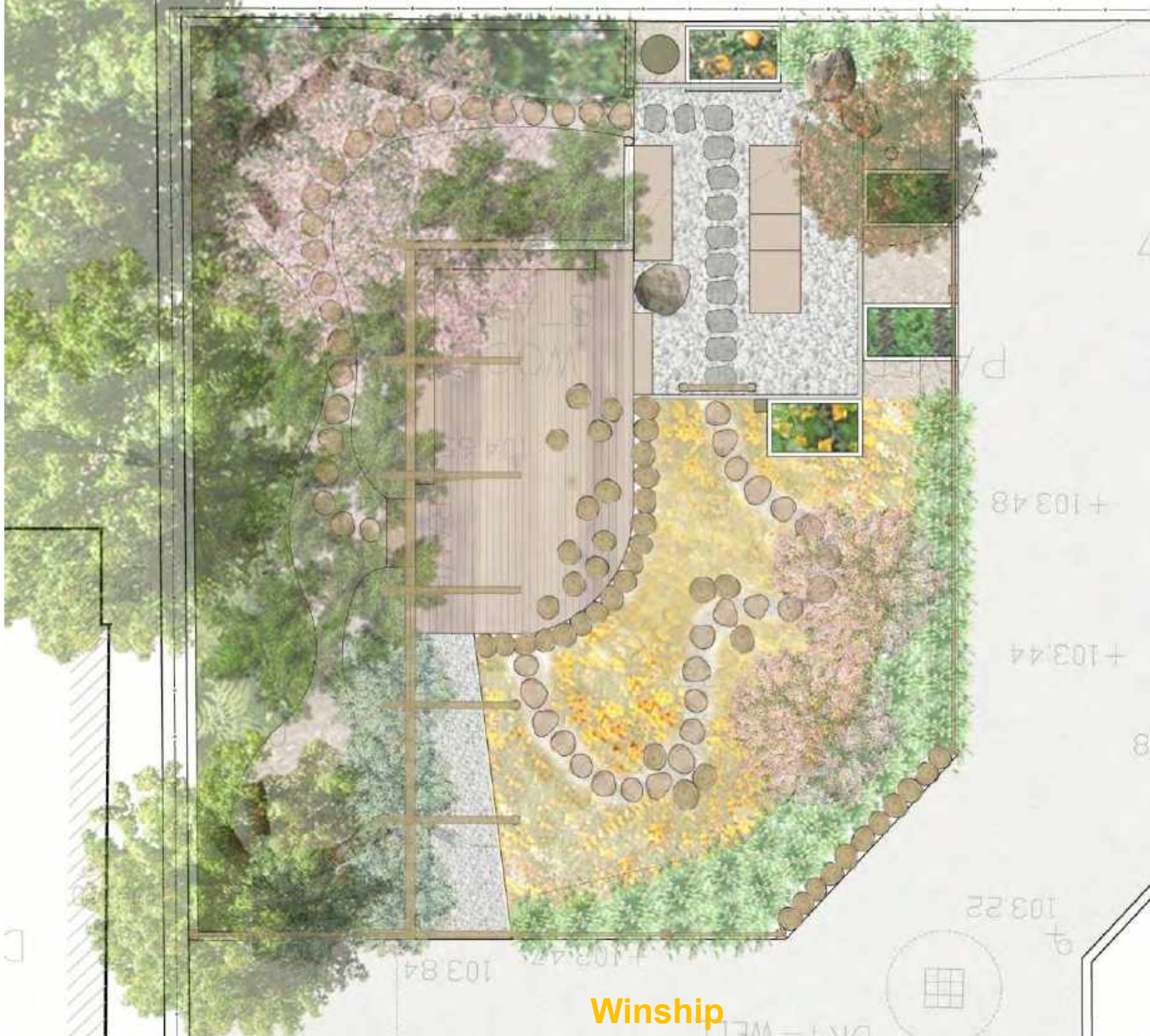












Winship









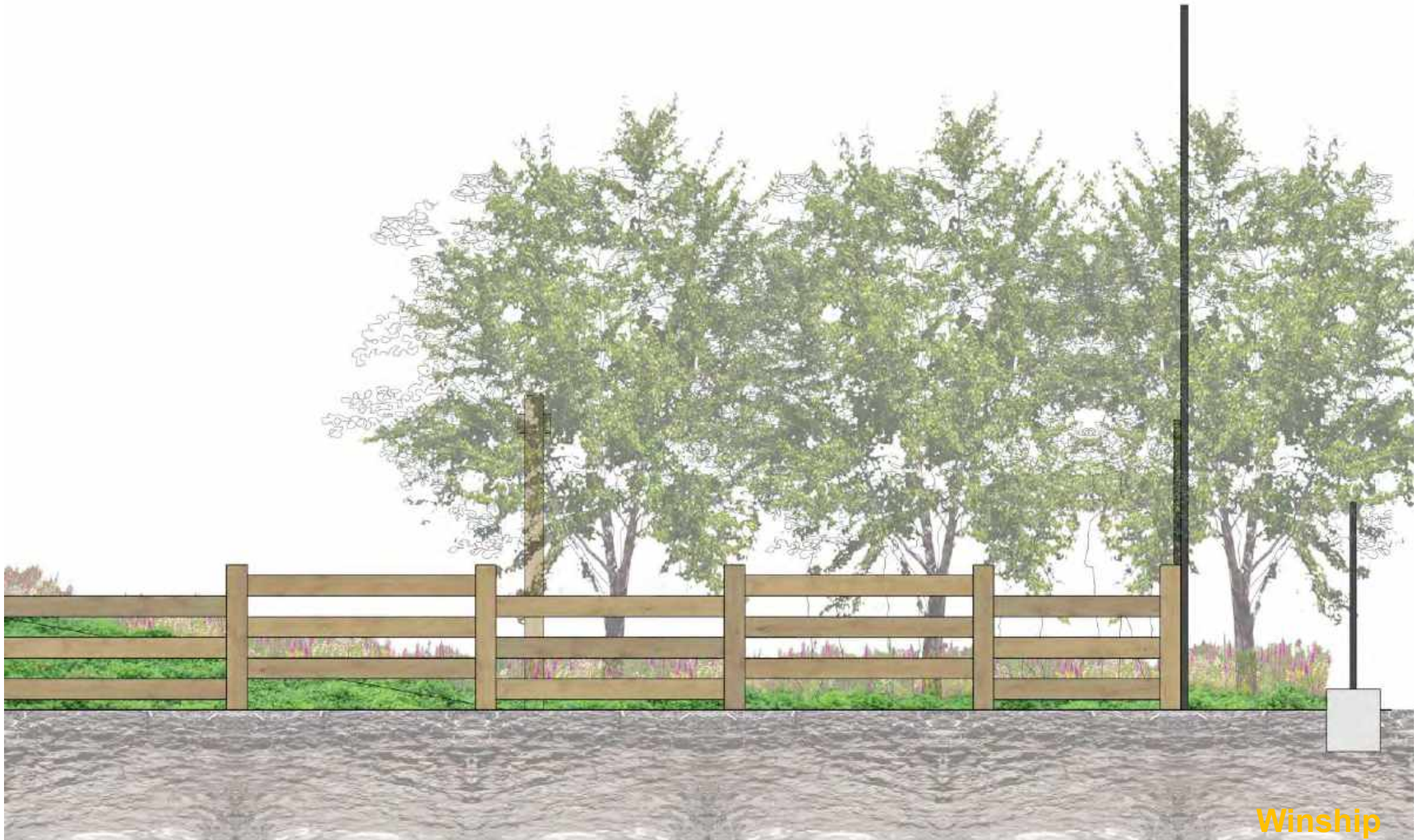


















## Mason School, Dorchester





















# Classroom Management Strategies

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## Learning and Experiential Strategies

- Exploratory Path/Loop
- Sample small planting areas (meadow, woodland, raised bed for growing)
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SEATING  
OPTIONS

PLACE TO GATHER

ARMATURE

TABLE

PLANTING

PATH





woodland

SEATING  
OPTIONS

PLACE TO  
GATHER

TABLE

ARMATURE

raised beds

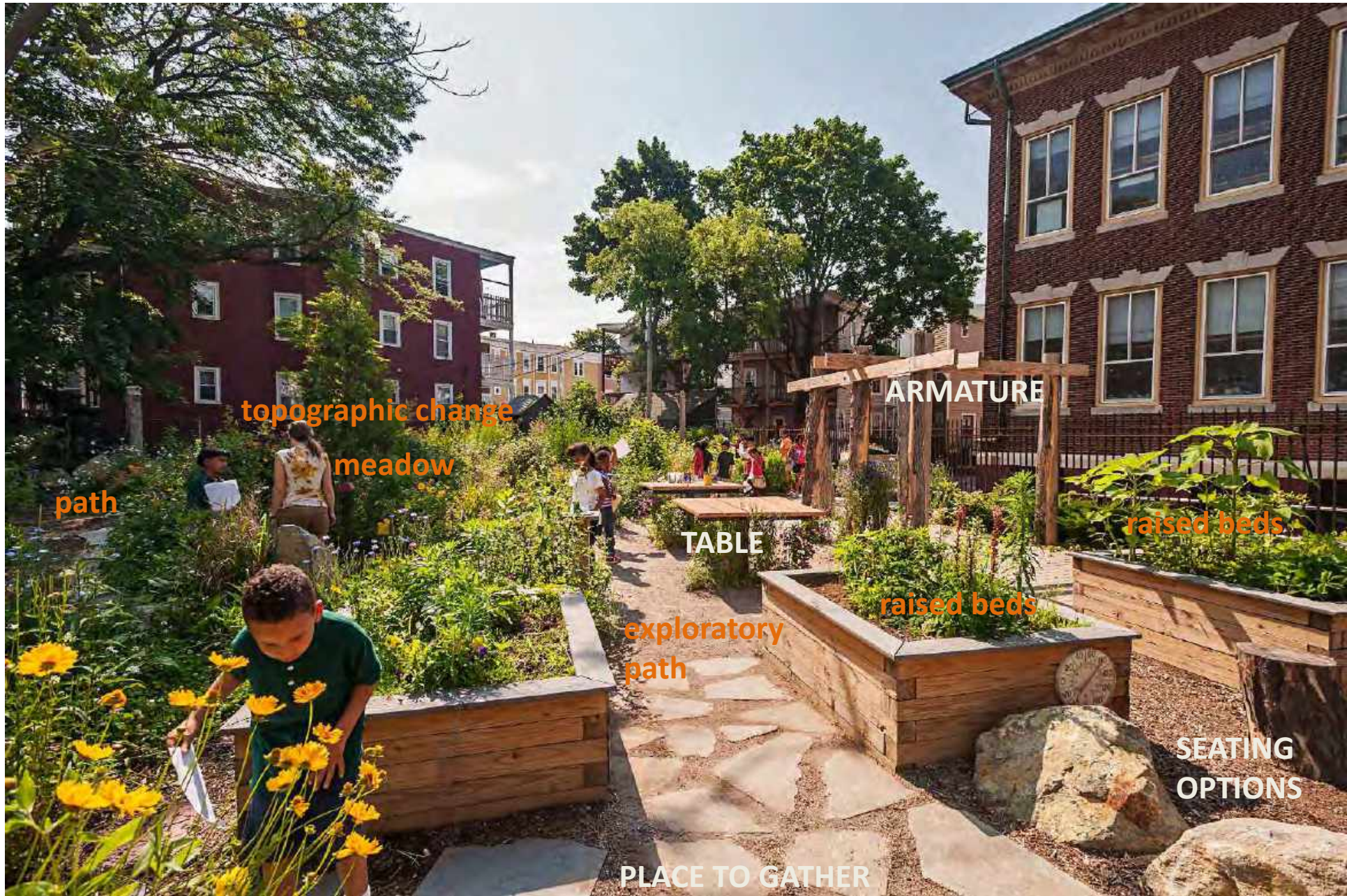
exploratory path

topographic change

meadow

ENTRY





topographic change

meadow

path

ARMATURE

raised beds

TABLE

raised beds

exploratory path

SEATING OPTIONS

PLACE TO GATHER

















# Outdoor Learning

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*Deeper learning comes from students' seeing and experiencing things for themselves.*

Revell and Wainwright (2009),  
*Journal of Geography in Higher Education*,  
v33 n2 p209-223, May 2009.





# Discussion and Questions

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# Resources

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**Children & Nature Network Research Library**

<https://www.childrenandnature.org/learn/research/>

**National COVID-19 Outdoor Learning Initiative**

<https://www.greenschoolyards.org/covid-learn-outside>

**Outdoor learning working group monthly zoom meetings:**

<https://www.greenschoolyards.org/working-groups>

**Anne Brockelman**, MSBA Facilities Assessment Subcommittee

anneb@perrydean.com

**Kristin Metz**, Education Consultant

kristinmetz@outlook.com

**Kaki Martin**, Landscape Architect

kaki@klopfmartin.com





Thank You

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