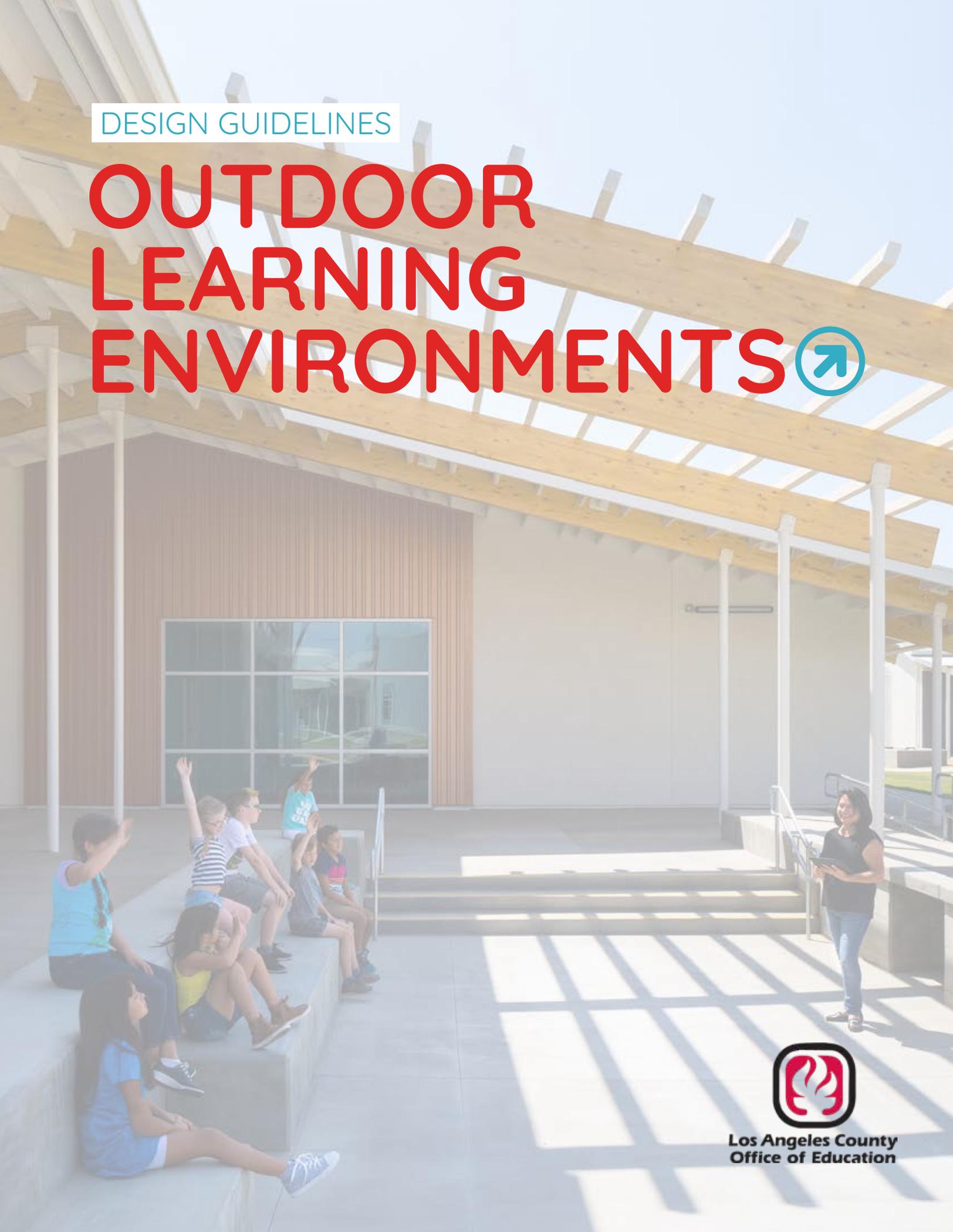


DESIGN GUIDELINES

OUTDOOR LEARNING ENVIRONMENTS



Los Angeles County
Office of Education

Table of Contents

	Message from Dr. Debra Duardo	5
1	Professional Learning and Student Engagement Using Outdoor Environments	7
2	Design Guidelines	13
3	Learning Spaces Components	21
	3.1 Seating	22
	3.2 Shading and Protection	25
	3.3 Teaching Tools and Resources	28
	3.4 Space Definition	31
	3.5 Site Landscaping	34
	3.6 Infrastructure	37
	3.7 Construction	39
4	Funding and Public Bid	41
5	Testing the Design Process	45
	References	53

Acknowledgments

This guide is published by the Los Angeles County Office of Education through the generous support of HMC Architects and the following organizations. In no way does the publication of these materials represent an endorsement of any one company or organization.

Los Angeles County Office of Education

Dr. Debra Duardo, Los Angeles County Superintendent of Schools

Jema Estrella, Director of Facilities and Construction

Shaun Hawke, Project Director of Outdoor & Marine Science Field Study

HMC Architects

Brian Meyers, PreK-12 Practice Leader

Julie Strauss, Director of School Advisors

Virginia Marquardt, Principal in Charge

Jonathan Richert, Project Designer

AHBE | MIG

Darren Shirai, Senior Landscape Architect

IMEG

Naseer Ahmed, Executive Principal

Bernards

Carl Magness, Project Executive

Jenae Decker, Senior Project Manager

Ali Hansen, Business Development Manager



Message from Dr. Debra Duardo, Los Angeles County Superintendent of Schools

Outdoor learning has been proven to offer students a range of benefits, from enhancing engagement to reducing stress and promoting physical and psychological wellbeing. When we take lessons outside our classroom walls, we teach our children that learning can happen anywhere and anytime, promoting lifelong curiosity.

The COVID-19 pandemic has forced educators to reimagine and be creative with outdoor space as a way to support the reopening of campuses given the lower risk of virus transmission.

Yet far too many of our young people, particularly those in inner-city and low-income communities, have not had access to outdoor learning environments and green space—not before nor during the pandemic.

This inequity is one of many longstanding educational injustices that COVID-19 has laid bare. Yet I see a silver lining and the chance to seize this moment to transform our education system with strategies that place priority on meeting the needs of the whole child.

My commitment is to advocate for a collective investment in such approaches, surrounding our most vulnerable students with the resources they need to succeed and fostering positive, healthy learning environments. Increasing opportunities for outdoor learning is essential to advancing educational equity.

I am delighted that the Los Angeles County Office of Education was able to partner with engineering and construction experts to develop these design guidelines. They are a valuable resource for educators and facilities professionals in developing effective outdoor learning environments that serve the needs of their school communities.

I look forward to a day when all our students have the chance to learn and thrive in the great outdoors.

Debra Duardo, M.S.W., Ed.D.
Los Angeles County Superintendent of Schools



Oxnard UHSD Rancho Campana High School
Image by HMC Architects

1 Professional Learning and Student Engagement Using Outdoor Environments

by Shaun Hawke, Project Director III, Outdoor & Marine Science Field Study, Los Angeles County Office of Education

The COVID-19 pandemic has brought massive change to education, including the awareness that activities outside can be safer when contagion is a concern. This need for safety has also brought a renewed interest in educating students outside, including designing and creating outdoor classrooms and spaces.

Change

Engaging students in outdoor education requires a different approach and set of skills than regular inside lessons. As with many large-scale changes, such as the pivot needed to move education outdoors, resistance may be encountered. School communities can be slow to change and may require proactive problem-solving efforts. Children, however, are most often enthused and can quickly adapt to the idea that a classroom does not equal four walls. Engaging instructional and facilities staff may take more time and require strategic conversations.

Concerns

One of the first steps to building support for outdoor classrooms in a school community is recognizing that transitioning instruction outdoors is substantial. It is important to realize that even those in a school community excited about developing an outdoor classroom may have concerns. Initially, staff concern and resistance may focus on safety or other challenges. Soliciting, acknowledging, and discussing matters at the earliest opportunity can effectively reduce staff concerns and increase receptivity to the concept. Defining and addressing those concerns can guide the process of moving toward your goal. It may be as simple as having everyone provide comments in a virtual meeting or as involved as developing new professional learning resources or including design elements in plans.

Logistics

A flexible approach is needed in the less predictable conditions of outdoor learning. One initial strategy is to ask, “*What can I control?*” Usually, the answer is lesson plans, equipment, and behavioral support strategies. Also ask, “*What can’t I control?*” That answer might be nature, weather, animals, noise, and Air Quality Index (AQI). Once you have those parameters, you can make plans for what you can and cannot control. As a leader, it cannot be overstated how crucial your positive mindset about the logistics of outdoor learning is in helping students develop resiliency and adapt to external conditions. The following logistical considerations can help assess what might be needed in an outdoor classroom space, as well as facilitate using that space.

Sound. Noise has a significantly magnified impact outside, especially if you are trying to teach or learn. Be aware of noise from the community, from other students or classes, and even from nature such as birds.

Weather. Most of coastal California has a Mediterranean climate. *Only three percent of the landmass on the planet has this amazingly mild climate!*

Perspective Example on Weather. A veteran teacher with experience in both Fairbanks, Alaska, and Los Angeles, California, once commented, “*In Los Angeles, we had inside recess if there was any possibility of drizzle, and in Fairbanks, we had inside recess if it was more than 20-degrees below zero.*” *Tolerance for varying weather has everything to do with perspective and attitude.*

Weather Considerations. Heat, sun, cold, wind, rain, and AQI over 100 are some of the concerns for southern California but could also include snow, ice, lightning, or other hazards in different areas. Looking at your local weather and general climate concerns can help you plan. Simple ideas, like putting slats in a chain-link fence, can reduce wind distractions. Consider factors that may be local to an individual site, such as two buildings that tend to form a wind tunnel.

Equipment. “*There is no such thing as bad weather, only bad clothes.*” – *Norwegian Proverb.* Good equipment makes all the difference in comfort. Assessing the resources of your school community and what items might be procured is essential. Consider ball caps, water bottles, rain ponchos, jackets, and seating pads.

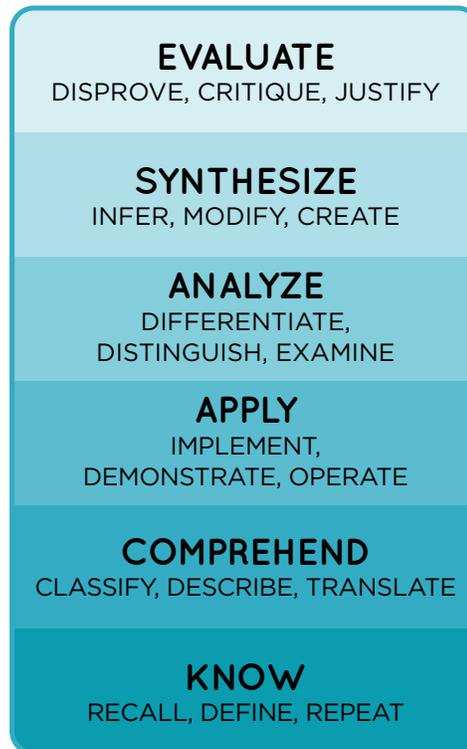
Comfort. *Maslow’s Hierarchy before Bloom’s Taxonomy.* Physical needs must be addressed before education can happen - this has always been known to effective educators. An essential rule when educating outside is to frequently ask, “*How physically comfortable is everyone, including myself? If not, how can I make that happen?*”

Scheduling Considerations. How you schedule for optimal use will depend on the availability of spaces and your school schedule. Avoiding recess times, PE classes, and class transitions are a given. However, there may be other schedules to consider such as maintenance, which would include lawn mowing, sprinklers or other scheduled needs. Community and seasonal schedules, such as garbage collection or activities at adjacent properties, may also need to be considered.

MASLOW'S HIERARCHY OF NEEDS



BLOOM'S TAXONOMY OF EDUCATIONAL OBJECTIVES



From Exploring the Core's April 2, 2020 web-article "Maslow before Bloom"

Additional Logistic Strategies for Outside Learning. Taking into consideration the varied needs of adults and students is important when considering equipment needs. While students and teachers may have similar responses to temperature-related conditions, consider how students and staff interact with the environment. On cold days, body heat is lost extremely quickly sitting on cold surfaces, so pads or other insulation should be used as a barrier to reduce heat loss. On sunny days, be aware that the learner should not face

the sun during instruction. Additionally, students need to be able read the instructor's emotion, so the teacher, aide, or instructor should not have sunglasses on while giving instructions. Instead, a broad-brimmed hat can be helpful for the instructor.

Outside Instructional Strategies

How you teach influences what you need from a space. There are two main approaches for teaching outside: lessons focused on phenomena found outside and conducting the regular lessons outside. Either approach can work in the right conditions. However, genuine phenomena are described in the Next Generation Science Standards as the centerpiece of three-dimensional learning and science concept attainment.

Inside Lessons Done Outside. We know from both recent and historical accounts that it is possible to do inside lessons outside, especially in mild California weather with comfortable conditions.

Intentionally Utilizing Phenomena for Lessons. The other approach is to use the phenomena found outside (i.e., writing haikus about sounds or smells, making a sundial as part of a lesson on planetary movement, observing and illustrating insects, making a visual map of sounds, or even measuring the energy transfer through conduction of sitting on a hot or cold surface). *Using immediate, experiential phenomena, like the sun casting shadows, is the magic that makes learning more powerful.* With the array of natural phenomena outside, both planned and spontaneous lessons are much more possible.

Distractions. More phenomena outside also mean more distractions. A new, intrusive phenomenon can take over a lesson. *Teachers will regularly face the question of how much of that new phenomenon to ignore or incorporate.* If the teacher includes a new phenomenon, they must constantly consider how long to incorporate it. Should it be recognized and

observed briefly, or is student interest so profound or the phenomenon so unique that the entire lesson should be pivoted?

Pivot Example. *If ants were to distract from a math lesson, a teacher might consider briefly observing the phenomenon.* Or, if the interest indicates a need for a lesson pivot, the teacher could do the following:

- Have students explore the ants.
- Direct student exploration by having them write down as many observations as they can about the ants.
- Use observation time to think of a way of connecting the ants to the original lesson goals.
- Connect the phenomenon to the lesson, usually with Science and Engineering Practices or Crosscutting Concepts, essential parts of Next Generation Science Standards for California.

In this example, if your lesson was math, have students census ants and estimate the population.

How to Pivot a Lesson. Pivoting while teaching is difficult and takes practice but it can be learned. Like acquiring most skills, educators will need examples, specific techniques, and practice. *Pivoting a lesson when needed often engages students with excitement about their learning dramatically.*

Thank you for creatively working to make education better for your students!

Adversity can often ignite our greatest accomplishments.

Behavior - Four Walls Should Not be Crucial to a Behavioral Support System

Group Behavior Feedback. Educators know that group behavior often gives important feedback about the lesson plans and instructional strategies, as well as student needs. Common situations of students talking over instruction can indicate a needed shift toward more partnering or teamwork. Conversely, student disagreements can indicate students need time on individual work or a more social-emotional learning-centered approach for lessons. These scenarios can be similar in science or other subjects.

Possible examples in an outdoor setting might include students focusing on local phenomena not associated with the lesson. In that scenario, more student-directed or phenomena-based lessons might improve student focus and lesson success. Importantly, group behavior can also give feedback about the physical conditions of the lesson indicating what the students need. For example, if students are moving excessively or seem inactive, conditions may be too cold or too hot.

Outside Behavior Differences. Initially, outside group behavior can be different or potentially problematic compared to inside behavior. However, *students generally like being outside if conditions are reasonable, so with clear parameters, behavior outside often can become more positive than typical inside behavior.*

Behavioral Supports. Quality behavioral support is essential for all education. *Four walls should not be a central part of a behavioral support system for regular education students.*

Experience-Based Tips for Education Outside

Keep Distance. Noise and other students are reliable distractors. Preplanning and scheduling can help maintain distance from the noise and student distractors. For example, outside education can be difficult adjacent to a hallway or breezeway, or other classrooms.

Flexibility of the Learning Environment. The flexibility of the learning space enables teachers to employ a variety of teaching formats to keep students engaged and meet their learning needs. For example, a permanent amphitheater is good for lecture or performance but awkward for whole-class discussions and small group activities. A permanent amphitheater, therefore, would not be a very flexible space. A flexible space example might be an open area with movable upright log rounds or stools where students can pivot to make small groups or face front for a whole group. *Consider how space can accommodate small groups, partners, whole group discussion, individual work, and giving instructions.*

Adjacent Open Area. An open adjacent area to an outdoor learning environment can add to the flexibility of teaching. Being able to physically move into a new space gives so many options. Most classroom teachers are used to very limited space indoors and don't think of using bigger areas of space. (Examples: "Leave all the equipment over there and make a circle here." Or, "Everyone stands over here in this area if you think this idea or over there for that idea.")

Including Nature. Significant research shows that the more you include nature in activities, the potential is increased for happier, healthier and better educated participants. (Lai 2017; Jacobi-Vessels 2013; Ernst & Monroe 2000; Eaton 2000; Carrier et al. 2013, The Kaiser Family Foundation 2010; Malone 2008; Louv 2008)



WCCUSD Sylvester Greenwood Academy/Leadership Public School
Photo by David Wakely

2 Design Guidelines

When we take lessons outside classroom walls, we teach our children that learning can happen anywhere and anytime, promoting lifelong curiosity.

It's that curiosity that we want to restore, as subjects like science either stopped or became limited for students through distance learning. Eighty-eight percent of teachers said that kids were learning less science during the pandemic, and pre-COVID, elementary teachers in California, on average, spent less than 60 minutes per week teaching science. When students are surrounded by the outdoors, they become first-hand witnesses to natural processes. This direct observation is the first step in becoming a 'natural scientist.'

This guide provides a framework for planning, designing, and implementing an outdoor learning environment—ensuring alignment for the long-term enhancement of student well-being and performance, as well as short-term benefits. For the short-term benefits, outdoor learning environments have shown to enable the operation of schools to reduce the risk of transmission and exposure to environmental health hazards, and to support student health and academic needs.

Identify Team, Goals, Schedule, and Budget

The first step is to identify the project leadership team and plan for stakeholder engagement. The leadership team's main role is to build consensus among the stakeholders about the project vision. The initial planning meeting will serve to establish the following:

Identify leadership team.

- Recommended team members are district and school leadership, representative teachers, students and parents, and the design team.

Identify outdoor learning environment goals and objectives.

- Identify how they align with the school's mission and goals.

Identify project schedule, budget, and funding sources.

Identify stakeholder engagement strategy.

- Identify the different groups you need input from, including those who will support or oppose. Then plan how and where to best to engage them. Recommended stakeholder groups are administration, teachers, maintenance and operations staff, students, parents, and outside members of the community.

Site Assessments

Each school site will have its own specific opportunities for outdoor learning. The site assessment is critical in identifying their potential opportunities and challenges. These include the condition of the site and its infrastructure. Then the availability of the physical space and their amenities, such as drinking fountains, restrooms, and exterior lighting. To develop an understanding of the site, stakeholder outreach and input from design professionals is key and achieved by:

Conducting a site walk.

- Walk the site with the stakeholders and identify potential location(s).

- Discuss the pros and cons about each location with, if possible, the school principal, the plant manager, staff, teachers, and stakeholders.
- What types of learning styles and activities can the location can offer?
- How many students or classes can the site accommodate?
- What amenities are needed?

Site assessments by professionals.

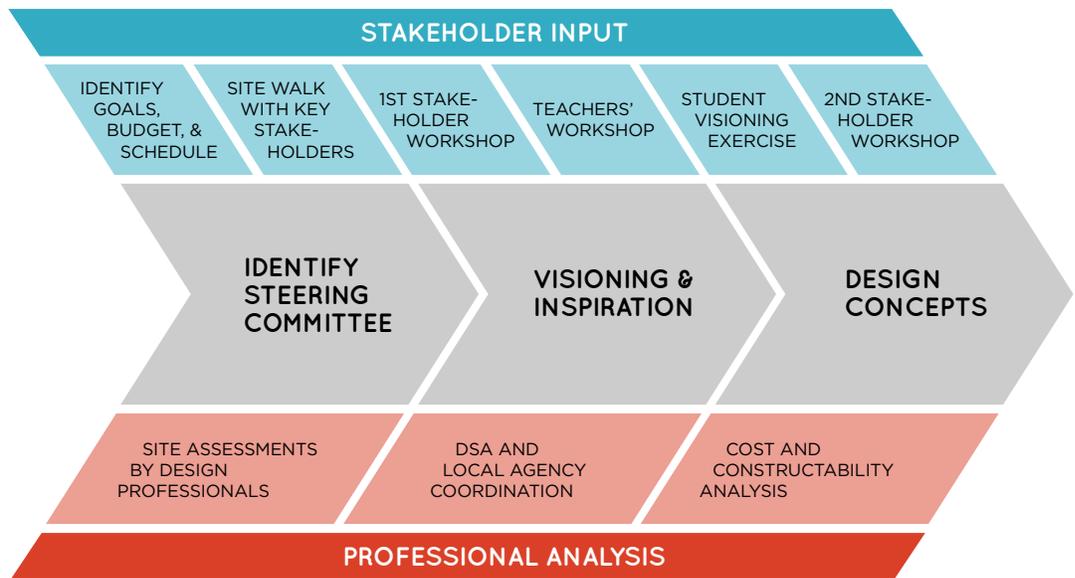
- Architect and civil engineer.
 - Identify the existing accessible paths of travel, access, grading and drainage, space availability, and adjacencies.
 - Understand the location’s orientation to sun, views, and architectural character.
- Landscape Architect.
 - Identify existing planting palette,

irrigation, landscape character of the campus, and maintenance considerations.

- Electrical and low voltage engineer.
 - Identify the existing infrastructure and available points of connection for power, data, and Wi-Fi.
- Plumbing engineer.
 - Identify the existing infrastructure, and available points of connection for potable and non-potable water.
- Contractor or construction manager.
 - Identify constructibility, logistics, and cost impacts for implementation.

Stakeholder Engagement

Stakeholder engagement gathers input from a broad representation of the school community, and the long-term success depends on teachers’ ownership and use of the space. It’s critical to integrate as many



DSA is the Department of the State Architect - the regulatory agency overseeing public school design and construction in California

of the preferred teaching and learning styles identified during this engagement process.

While the list may evolve throughout the design process, it's important to create a list of attendees at the beginning stages. If we can get as many voices in the room from the get-go, we can achieve even greater success by way of diverse collaboration. It's important to listen and hear all voices, so consider a mix of large and small gatherings and survey the broader school community. If we are effective in starting our process with the right attendees, we can create a stakeholder engagement process that can take as little as four weeks.

Given what we've learned throughout the pandemic, we've become accustomed to working virtually and, as such, maintain that all meetings can be virtual. However, to gain useful stakeholder feedback, we need to promote the use of the platform's tools. At the start of the meeting, provide instructions about the different types of tools. The Zoom platform, for instance, includes annotation tools, chatbox, and online surveys. Student engagement increases when they can use annotation tools (red hearts, green checkmarks, and red 'X's) and share their comments and custom emojis in the chatbox. Sharing live online surveys results with the group, allows for quick feedback and quicker emergence of consensus.

Recommended components include the following:

Stakeholder workshop one (general audience).

- Introduce the vision.
- Share inspiration images.
- Gather input on concerns and preferences.

Workshop for all teachers.

- Attend a professional development or staff meeting to ensure the broadest participation from all teachers.
- Share the progress and opportunities the outdoor learning environment offers.
- Provide ample time for teachers to voice their concerns and preferences.
- Provide a process for teachers to submit further input. For example an e-mail or a formal survey.

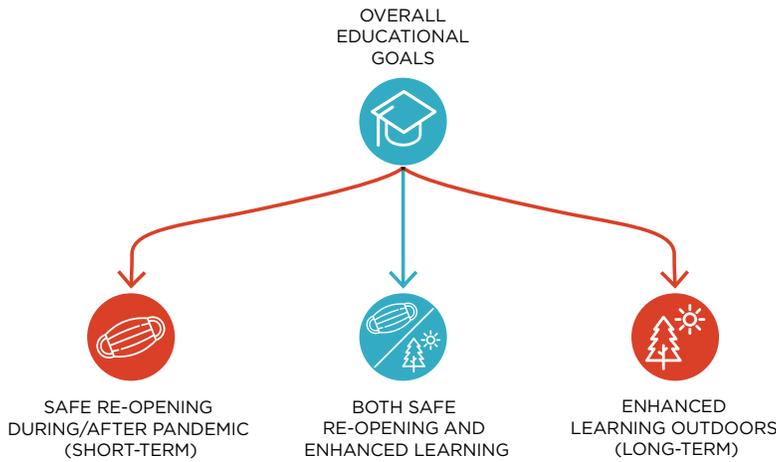
Student visioning exercise.

- Create a video for teachers to share with their students that describes how outdoor learning environments can enhance their learning experience.
- Each teacher customizes their student exercise. The exercise is to inspire and engage the students in imagining their vision of the outdoor learning environment.

Stakeholder workshop two (general audience).

- Share design concepts.
- Gather input on preferred schemes and priorities.

At the end of this process, take a moment to reflect on stakeholders' thoughts and ideas, and the final outcomes. Then update your school district's Local Control and Accountability Plan (LCAP) to include outdoor learning environments and their goals, actions, services, and expenditures to support student well-being and achievement.

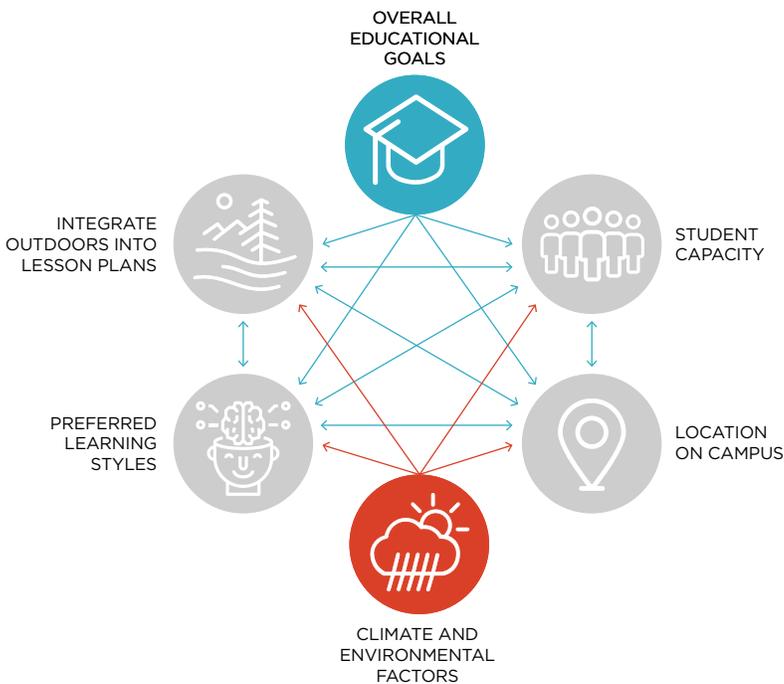


Development of Design Concepts

Kick-off the design process with a presentation of inspiration images. Use the images to create a discussion with the stakeholders, gaining their comments, preferences, concerns, and constraints. This feedback loop then leads to optimal solutions for the school.

Follow this step-by-step process to allow the gradual emergence of a shared vision.

- Share inspiration images of project components and collect input on preferred components.
- Develop and share a range of design concepts and collect input on preferred concepts.
- Check the cost of each scheme against budget and establish prioritization of components to balance cost and feasibility against design preferences.
- Review code implications and construction logistics.
- Document and share the final design concept.
- Along the way, key decisions and differentiators will help to clarify the vision and requirements for your outdoor learning environment. The next section defines these important differentiators which provide a road map to design your outdoor learning environment.



Overall Educational Goals

Different design solutions may result depending on whether the outdoor learning environment is for (1) safe re-opening of schools post-pandemic or (2) to promote long-term enhanced learning opportunities. Outdoor learning environments for safe re-opening will need to accommodate a larger

percentage of the students outdoors at one time. This will lead to a greater number of dispersed outdoor classrooms and spreading students out over a larger area to achieve safe distancing may lead to more staffing. Positioning the outdoor classrooms closer to indoor classrooms can ease supervision and sightlines and reduce staffing requirements. In contrast, long-term goals for outdoor learning accommodate all students at less frequent intervals and fewer students at once. Ideally, any investments in short-term solutions will also be optimized for long-term durability.

- Social distancing.
- Wearing masks.
- Keeping groups to small numbers
- Paying attention to acoustics. Speaking loudly to a larger group or next to noise pollution has the potential to cause a greater spread of viral particles. This will increase the chance of infection should a positive COVID-19 case occur on site.

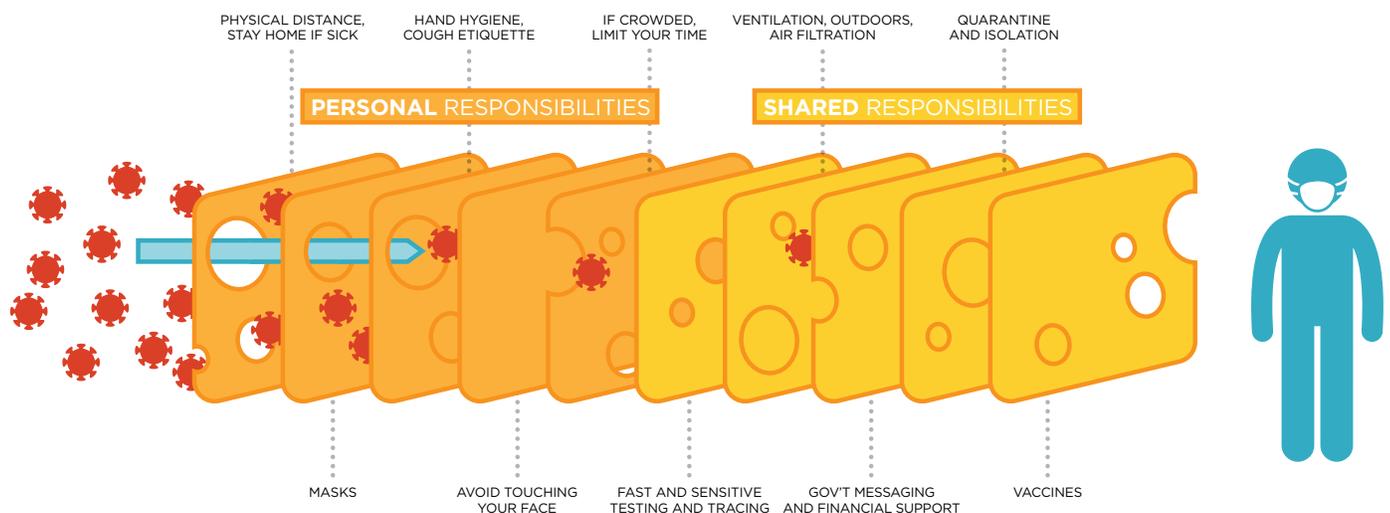
Safety Protocols

Using outdoor learning environments to help safely re-open schools requires a multi-layered strategy, which in terms of safety measures, is certainly ideal -- as no single intervention is 100 percent effective.

Even outdoors, it is important to establish critical safety protocols, including:

Integrating Capacity, Location, Layout, and Design with Educational Mission and Learning Styles

After establishing the goals, several inter-related factors will help to define the layout and design of the space(s). These factors include the required student capacity, the location of the spaces on campus, the preferred learning styles to accommodate, and the extent the lesson plans will integrate with the outdoor experience. The process is



SWISS CHEESE MODEL OF PANDEMIC RESPONSE

Source: Adopted from Ian M. Mackay (virologydownunder.com) and James T. Reason. Illustration by Rose Wong. The New York Times. 12/5/20

not linear and one should expect back-and-forth discussion among the stakeholders. As the stakeholders share their preferences, the discussion will continue to inform and change design options.

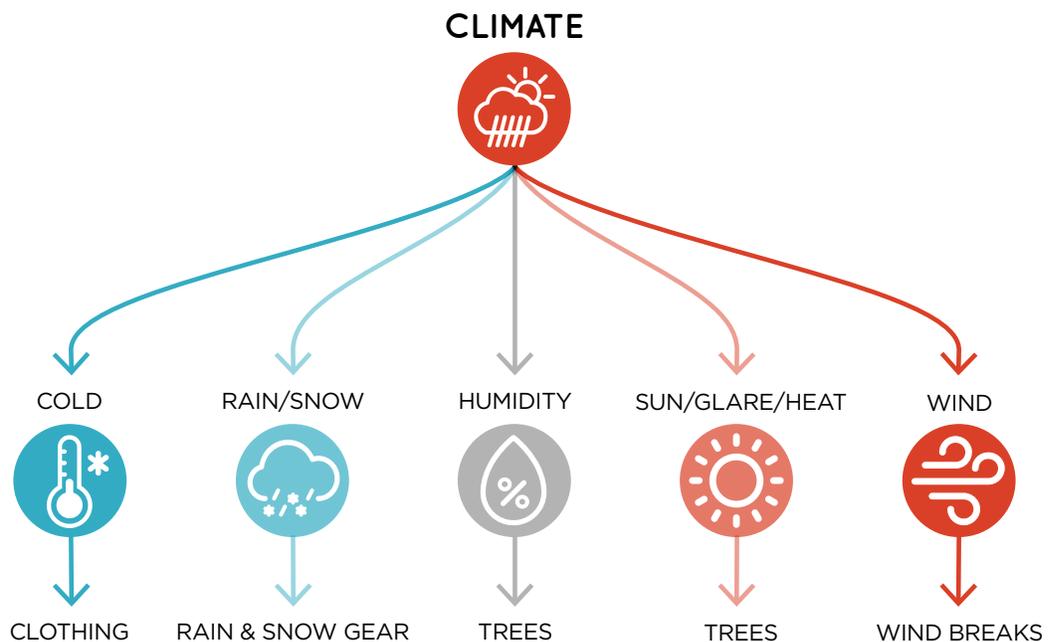
Climate and Environmental Constraints

Inherent to learning outdoors is greater exposure to the elements. This could give way to uncomfortable climactic conditions as well as unhealthy or distracting environmental factors. After an assessment of the site conditions, the school community must decide its level of tolerance for varying environmental conditions and then the extent to protect the outdoor learning environment from them. The extent of overhead cover needed, for example, can impact the schedule, scope, and budget for a project. The different types of overhead cover to consider are permanent or temporary, fixed or movable, architectural or landscape, or a combination of the two.

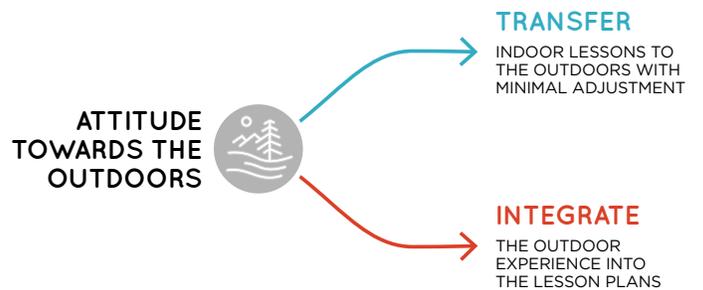
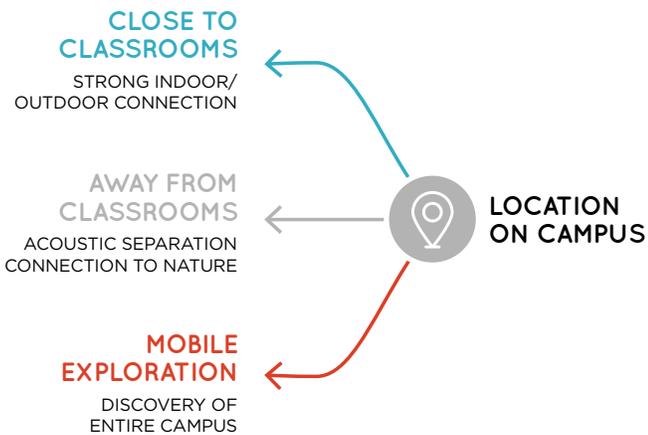
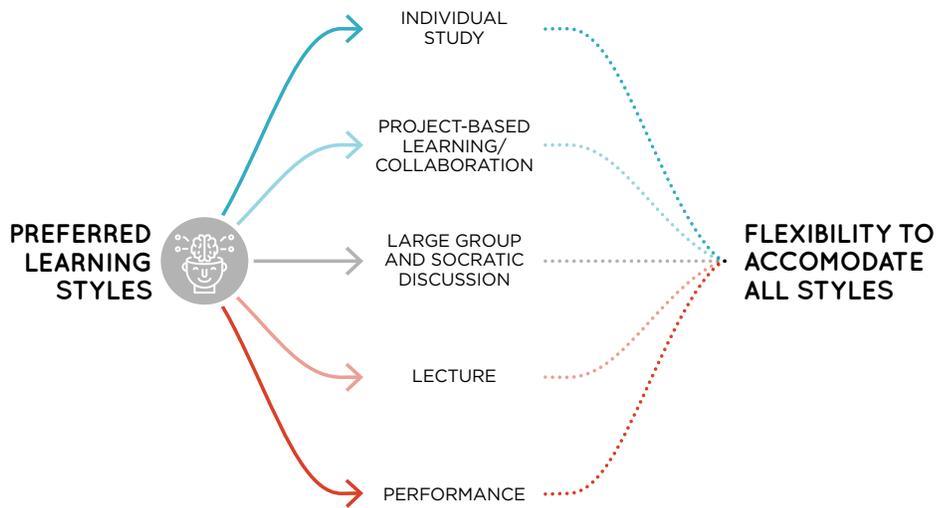
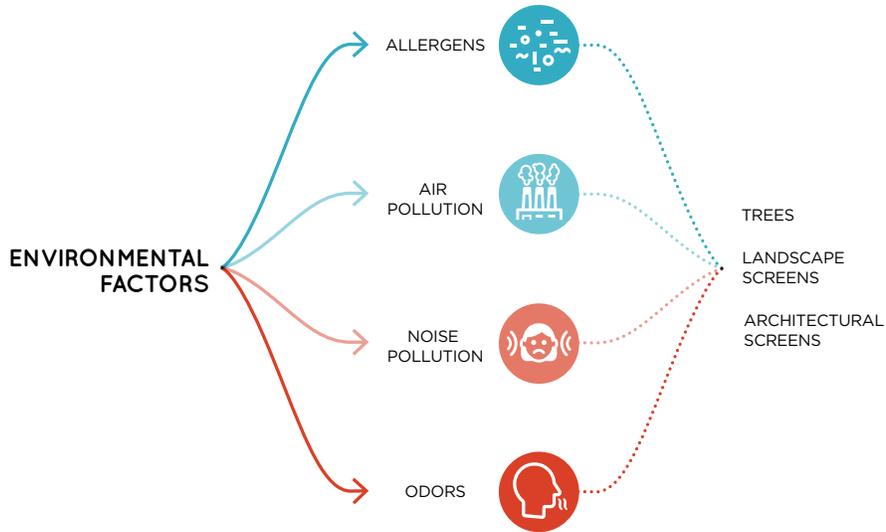
Professional Development and Training

Development of the school culture to support learning outdoors is key to its success. This involves professional development of the teachers, in communication with the administration; training of maintenance and operations staff; and engagement of the students with this new way of learning. All can begin before the outdoor learning environment is complete.

- Organize professional development sessions. Ensure teachers can integrate their lesson plans with the opportunities from the outdoor learning environment. Use the sessions to address teacher’s concerns such as concerns as responding to the weather or noise distractions.
- Provide adequate training and support for maintenance and operations staff. Proper maintenance of the outdoor learning environment is important for long-term safety, durability, and enhanced learning.



OPTIMAL OUTDOOR LEARNING ENVIRONMENT





LAUSD South Region Elementary School #9
Photo by Lawrence Anderson

3 Learning Space Components

Introduction

To develop the most universal outdoor learning environments for all campuses and sites, we studied indoor classrooms and identified the fundamental components that make-up an indoor classroom. Each of these components can work together in various ways to form a variety of outdoor learning environments. We used cost, time to install, and flexibility factors to analyze options for each component. Determining your school community's most important factors will help you to identify what component options will work best for your needs and your school.

Modular Building Blocks

Use a system of modular blocks to provide a flexible solution for many component types.

The use of modular blocks to provide flexible solutions makes projects easy to build by volunteers, contractors, or a professional fabricator. Conjoining blocks with each other, provides a multitude of opportunities for creating different layouts and types of outdoor spaces.

Considerations:

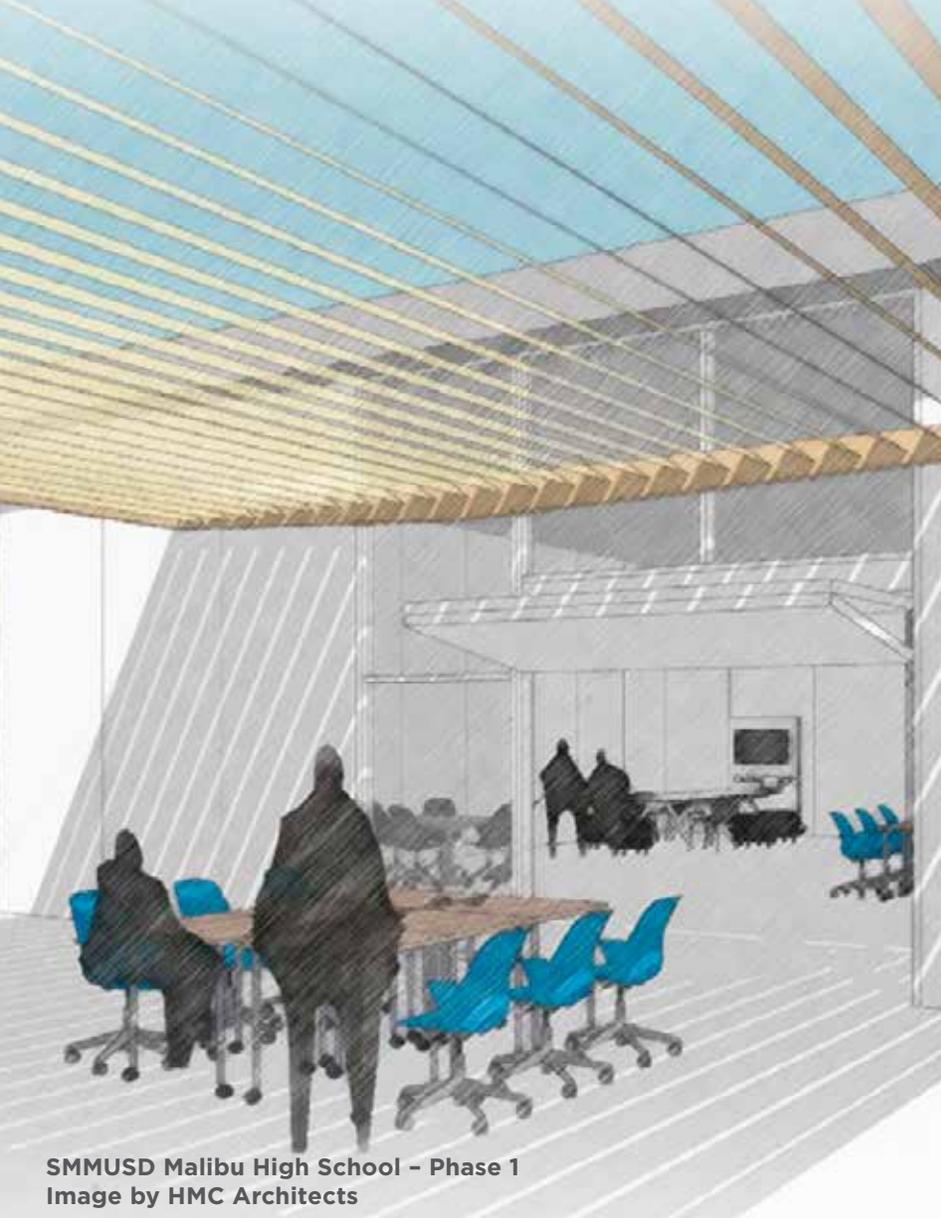
- Can be **inexpensive with community involvement** in construction.
- Provides **long-term flexibility**. Reorganize the blocks to develop different configurations and learning spaces.
- **Scalable**. Build more units to expand the learning space.
- Bolt blocks together to help in **preventing theft**.
- Wood-like material provides a more **naturalistic feel** to the learning space.
- **Built to weather the elements**.



Images by HMC Architects

3.1 Seating

Student seating is one of the key components to having agility for the space. And the space being adaptable for different learning styles is important for success of usability. Off-hour protocols is another important consideration when selecting the type of seating. Consider, *will the seating remain outdoors? Or moved to a different location each day? Or will chairs be chained together and fixed to security points?* Additionally, student workspaces should align with the desired teaching and learning styles. Some seating can double as a writing surface when kneeled next to, while others allow students to use their lap or a clipboard on which to work.



SMMUSD Malibu High School – Phase 1
Image by HMC Architects

Existing School Furniture

Using existing school furniture outside.

Considerations:

- **Inexpensive** (existing resource).
- **Quick implementation.** No outside resources to buy furniture.
- **After-school consideration.** Consider, will the seating remain outdoors? Or moved to a different location each day? Or will the chairs be chained together and fixed to security points?
- **Weather consideration.** Most indoor furniture is not designed for outdoor conditions and may deteriorate if left outside. It is best to not use non-outdoor furniture in inclement weather.
- **Flexible.** Agile furniture for ease of moving into different configurations within the space.



SMUSD Double Peak School
Photo by David Fennema

Seating Rocks / Logs

1. Large stones in the landscape.
2. Cut rounds of tree logs.
3. Long tree trunks laid on the ground.

Considerations:

- Depending on the size, rocks/ boulders/tree trunks may be **quick to put in place.**
- Logs are **inexpensive and quick** to place, and **easy** to move around.
- Provides a **naturalistic tone** to the learning space.
- Can have **dual function** as both sitting and playing element.
- **Durable and natural material** to weather the elements.

Outdoor Furniture

Purchase new or relocate existing to better serve outdoor learning objectives

Considerations:

- **Inexpensive.**
- Provides **long-term flexibility.** Agile furniture for ease of moving into different configurations within the space.
- Furniture, such as tables, is both **seating and a writing surface.**
- **Built to weather the elements.**
- Picnic table style furniture can be difficult to use during COVID, while needing to maintain safety protocols.



WCCUSD Sylvester Greenwood Academy/Leadership Public School
Photo by Chris Grant

Built In Benches / Seat Walls

Considerations:

- Can **define the space.**
- Based on the layout, can create a more **formal learning space.**
- **Fixed elements** and will allow for least adaptability.
- **Built to weather the elements.**
- Benches can be for **sitting, playing, and writing.**



Perris ESD Clearwater Elementary School
Photo by Lawrence Anderson

3.2 Shade/ Protection

For most climates, having shade and overhead protection is important for comfortable outdoor environments. Shade and overhead protection are one of the most challenging elements to provide as the need changes throughout a single day, and over a year, with the movement of the sun, and the direction of inclement weather. Trees provide great shade possibilities, especially existing mature trees. Yet, new trees will be for the benefit of future generations. New trees partnered with shade canopies, can provide a good interim solution. Movable overhead protection provides the greatest flexibility throughout the day and during the year. But, this same protection can become a challenge with moderate to high winds unless it's anchored or protected.

Division of the State Architect (DSA) Preapproved Structures

Considerations:

- **Long time implementation** in construction.
- DSA review and approval process is streamlined. DSA will review for structural, fire | life safety and accessibility compliance. Before submitting to DSA for review, confirm that the following comply with the current code: (1) accessible path of travel, (2) grading and drainage, (3) toilet room locations and accessibility, (4) drinking fountain access, (5) distance of structure to building, to name a few. Consult the Code for compliance requirements.
- **Greater Cost.**
- Designed and built to be **wind and weather resistant.**
- Once placed it's not flexible.

Portable Umbrellas, Tents, and Easy Ups

Considerations:

- **Inexpensive.**
- **Quick to install.**
- **Flexible.**
- **Wind consideration.** Requires protection or anchoring in moderate to high wind conditions. Permanent anchorage requires DSA review and approval.
- Easy ups may be **linkable** to help with wind considerations.
- **Scalable.** Add more units to expand and create a larger shaded area.
- **DSA review and approval.** Refer to DSA's *BU 20-01 - Bulletin: DSA Assistance During the COVID-19 Pandemic for Emergency School Facilities* for review and compliance requirements.



Desert CCD East Valley Interim Campus
Photo by Claudia Ambriz



LAUSD Frida Kahlo High School
Photo by Ryan Beck



Mammoth USD Mammoth High School Addition/Modernization
Image by HMC Architects

Custom Shade Structures

Architects and engineers design the shade structures and the overhead protection systems for permanent applications.

Considerations:

- **Long-time implementation and requires DSA review and approval.** DSA will review for structural, fire | life safety and accessibility compliance. Before submitting to DSA for review, confirm the following comply with the current code: (1) accessible path of travel, (2) grading and drainage, (3) toilet room locations and accessibility, (4) drinking fountain access, (5) distance of structure to building, to name a few. Consult the Code for compliance requirements.
- **Cost can be higher.** Cost can include the structure and improvements to comply with Code to gain DSA approval.
- Designed and built to be **wind and weather resistant.**
- Customizable to the school's criteria for design.
- Once placed, not flexible.

3.3 Teaching Tools and Resources

Like seating, consider whether the teaching tools and resources will remain outside during after-school hours or brought inside. The components listed below seek to accommodate a wide range of teaching and learning styles needs.

Individual Rolling Storage

Considerations:

- **Premanufactured, purchased or custom** built by the community/school.
- **Customizable** for each teacher and their supplies.
- Moves with the teacher. Stored in teacher's classroom.
- Does not need to be weather protected.
- Can double as small teaching station/desk for teachers.

Movable Water Supplies

Considerations:

- **High flexibility** to provide water.
- **Inexpensive** compared to running utilities.
- Refresh clean water, as needed.
- Dispose of dirty water.
- After-hours consideration due to theft.
- Water is useful for outdoor science and art classes.

Outdoor White Boards and Black Boards

Considerations:

- Rolling whiteboards are **agile**. Outdoor whiteboards provide **long-term flexibility** if not anchored.
- **Inexpensive.**
- **Weather considerations.** Whiteboards and blackboards do not perform well outdoors and need protection from moisture. Slate blackboards have great weather endurance.
- The whiteboard surface can cause **glare** based on the board's orientation.
- **As an alternative, consider a back-painted glass. Can mitigate the weather issues surrounding a standard whiteboard.**
- **After-school consideration.** Unless there is protection from vandalism, moisture, and wind, store rolling whiteboards indoors.
- **Wind consideration.** Anchor white boards for moderate to high winds, but anchoring will reduce flexibility. If the white/black board is combined with storage, the storage can act as the part of the anchorage system. Consult DSA for potential review and approval requirements.



Outdoor Storage

Considerations:

- **Prefabricated options can be inexpensive.**
- **Weather considerations** -- protect from the elements.
- Storage for **shared supplies.**
- After-hours consideration -- **lockable.**
- Allows for **greater flexibility** in use of outdoor learning space.
- Can include outdoor water or power utility connections.

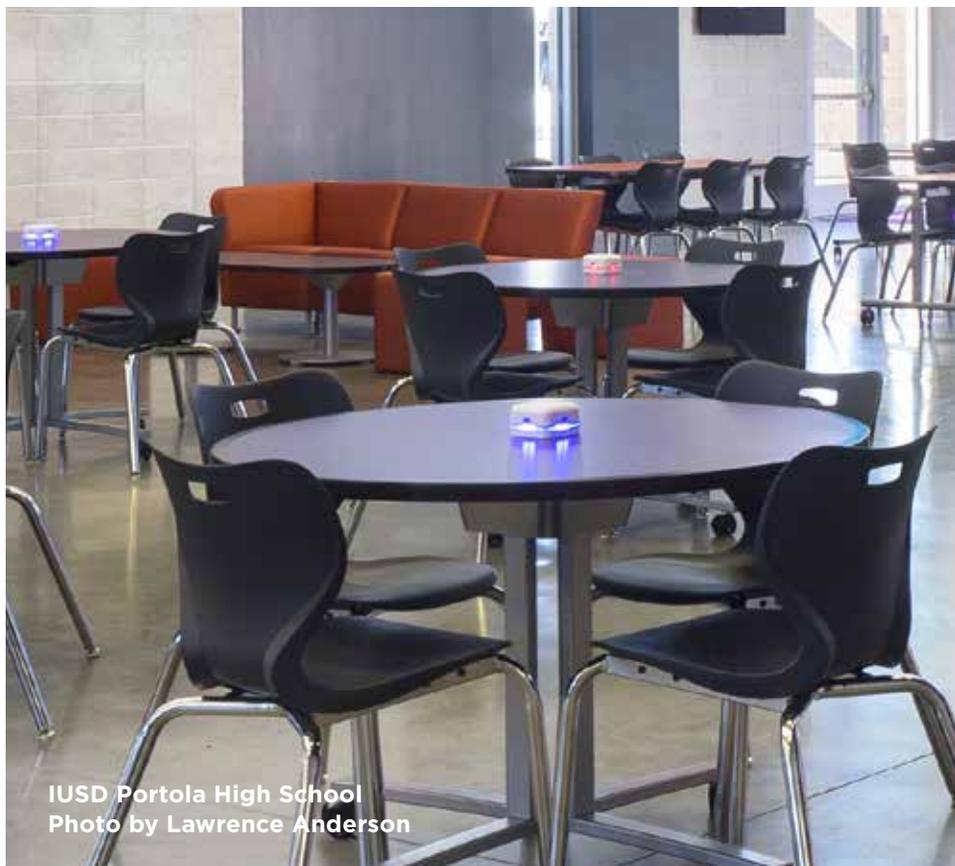


SCUSD John Morse Therapeutic Campus Center Modernization
Photo by David Fennema

Power Ports

Considerations:

- **Chargeable power ports provide high flexibility;** they power devices without having to run utilities.
- Charge depleted power ports.
- Charge power ports when stored at the end of the day.
- Solar-powered ports create great opportunities for learning.
- Solar-powered ports can remain outdoors if anchored.
- Depending on scale and installment, solar-powered ports can provide long-term flexibility around campus.



IUSD Portola High School
Photo by Lawrence Anderson

3.4 Space Definition

The defining of boundaries around an outdoor learning space can help to delineate between different activities taking place in an outdoor setting. Use elements to help define the space. They offer mental cues about what to focus on, and what to disregard. Outdoor learning spaces next to outdoor play or PE areas are ideal candidates. Besides the components discussed below, the modular building blocks already discussed provide great opportunities for space definition.

Movable Walls

Considerations:

- Wood materials offer **naturalistic elements** close to the learning space.
- Premanufactured or constructed by school's community.
- Helpful to **define learning space and focus learners**.
- Designed to provide sound protection and sound mitigation.
- **Wind consideration.** If not in a protected location, take down during medium to high winds occurrences.
- If walls are over four-feet-high, DSA review and approval is required. Consult DSA for potential review and approval requirements.
- Provides **long-term flexibility**.



HMC Architects Ontario Office
Photo by Ryan Beck

Permanent Wall / Fences

Considerations:

- Helpful to define **learning space and focus learners**. Can be very helpful in wide-open areas.
- **Greater Cost.**
- If walls are over four-feet-high, DSA review and approval is required. Consult DSA for potential review and approval requirements.
- Can provide some protection from the wind.
- Consider including **solar-powered ports** into the design and construction.



SCUSD John Morse Therapeutic Campus Center Modernization
Photo by David Fennema

Planting Screens / Planting Boxes

Considerations:

- **Inexpensive.**
- Brings **natural elements** into the learning space. Great for outdoor learning spaces located on hardscape or tucked in close to buildings.
- Helpful to **define learning space and focus learners.**
- Provides some sound absorption and sound mitigation.
- Provides an opportunity to integrate planting and gardening into curriculum.
- **Requires maintenance and weeding.**
- Hand watering required, unless connected to an automatic watering system.
- **Long-term flexibility.** Can move screens/planters to reconfigure the space.



HMC Architects Ontario Office
Photo by Chris Grant



Photo by Chris Grant

3.5 Site Landscaping

Plants, Both Woody and Herbaceous, in Outdoor Classrooms

Incorporating plants as part of an outdoor classroom can enhance its effectiveness as a learning environment.

- Physical proximity to plants, and the wildlife attracted to them, helps reduce anxiety, depression, and stress that can inhibit focus and motivation.
- Students concentrate better when they are not distracted by discomfort and irritation. Plants, such as trees and shrubs, enhance physical comfort. They provide shade, filter airborne pollutants, screen out glare, generate refreshing sounds, and create a soothing sense of human scale next to buildings and stark asphalt playgrounds.
- The life cycle of plants can often be dramatic and engaging.

Woody Plants. Trees and shrubs are generally large, long-lived, and durable. They are ideal for defining outdoor spaces. They are also most resilient to accidental damage and the expected ‘wear-and-tear’ students will inflict on them.

Herbaceous Plants. Ornamental grasses and flowering perennials provide a fast-growing impact. They are generally child-scaled, easy to interact with, and inexpensive to replace. Herbaceous plants are ideal for school gardens where students can observe dramatic growth and life cycle changes, often within the span of a school year.

Focus on Strategies to Physically Protect Plants

Establish a physical threshold that transitions outdoor play space to outdoor learning space. Diffusing the level of activity around the planting area helps to protect plants from accidental damage. Elements such as fences, railings, gateway arches, seat walls, benches, boulders, evergreen hedges, and changes in the ground plane or ground material are all effective tools in creating transition.

- Install trees that have at least three-inch diameter trunks (measured four and a half feet above the root crown) to help maximize their ability to survive accidental collisions.
- Install evergreen hedge shrubs from no smaller than 15-gallon containers to ensure plants are large enough to create a living boundary.
- Install other understory plants from no smaller than one-gallon containers to ensure they are too heavy to pull out of the ground by wildlife.
- Install all understory plants in raised containers or raised in-ground planting beds, to the greatest extent workable, to help reduce chances of accidental damage.



Diagram by EPTDesign for Antelope Valley College Cedar Hall

Follow Planting Design Strategies That Maximize Chances of Plant Survival:

- Avoid creating planting areas in high-traffic areas of campus where there is a higher likelihood of damage. Instead, plant against the edge of a building or fence or enclose the perimeter of the planting area with a berm.
- Maximize the width of planting areas to deter cut-through behavior and help absorb leaf and flower.
- Put aside enough funds to replace at least 20 percent of the understory plants within the first year of installation, due to accidental damage, faulty installation, plant pests or diseases.
- Install a diversity of plant species that can thrive with minimal human intervention to maximize the resilience of the planting; avoid mass-planting only a single understory plant species.
- Plan new planting areas, or enhance existing planting areas, around mature, well-established trees and understory plants.
- Avoid installing winter-deciduous understory plants (vines, shrubs, perennials, groundcover, etc.); these plants are commonly mistaken as dead or sick by maintenance crews.
- Provide permanent irrigation to all planting areas, including sub-surface bubblers for all trees; avoid drip irrigation systems.



Chaminade College Preparatory 2 Campus Masterplan
Image by HMC Architects

- Encourage landscape stewardship by installing plants that can be integrated into the classroom curriculum or have special meaning to the school or surrounding community; plant trees, shrubs, and perennials that will be blooming and showy when the students can see them.

Identify Plant Species that are Best Adapted to the Growing Conditions at Your School:

- Submit at least one soil sample to a state-certified soils lab to test the soil in the area you want to plant; use recommendations from the soils lab to amend soils in the proposed planter location and select plants that are best adapted to the native soil structure chemistry at your school.
- Select plants that are best adapted to your school's climate and outdoor classroom location on campus. Consider sun and shade conditions throughout the year
- Avoid plant species that will grow too large for the available space and require regular trimming. Avoid tree species with aggressive surface roots that can cause costly damage to paved areas, underground utility lines, and building foundations, and avoid large tree species that are known to have weak branches or are prone to wind damage.
- Select trees with a single trunk and a spreading canopy that can create a shaded intimately scaled inhabitable space beneath it; avoid pine and palm species.
- Avoid plants that are toxic to humans or that pose a safety hazard through thorns or other physical traits.
- Select resilient plant species that can recover quickly from accidental damage and intensive child interaction.
- Select plants that generate minimal leaf and/or flower litter, or plants that generate only seasonal green waste.
- Avoid high water use plants (refer to *Water Use Classification of Landscape Species [WUCOLS]* rating for state region: https://ucanr.edu/sites/WUCOLS/Plant_Search/), and plant species that are highly invasive and capable of disrupting native ecosystems (refer to *California Invasive Plant Council [Cal-IPC]* assessment for state region: <https://www.cal-ipc.org/plants/inventory/>)
- Specify plants that are commonly available at local plant nurseries.
- Select plants that require only minimal maintenance resources (pruning, fertilization, etc.) to remain attractive.
- Specify long-lived plants that are reasonably attractive throughout the school year.
- Select plants with attributes that have educational or play value, such as seed pods, flowers, or bark.

It is highly recommended that a state-licensed landscape architect, experienced in planting design, be engaged in plant material selection and layout for outdoor classroom projects.

3.6 Site Infrastructure

Infrastructure can be a highly valuable resource to an outdoor learning environment. By providing power, water, or technology to the space, the learning environment has greater flexibility in how it is utilized day to day. The process of providing infrastructure however can be costly and reduces the space's flexibility to move locations.

Water

Considerations:

- Requires utility be brought to the site if not existing.
- **Potential high cost** if utility is not near an outdoor site.
- Helpful for **outdoor science and art**.
- Good for local water bottle filling station if outdoor learning space is distant from other water sources.

How to implement providing water:

1. Identify locations of the proposed class spaces.
2. Locate the nearest water source or existing water lines (potable and/or non-potable, as required).
3. Validate the size of existing lines for the tap to serve the class space.
4. Avoid cutting existing site hardscape and complete finishes.
5. Route new raceways in landscape areas (preferred).

Electrical

Considerations:

- Requires utility be brought to the site if not existing.
- **Potential high cost** if utility is not near outdoor site.
- **Helpful if the class is being taught with any virtual students.**
- Helpful for outdoor equipment with a large power draw.

How to implement providing electrical:

- Identify locations of the proposed class spaces.
- Locate the existing electrical panels/rooms nearest to the class space.
- Check for spare capacity on existing electrical panels to add 20-amp single-phase circuits.
- Avoid cutting existing site hardscape and complete finishes.
- Route new raceways in landscape areas (preferred).

Technology

Considerations:

- Cost determinate by site conditions.
- **Helpful if the class is being taught with any virtual students.**
- May require new wireless access points (WAP) to extend the signal to outdoor learning location.

How to implement providing technology:

1. Identify locations of the proposed class spaces.
2. Locate the nearest existing WAP and intermediate distribution frame/main distribution frame (IDF/MDF).
3. Validate the existing WAP coverage range.
4. Identify the need for a new WAP (if required).
5. Locate the IDF/MDF for connection of new WAP.
6. Avoid cutting existing site hardscape and completed finishes.
7. Route new raceways in landscape areas (preferred) based on what components were most important to be included in the outdoor learning environments.

3.7 Construction

Construction Logistics

The logistics of construction work on an active school campus is a critical component and if executed properly will add to the success of the project. The key for any contractor is to remember that we are guests in your home. As such, the approach for projects that entail site work and utility replacement on operational campuses is to carefully coordinate construction activities with school staff relating to the daily school schedule and also a calendar of events to ensure that work is completed on schedule, with the least amount of disruption to the learning environment and zero impact to student health and safety.

Each outdoor learning environment project will vary slightly logistically due to campus size and location, but in many cases work on-site will most likely occur during of-school hours. Contractors should also be sensitive to the surrounding neighborhood to eliminate impacts to pedestrians and vehicular traffic on the local streets. Most school campuses will lack enough area of unused space that can be designated for storing construction materials before installation. On-time delivery and installation of the construction materials will address the lack of any storage space on campus and ensures the contractor is prepared and ready for installation upon material delivery.

Material Costs

When designing an outdoor learning environment, the selected space and location on campus are important factors that will need to be evaluated when considering the allowable budget. If the design requires water and power, it's important to consider the distance from the utility point of connection to the designed location as removal of the existing ground surface, soil excavation, and patch back of the ground surface are required for installation of that utility. Investigation of existing underground utilities in the area whether by use of as-built drawings or potholing will be helpful to eliminate additional costs in the removal and/or repair of existing utilities that are encountered.

Consider various materials when pricing the design including the use of pre-fabricated materials which typically last longer when used in outdoor locations. Taking advantage of existing outdoor ground surfaces such as asphalt, concrete or grass can lower the overall project cost by eliminating the installation of a new ground surface. The use of a decomposed granite surface within the space and leading to it should also be considered and can be a good cost alternative to new hard surface installations. The cost of work will include current and forecasted unit pricing and labor.



New Campus - Flexible Learning Village
Image by HMC Architects

4 Funding and Public Bidding

Funding Opportunities

Funding opportunities for outdoor learning environments include both California's School Facility Program (SFP), and the recent one-time state and federal emergency relief funds to address the impact COVID-19 has had and continues to have on schools.

Outdoor learning environments have been shown to enable the operation of schools to reduce the risk of transmission and exposure to environmental health hazards, and to support student health needs. Thus, these one-time funds can aid districts in financing outdoor learning spaces and executing their learning recovery plans to provide equitable and healthy learning environments for their students to learn. When applying for funding, request funds for the outdoor learning environments' infrastructure and professional development needed to develop, design, construct and implement them.

One-time state and federal funding programs include:

March 27, 2020 CARES Act

On March 27, 2020 the *Coronavirus Aid, Relief, and Economic Security (CARES) Act* was signed into law, as passed by the U.S. Congress. The law allocates provisions for elementary and secondary education, including new waiver authority for the Secretary of and the creation of the Education Stabilization Fund (ESF).

The ESF consist of three emergency education relief funds: (1) a Governor's

Emergency Education Relief (GEER) Fund (Section 18002), (2) an Elementary and Secondary School Emergency Relief (ESSER) Fund (Section 18003), and (3) a Higher Education Emergency Relief (HEER) Fund (Section 18004). The first two emergency education relief funds provide monies for elementary and secondary schools to address the financial burden COVID-19 has placed on them. The ESF appropriates \$30.750 billion for Fiscal Year 2020. The Department of Education (DOE) awards these grants to state educational agencies (SEAs) who then provide grant funds to local educational agencies (LEAs), including charter schools that are LEAs

Governor's Emergency Education Relief (GEER Funds).

The Governor's Emergency Education Relief Fund provides approximately \$3.2 billion in funding, with approximately \$355,227,235 allocated to the State of California.

GEER Fund awards monies to governors based on their state's share of students ages 5 to 24 and their state's share of students counted in Section 1124(c) of the Elementary and Secondary Education Act (ESEA) for purposes of awarding Title I-A grants to LEAs. Governors may award the funds to elementary and secondary schools in the following ways:

1. Providing emergency funds to LEAs that the SEA "deems have been most significantly impacted by coronavirus" to support these LEAs in providing educational services to their students and to support the "ongoing functionality" of the LEA,

2. Providing emergency support to any other LEA, or education-related entity within the state that the governor deems “essential for carrying out emergency educational services” to students for purposes ranging from any activity authorized under various federal education laws to the provision of child care and early childhood education, social and emotional support, and the protection of education-related jobs.

Elementary and Secondary School Emergency Relief Fund (ESSER Funds).

The Elementary and Secondary School Emergency Relief Fund provides approximately \$13.2 billion in funding, with approximately \$1,647,306,127 allocated to the State of California.

ESSER Funds are awarded based on the state’s shares of grants awarded under Title I-A of the ESEA. SEAs are to provide at least 90 percent of the funds they receive to LEAs. The funds are for any activity authorized under various federal education laws, coordination of preparedness and response to the coronavirus, technology acquisition, mental health services, and activities related to summer learning.

December 27, 2020 CRRSA Act

On December 27, 2020, *the Coronavirus Response and Relief Supplemental Appropriations Act, 2021 (CRRSA Act)*. Like the CARES Act, the CRRSA Act includes two emergency education relief funds that provide monies for elementary and secondary schools to address the financial burden COVID-19 has placed on them.

Governor’s Emergency Education Relief (GEER II Funds).

The Governor’s Emergency Education Relief Fund provides approximately \$4.05 billion in funding, with approximately \$341,442,086 allocated to the State of California. GEER II Funds also includes \$2.75 billion in allocated monies for non-public schools, the Emergency Assistance to Non-Public Schools (EANS). This Fund is now part of Assembly Bill 86.

Elementary and Secondary School Emergency Relief Fund (ESSER II Funds).

The Elementary and Secondary School Emergency Relief Fund provides approximately \$54.3 billion in funding, with approximately \$6,709,633,866 allocated to the State of California. The major difference between the ESSER I and II Funds is that ESSER II Funds define additional allowable uses of the monies.

March 11, 2021 American Rescue Plan Act

On March 11, 2021, the American Rescue Plan Act of 2021 (aka COVID-19 Stimulus Package or American Resure Plan) was signed into law, as passed by the U. S. Congress. The Act includes \$122 billion in emergency K-12 education funding to re-open schools within 100 days safely. Additionally, 20 percent of the funds must be used to develop “learning loss” programs.

Assembly Bill 86, Governor and Legislature Re-Opening Deal

On March 5, 2021, Governor Newsom signed *Assembly Bill (AB) 86* and the California Legislature approved \$6.6 billion of funding for the re-opening of schools. The funding includes \$2 billion for In-Person Instruction Grants and \$4.6 billion for Expanded Learning Opportunities Grants.

No application is required from the LEA to receive funding. LEAs will receive their first distribution, 50 percent of allocated funds in May 2021. The second distribution, the remaining 50 percent of allocated funds in August 2021.

In-Person Instruction Grants provide LEAs with the funds to assist with re-opening schools in providing in-person instruction safely.

- Must offer in-person instruction, including hybrid models, by April 1, 2021 for required student groups.
- Each day in-person instruction is delayed after April 1, 2021, there is one-percent reduction of funding for each calendar day.
- LEAs forfeit their allocated funds if in-person instruction is not offered by May 15, 2021 for all required student groups and in-person instruction is not offered continuously, through the end of the school year.

Expanded Learning Opportunities Grants provide LAEs with the funds to execute their learning recovery plans to assist students with lost learning and support the whole student's well being.

- LEA's Board of Education must adopt their Recovery Program by June 1, 2021.
- Once adopted, LAE to submit to local authority within five days.

Go to the California Department of Education's Website for additional Information and resources regarding CDE's COVID-19 response efforts, including the guidance document for safely reopening schools for the 20-21 school year. <https://www.cde.ca.gov/ls/he/hn/coronavirus.asp>

Public Bidding

Annually, the California Department of Education (CDE) reviews and establishes the bid threshold for contracts awarded by school districts as required by Public Contract Code (PCC) Section 20111(a). As of December 18, 2020, school districts may award contracts directly to consultants when the total award is less than \$50,000, without going through a public bid process. And for construction or reconstruction of facilities, there is a lower bid threshold of \$15,000.

As always, school districts should follow their local control district's purchasing obligations.

PCC "requires school district governing boards to competitively bid and award any contracts involving an expenditure of more than \$50,000, adjusted for inflation, to the lowest responsible bidder. Contracts subject to competitive bidding include:

1. *Purchase of equipment, materials, or supplies to be furnished, sold or leased to the school district.*
2. *Services that are not construction services.*
3. *Repairs, including maintenance as defined in PCC Section 20115, are not public projects as defined in PCC Section 22002(c).*

Note, public projects as defined in PCC Section 22002(c) have a lower bid threshold of \$15,000 that is not adjusted for inflation."

To learn more about bidding requirements for all projects, refer to [PCC sections 20110 to 20118.4](#).



SCUSD Washington Elementary School STEM Academy Modernization
Photo by David Fennema

5 Testing the Design Process

The Los Angeles County Office of Education (LACOE) along with HMC Architects and their design and construction partners developed design guidelines for outdoor learning environments. A K-8 public school in an urban residential neighborhood of Los Angeles County was chosen as the site to provide and develop design options that focus on what students and teachers need and want in their outdoor learning environments.

Academic and Site Context

The school site is broken into three primary zones. The first is the main school buildings where the east side is dedicated to elementary students while the west side is dedicated to middle school students. The next zone is a large asphalt play area with courts, a playground, and a track for the students. The final zone is a large grass field also used for play, PE, and a soccer field.

Design Process

LACOE and the design team joined with school administrators, teachers, and students to work through the following process to clarify outdoor learning spaces that would best meet the needs of the school.

Step 1. *Take a broad overview of the many kinds of outdoor classrooms and learning environments that can be created to serve different learning pedagogies to give a vision to the school as to the different directions the project could pursue.* School staff and students thought creating spaces

that are flexible and adaptable throughout the day would be beneficial. An example would be a space that can be used for lectures and large group discussions in the morning and project-based work in the afternoon.

Step 2. *Further define the primary program for the learning environment and examine the campus to determine what would be the best location for this program.* The school serves both middle and elementary school students. Staff and students liked the idea of starting off with at least one separate outdoor learning environment for each “school,” away from existing buildings and large enough to accommodate one class size. However, a school may choose to locate its outdoor learning environments adjacent to or closer to indoor classrooms. A school may also want its spaces to be smaller in size for break-out groups or larger in size to accommodate multiple classes at one time.

Step 3. *Use the determined priority list of components and the program for the learning environment to develop multiple schemes.* These schemes were developed where the total cost of construction for both learning environments and components would be less than \$50,000.

Site Considerations

The outdoor learning environment locations under consideration at the K-8 school are located on the south side of campus, exposed to sun and reflected glare from south-facing buildings and an adjacent asphalt-paved playground. The middle school site is located on the west end of the school's southern field, while the elementary school outdoor classroom is located on an existing unused parking lot on the east side of the campus.

Located in the playfield, the middle school outdoor classroom site requires a form of paving for accessibility. Decomposed granite provides a cost-effective and natural feeling groundscape for this use. The exact site sits up against the edge of the school field where existing mature trees line the boundary. These trees can provide needed shade for the site without the need to employ large numbers of young trees or shading systems.

The location of the elementary outdoor learning environment provides an accessible location and preserves a greater amount of the existing field for play use and the soccer field. As the site has little existing shade, the outdoor classroom could benefit from being placed near new jacaranda trees that could be planted entirely within the eastern edge of the existing grass playfield. The turf areas surrounding the trees could help mitigate the time needed to collect green waste as most of the leaf and flower litter that falls on it can be left to naturally decompose. The contiguous grass playfield ensures

trees have abundant soil volume in which to grow to their fullest potential in combination with permanent sub-surface bubblers for irrigation.

Conditions are good for installing broad-spreading tree species like jacaranda that can provide effective canopy coverage using fewer trees. There is ample clearance from existing buildings and site utilities.

Additional landscaping considerations include using raised planters to provide shrub screening for the elementary school outdoor learning area. Planting in containers allows for design flexibility to enhance or reconceive the layout of the space in the future. Permanently fixed irrigation is not provided to maintain flexibility but requires that the screening shrubs will need to be hand watered. This dependency on human stewardship is both a challenge and an opportunity. Students can be encouraged to care for the shrubs during the school year, potentially imparting valuable life lessons; however, the plants will require their greatest watering needs in summer when school is not in session.

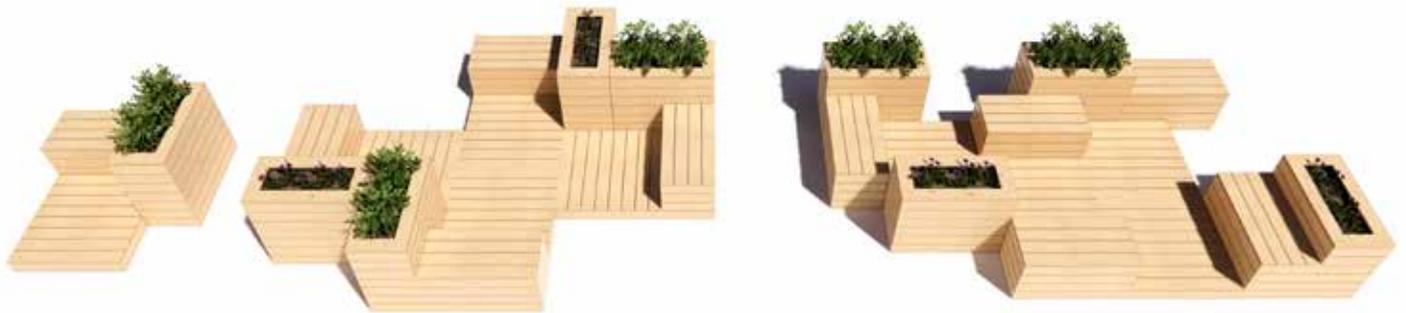




Modular Building Blocks

During the process of working with the school, the design team developed a series of modular building blocks as an option to provide for outdoor classroom needs. These blocks can be joined together in various ways to create seating, working areas, shade, screening, and storage. Blocks could be designed to function as teaching stations with the potential of connecting utilities to the station. The blocks could be produced by a manufacturer or by community volunteers to help lower the cost. The material specified is a long-lasting exterior wood material for ease of construction and lasting investment.





Proposed Option One

The components for this option are built around the desire to provide seating for one class size and Wi-Fi for both west and east learning environments. Each site would also be equipped with a weather-protected outdoor whiteboard with built-in storage.

For the west site, tree stumps are used for the seating as a natural and cost-effective solution. One additional tree is placed to

provide shading for the classroom in the morning when the sun is coming from the east.

As the east site is located on a hardscape, stools could be used to provide seating with three shade trees placed strategically nearby to provide the most shade possible during the process of maturing. An adjacent existing storage container could be painted with a mural to further enliven and define the classroom area.



Proposed Option Two

Option two follows the same strategies as the first option with one difference: replacing the enhanced Wi-Fi service with modular seating blocks.



Proposed Option Three

Option three shows the same potential for additional enhancements over time or with increased initial funding. Added modular building blocks create more break-out / project spaces to define the perimeter of the space.



References

- Carrier, S.J., Tugurian, L.P., & Thomson, M.M., (2013) Elementary Science Indoors and Out: Teachers, Time and Testing. *Research in Science Education* 43(5) 2059–2083 DOI 10.1007/s11165-012
- Eaton, D. (2000). Cognitive and Affective Learning in Outdoor Education. (Doctoral thesis). University of Toronto, Canada. Recovered from <https://tspace.library.utoronto.ca/bitstream/1807/12600/1/NQ41587.pdf>
- Ernst, J., & Martha Monroe, M., (2004) The effects of environment-based education on students' critical thinking skills and disposition toward critical thinking, *Environmental Education Research*, 10(4),507-522, DOI: 10.1080/1350462042000291038. Recovered from <https://www.tandfonline.com/doi/abs/10.1080/1350462042000291038>
- Green Schoolyards America. <https://www.greenschoolyards.org/>
- Jacobi-Vessels, Jill L. (2013) Discovering Nature: The Benefits of Teaching Outside of the Classroom, *Dimensions of Early Childhood*. Recovered from <https://files.eric.ed.gov/fulltext/EJ1044065.pdf>
- Kaiser Family Foundation. (2010). Generation M2: Media in the lives of 8–18 year olds. Retrieved from <http://www.kff.org/entmedia/8010.cfm>.
- Lai, C. (2018). A study of fifth graders' environmental learning outcomes in Taipei. *International Journal of Research in Education and Science (IJRES)*, 4(1), 252-262. DOI:10.21890/ijres.383171
- Louv, R. (2008). *Last Child in the Woods: Saving Our Children from Nature Deficit Disorder*. Chapel Hill, North Carolina: Algonquin Books.
- Malone, K. (2008). *Every Experience Matters: An evidence based research report on the role of learning outside the classroom for children's whole development from birth to eighteen years*. Farm and Countryside Education, UK Department Children, School and Families. Wollongong, Australia. Retrieved from: https://www.researchgate.net/profile/Karen_Malone3/publication/265231721_every_experience_matters_An_evidence_based_research_report_on_the_role_of_learning_outside_the_classroom_for_childrens_whole_development_from_birth_to_eighteen_years/links/54414e170cf2a6a049a5704f/every-experience-matters-An-evidence-based-research-report-on-the-role-of-learning-outside-the-classroom-for-childrens-whole-development-from-birth-to-eighteen-years.pdf



Want to learn more?

For more information on creating outdoor learning environments,
please contact:

Jema Estrella

LACOE Director,
Facilities & Construction
estrella_jema@lacoed.edu

Shaun Hawke

LACOE Project Director,
Outdoor & Marine Science Field Study
hawke_shaun@lacoed.edu



NATIONAL STORAGE
STORAGE TANK, INC.
NationalStorageTank.com

NATIONAL STORAGE
STORAGE TANK, INC.
NationalStorageTank.com

Cistern
Water Conservation at School



Water Conservation at School

Perris ESD Clearwater Elementary School
Photo by Lawrence Anderson

