Learning Landscapes Field Handbook

for teachers and parents
and other Mountain Kid Mentors

Rob Wade

LEARNING LANDSCAPES

Learning Landscapes is a program of the Feather River Land Trust. Founded in 2000, FRLT is committed to protecting the places that make the Feather River region special, and conserving children's access to wild places in perpetuity.

Learning Landscapes is committed to the right for all kids to engage in regular outdoor learning, by supporting their teachers and schools with access to adjacent properties, improved infrastructure, field resources, and training.

FEATHER RIVER LAND TRUST

LEARNING LANDSCAPES

This Handbook was funded through the generosity of an anonymous family foundation based in Stockton, California.

This Handbook is the result of the close collaboration between teachers in the Upper Feather River region, the Staff of the Feather River Land Trust, local private and public landowners, and many local partners since 2000. Special thanks to Paul Hardy, LL co-creator and constant collaborator, friend, and founding director of FRLT. We are both the sons of educator parents who instilled respect for the noble profession of leading out kids.

With gratitude to Jack Laws for sharing big ideas, Sierra Nevada affection and art, and his craft for this Handbook and well beyond

Learn more at frlt.org/learning-landscapes

This Field Handbook is dedicated to the courageous and talented mountain men and women who guide our kids to venture further afield, in perpetuity.

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"Teaching children about the natural world should be seen as one of the most important events in their lives."
—Thomas Berry

Photo by: RW

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Welcome

Introduction

Nature has always been a place of learning. The ability to survive in any place required strict attention to be placed on place—where you were ninth world—and the risks and rewards, costs and benefits of being and thriving right here, right now. Paying attention to ever–changing seasons and the cycles nestled in them allowed for people to attend to their survival through the constant need for food, water, shelter, and space. This attention resulted in deep awareness, knowledge, connection, and a relationship between every person and their place.

We are generations removed from such survival needs however the places we call home still hold us close, even if our full attention has grown less acute and necessary. We turn on, rather than draw up, our water. We order and buy food rather than hunt and harvest. We rent and mortgage our homes rather than build them. While this may vary from family to family, the land is still here curating life, and collecting water between the ridges for every tributary as it always has done and always will. Between these ridges we find more than our water. We discover literally everything.

Everything you might want to know about the world can be found here! Right here! Not every species is in every place, but every puzzle piece that is needed to understand the planet is here. And we are here. That is no coincidence. That is a connection that also creates a sense of place that transforms a place, this place, into our place and our home.

Learning Landscapes

For the better part of 20 years, local educators in the Upper Feather River Watershed have been rediscovering the power of place for students. The places we live and learn are overflowing with real world phenomena that invite exploration, issues that require investigation, and problems that need solving. These places invite deep imagination and full curiosity to explore, understand, and engage every encounter. Formal public education is a 13-year time to prepare kids for the world, and what better way to prepare them for this world than by immersing them in this actual, local, real world. Nothing will inspire and challenge a student more than the 67,000 mph annual trip around the sun on this planet spinning at 24,000 mph. Kind of takes your breath away.

Simon Sinek says, “There are only two ways to influence human behavior. You either manipulate it, or inspire it.” As parents, teachers, and communities seek to guide our children and youth, we can inspire an outdoor, place–based eduction by honoring and drawing out the genius of every child through the genius of this place. Nature does not make copies of people or places. Every person and every place is an original. Learning Landscapes is the local synthesis to honor that originality and genius.

Since 2004, Feather River Land Trust has sponsored Learning Landscapes, a collaboration of schools and landowners in the Upper Feather River region. Learning Landscapes is based upon the conservation of properties within a 10-minute walk of every campus, the improvement of those sites, and the support of teachers to independently use these properties for meaningful learning experiences.

Field Handbook

This handbook has been developed as a resource for teachers, non–formal educators, and parents to better support their efforts to use the local outdoor environment as an instructional resource and integrating context for learning. While outdoor and environmental education have long been seen as a quality of experience in formal, modern education, they have also been seen as more of a supplemental extension rather than a core strategy. The value is true and the invitation is always open to you.

Cracking the code of inclusion into formal education is part of the Learning Landscapes design. Recent changes in formal education, including Next Generation Science Standards and Environmental Literacy Plans, have moved outdoor strategies from the back burner of consideration to the front, alongside English Language Arts and Mathematics. ELA and Math are tools to help kids better know the world. The skills, strategies, training, and resources to support teachers to make conceptual and instructional shifts are needed to support teachers as they use outdoor environments on every school campus, neighborhood, community and region to enrich student learning and living. This handbook was developed to support these shifts and the ongoing development of formal and informal teachers in their outdoor endeavors.

Image by Colby Elliott

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Foundations

Mountain Maidu

As the original and current human inhabitants of the region, your native neighbors have much to claim and much to teach. Their 10,000 years and 500 generations in the region is a humbling consideration. In my own work with various members of the Mountain Maidu, many of whom I count as friends, I have learned slowly, listening, waiting, and always asking permission and guidance. Two essential practices have helped me immensely.

1) The Speed of Trust—In the time since the gold rush, when the harmony of life in the Upper Feather River Region was changed forever, the Mountain Maidu experienced great and lingering injustices. We cannot fathom these so many years later, but we must try. Trust is low as you would expect after theft of lands, genocide, and the constant persecution of language and culture. This is heavy and is not the fault of you nor your kids, but it is our responsibility to know the truth and to move at the speed of trust. What is the speed of trust? It is the pace that is required for trust to be restored and kept. That speed and extent of trust is for the Mountain Maidu to determine and extend. It requires patience that western culture does not practice well but it is the only way forward.

2) Nothing About Us, Without Us—This says the essential, but to reiterate, if you wish to share anything about the Mountain Maidu, beyond the permission, please invite and include the Maidu directly. It is too easy to move forward and talk about the Maidu as if they are not here. They are here. Later in this handbook some specific opportunities will be shared.

Feather River Education (FREd)

Outdoor education and many principles of Learning Landscapes work anywhere on the planet, but the truth of the matter is that we are not just anywhere, we are a specific somewhere. That somewhere is the Upper Feather River Watershed. That fact comes with qualities you will find nowhere else. You will read a little more about this in the “genius” section. Other qualities will be sprinkled throughout the Handbook.

I am severely biased about this region. I am not from here, but I do intend to live the rest of my life here. I tell kids that you can get an education anywhere but this is the only place you can get a FREducation. This is because the learning here comes from the miracle of what has come to be here after millions of years of cycles and change. So allow me to brag as a FREdite.

The Feather River Watershed is a the largest and wettest watershed in the Sierra Nevada. It is formed at the meeting place of 3 major geographic regions of the Western US—the Sierra Nevada, the Cascades, and the Great Basin. So the unique biotic and abiotic attributes of each collides and mixes here. This has even recently brought Pronghorn Antelope back from the east, elf and wolves down from the north. We are the only watershed in the Sierras to begin east of the Pacific Crest, resulting in large inter–mountain valleys at the headwaters (where a river begins) and deep canyons that cut through the crest, draining westward to the great Central Valley, Sacramento Delta, San Francisco Estuary, and finally, Pacific Ocean. Due to a number of factors we are the headwaters of the California State Water Project, supplying water to 2/3 of Californians (29 Million and counting…) and irrigating 750,000 acres of farmland.

Equity, Diversity, Justice, Inclusion (EDJI)

The alphabet soup order of these 4 letters is less important than what they mean and their importance. I do prefer EDJI as it reminds me to be at my edge with this. My edge is where I find my internal resistance to growth and doing the hard but meaningful work. Because we want every child to experience the full opportunities of life this is an essential edge for anyone in education. Learning Landscapes was conceived, designed and coordinated upon an EDJI foundation. Learning Landscapes is for every community, for every school, for every grade, for every teacher and, of course, for every child. To do that it must be equitable, diverse, just, and inclusive. We are not there. Visit the edge. Be at your edge. Grow the edge.

Equity

Learning Landscapes is a strategy and program model for every child in every school. Public schools are a commons for every community. It is where every child in a geographical area, irrespective of family background—ethnicity, socioeconomic, religion, politics, philosophy, attends school. This commons holds the thirteen-year rite of passage of every child to adulthood. If we provide weekly and yearly access to meaningful outdoor experiences, then all children in a community will share this common experience and ground. Nature welcomes all equally into the sun, science and sweat of being together outside. While every school may be located in neighborhoods with different attributes, the sky overhead with its passing storms and ever–changing seasons and sunrise, sunset times, the birds and insects coming and going, and the soil beneath that seizes the seed and grows in even the smallest sidewalk crack, is at every school. Nature is not an expression to be found only at regional, national, and state parks. Nature is found in every square inch of where you are. We want it to be equitably experienced by

all children.

Diversity

Just as the diversity in nature adds to its value, the diversity within any school or class also increase its collective and individual value. The difference and variation from one child to the next allows for a wider range of ideas, insights, creativity, and solutions to problems. The wider and deeper the range, the greater the resilience and strength we have as a community. We invite, celebrate and respect the differences among us they make us a stronger, individually and collectively.

Justice

Justice is often missing from this conversation but without it there is no accountability to one another. We need accountability. Accountability for words and actions inform a sense of fairness that allows trust to grow between children as well as between kids and the adults in their lives. No group has a sense of fairness like children. When there is accountability and justice for the past and present, it will help build a future where trust can be present and community can and will be strong.

Inclusion

Every child knows how it feels to be included as well as excluded. They also know the degrees of inclusion out there. Inclusion builds upon fairness, to also include kindness and loyalty that engender the trust needed in any community. When we fail to include a child we create a weak point in the connection, a place that can and will break. On the other hand when we consciously include all we create strength in the connections between each and all that will bind and hold each and all. When we commit to this culture of inclusion the natural result is trust. We know that no one will be left behind, no one. We, are better and stronger together.

Students are Children & Kids First

Student is a label we give to children and youth while they are in school. The challenge with all labels is that it can reduce the humanity of a young person and leads to unintentional objectification, agenda and pressure. For this reason The Learning Landscapes Field Handbook will never use the term student beyond this discussion. It will also seek to limit the unnecessary use of other adult labels such as parent, teacher, etc. for the same reason. Teachers are also just adult humans who have a role in our communities to guide and instruct our children. There is no difficulty in this role on the surface but when the person becomes only the label, their humanity can be inadvertently lost. So, this is a handbook for adults who are leading children outside. Perhaps this is simply semantics but I have found that roles and labels can unintentionally insulate us from one another. Learning Landscapes is about bridges, not barriers.

Why Outdoor? Why Nature?

If you are reading this handbook then the motivating “why” is already alive within you. Whether it is your own enjoyment of the outdoors that compels you or the way you see your kids light up when they are active and outside, the outdoors inspires potential and possibility. Recent efforts to identify and compile the research in the field should give every person, teacher, principal and parent, confidence that this is not simply a trend but an infinite value that has always existed for kids. Within the infinite endeavor of education, the outdoors is also a framework and movement steeped in neurobiology and pedagogy. All of this not only justifies the value of using instructional time outdoors but in fact provides evidence that it may be the very best way to teach kids. It is

authentic, real–world, relevant, hands–on learning at its healthy best!

Place-Based Learning

Place was the original root of education. It is where learning literally occurs. Words often attributed to the best learning—authentic, real–world, relevant—is the local. The ground at your feet is the place you live and the first geographical intimacy available to anyone. Getting kids outside in their local environment is simply, great teaching and learning. The natural world and its mix of life, earth, space, and physical sciences presents itself everywhere but it is uniquely, always somewhere. The only where you ever are, is here, with the near nature of home.

Near Nature

Near nature is one of the core values of Learning Landscapes. It is the recognition that the ground at your feet is the place to start and it is not the far flung places of state and national parks that require budgets and buses to reach, but the nearby nature close at hand. This is where the 10-minute walk concept came from. Not only was 10 minutes the comfort threshold for teachers taking kids off campus for a walking field trip, it is also how habit and relationship is formed. Proximity leads to frequency, frequency leads to familiarity, and familiarity (think family) leads to close relationship. We care for and know best, the people, things, and places we feel connected to. This is the value of near nature.

Sense of Wonder—One Adult Required

While a sense of wonder overall is a quality in every human being, and children naturally live very closely to their own, it is something specific that I refer to in this handbook. In Rachel Carson’s deeply felt book, A Sense of Wonder, she shares her explorations of the Maine woods with her young nephew. It is in this book that Carson shares the following:

> “If a child is to keep alive their sense of inborn wonder,
> they need the companionship of at least one adult who can share it,
> rediscovering with him the joy, excitement, and mystery of the world we live in.”

The invitation here is that any adult—family member, teacher, neighbor—can be that one adult for any child. I have been told many times by former students, the last time being today, that I changed their life by simply taking them outdoors. The young man, Chase, who approached me today on Main Street in my town shared that he hated living in a small town until he met me. He said that the experiences he had with me have led him as an 18 year-old young man to become a Wilderness First Responder, with a desire to work in the field of Wilderness Therapy for teenagers. I remember Chase as a 12 year old boy but I did not know what our time meant to him. You may not know either but if you choose to be that adult, they can become that child, and eventually they will be that adult that retains their sense of wonder throughout their life.

Genius

Every place has genius. This genius is a way of expression that is unique to where it is in the world.

Longitude and latitude, elevation, plant zone, animal range, geology, climate, weather, and more all combine to make this place that you stand a sort of miracle of emergence and convergence. Like the ingredients of masterful dish, everything that is here and everything that isn't here combines to make the genius of this place. To see it and be with the genius of a place requires your undivided attention. That is the core requirement, a key that will unlock the ground beneath your feet and the trail you enter. Every person also has genius. This is not the measurable intellect of IQ but the immeasurable, unique intelligence of each and every child. The unique way that each child perceives the world, connects to the world, and expresses themselves in the world. It is the journey of childhood and everyone who is a part of that path of a child to help them to reveal and ignite that genius. Once ignited and supported it will become a fountainhead, a wellspring of lifelong learning.

Nature does not make copies of places or people, only originals. Connecting the genius of every person with the genius of every place is at the heart of Leaning Landscapes. The way that a place holds each person, and the way that each person considers place will change both the place and the person, further increasing the uniqueness and distinction of each.

You will not find another place exactly like this place, anywhere in the world. You will find the patterns, and familiar form and function from place to place but not the full expression. And you will never find another child exactly like this child, anywhere in the world. You will find the stature, the complexion, the eye or hair color, even familiar character and personality, but not the full expression.

It cannot be a luxury or impossibility to educate every child according to their genius. And it cannot be a luxury or impossibility to explore and care for every place according to its genius. Look closely, deeply, slowly, commit completely. That is the way forward.

The Hero's Journey

Joseph Campbell popularized the concept of the Hero's Journey in western culture 70 years ago, but it is literally embedded in the history and mythology of many indigenous and traditional cultures around the world. From Homer's Odyssey, the Danish Beowulf, the Finnish Kalevala, to modern day Star Wars, the Hunger Games or Lord of the Rings, the Hero's Journey has defined an inspirational growth and transformation of boys and girls, men and women. The basics of the Hero's Journey are as simply identified by three steps, the Call/Departure, the Ordeal, the Return. Other, more comprehensive examples go as far as citing 12 to 24 steps in the Hero's Journey. For our purposes here I will keep it simple.

Our children are Mountain Kids. Just naming them that elevates the heroic possibility., But, as I like to remind them, "Just because you live here doesn't make you a Mountain Kid". Mountain kids do great things as they explore the boundaries of our wild homeland. They have courage, lean into their edges, and come back stronger, wiser. By consciously, thoughtfully, and deliberately approaching these learning experiences as adventures, it excites their minds and grows the possibilities of what might occur. Rather than just learning information and passing a test, these adventures can become the discovery of the world and taking action as a quest. Which would you rather do? Whether this is your framework for a single day adventure, a seasonal foray, a year-long challenge, or a lifetime, using the Hero's Journey intentionally with your kids will inspire greatness in their growth.

Teacher Knowledge

Knowing how to guide kids in the outdoors does not require specific scientific knowledge or a science degree. Nationally, only 15% of K-6 teachers, have a Bachelors degree of Science. The result is that many, if not most, elementary school teachers shy away from science as a subject. This is unfortunate for all, as science does not require an encyclopedic command of any of its disciplines. Such mastery actually can handicap the guide, as there is a tendency of adult leaders to share their breadth and depth of knowledge and answer every question. The result stalls a child's curiosity and inquiry, if not fully stopped in its tracks. Authentic curiosity about the subject you explore is all you need as the adult guide of a child. You were born with native curiosity. It begins simply with - What is that? Why does it do that? How does that work? And on and on… You have that curiosity, as do your kids. Your skill set as an explorer and guide, to ask deeper and deeper questions, and to use all of the tools available to get to the bottom of the bottomless world and universe we live in, is your gift to your kids. And so while bottomless we begin somewhere with something. We begin with phenomena.

Phenomena

Phenomena is the plural of phenomenon. A phenomenon is any observable occurrence in the natural world. The wind blowing up the canyon in the afternoon. The blooming of a Buttercup in Spring. The falling of a Black Oak leaf in autumn (abscission). The building process and structure of a cumulus cloud. The formation of snowflakes and ice crystals. The migration of a Western Tanager. The song of a Tree Frog. The pollination and flight of a Western Bumblebee. The hatch of a stonefly. The spawning of a trout. These things are happening every single day around us. Observing and investigating any one of them is the life work of many scientists. Catching these phenomena as they occur is a daily enterprise. Getting to know what happens and when it occursnwill help you to guide your kids on any given day of any given week of any given month and any given season of the year.

Phenology

Phenology is the study of cyclical phenomena during the annual cycle of seasons as we travel around the sun. As you might imagine, all of the cycles of life and occurrence fall into patterns throughout the year. What is happening, where and when it is happening, and finally how it is happening and why. This deep noticing is at the root of indigenous Traditional Ecological Knowledge and all science. Think of the fall season. Abscission is the phenomenon of leaves falling. That varies from tree species to tree species. Why? When do the leaves begin to change? How do they change? Why are they starting to change? Watch it happen before your very eyes. Document your observations? Compare different influences such as temperature. Notice the difference of this phenomenon as you go up and down elevation.

When, is a critical part of that study, because when phenomena occur is changing dramatically. Birds are leaving and returning at a different time that in decades past. Climate scientists especially are interested in phenology. Many want your help as a citizen scientists to make and record observations. You and your student's ability to simply know a specific plant at your school intimately and following it through the course of a year develops understanding that most people never possess.

1-4-9-36-180

This is a school year display like 1-4-12-52-365 of a calendar year.

Embedded in each, is an opportunity to explore the phenomena that happen once or multiple times a year. The changes that occur slowly by days from week to week, but dramatically in months or seasons. There is a rhythm of learning as we take the whole year and explore the possibilities within it. Later in this handbook we will dive more profoundly into each.

Photo by: RW

Photo by: Vanessa Vasquez

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Well Being

Vitamin D

In the fields of Outdoor Education (OE) and Environmental Education (EE) there are many activities that are purely and simply referred to as Vitamin D. The purpose of these activities Is simply to be outside. Just for the play and health of it! It is not driven by curriculum as much as the common sense of elicited joy in sun–kissed activity, combined with a little physical science—the chemistry of turning solar radiation into an essential vitamin metabolized by your body. This health and well–being value is worthy to claim and safeguard without additional justification. Kids need it. We all need it.

Free Play

Right in line with Vitamin D is the idea and importance of unstructured time. This free play is not a “free for all” (although that can be fun if you have the courage). Free–play experiences are where the attributes of a place meet the curiosity and creativity of a child. Free play allows kids to open their minds, lift their voices, and drive their own choices. It is important part of a child’s social and cognitive well–being and development. Incorporating free play into any outdoor experience can begin slowly, measured as trust and culture is built to allow for it. Unstructured time can be rare or even extinct in education, where every minute of every hour of every day is accounted for and measured. There are only so many minutes in a school day. That is why allowing precious time for outdoor experience generally, but free play specifically, declares to children that they and their play are valuable. They know it and they hope that you know it too and will allow it.

Other Physical Health Benefits

We know how much kids love recess. It was my favorite part of school and a close second was physical education (PE). A growing body of research is helping to better identify the specific physical and mental health benefits of outdoor time and activity. The common denominator to so much of this research is the outdoors. The Children & Nature Network has compiled journal published and peer–reviewed research to help make the evidence–based case for what we certainly already know anecdotally. And as students age you can’t just pivot to sports as many students step away from physical activity because they don’t prefer the competitive sports that dominate middle and high school physical education programs.

I recall an 8th grade trip to Taylorsville Elementary School where during free time the students only wanted to hang out on the elementary school playground equipment. When I teased them about it, several students commented that this was the first time they had played in a couple of years. The infographics on pages 23 and 97 share the research and related benefits.

Mental Health Benefits

Rising occurrence and extent of mental health issues should be concerning to anyone who cares about kids. It is not just depression or anxiety. The struggles of kids to meet and adapt to the stress of life and changing conditions is essential. The authentic encounter of kids with the varied challenges and problems in the natural world around them provides a natural time and place to learn and grow. Nature is also a natural place of healing. The beauty and bounty of life provides respite and hope for us all. Please refer to the Children & Nature Infographic that identifies the mental health benefits of time spent outdoors. Time outdoors is a natural balm for what kids yearn to have, and too many have too little contact or connection. This is a valuable life habit that we can help kids to integrate into their lives now. This is the life we can and should be preparing kids to live.

Social Emotional Learning (SEL)

One word on social emotional learning (SEL). As a recently formalized innovation and emergent field in education, SEL has garnered significant attention as a quality that was missing from the classroom and school day. SEL exists because of failures in the culture of the educational system to support and care for the whole child. When we label a child and see them primarily or only as a student, we are able to objectify them. This label/role objectification allows us to run an agenda with its pressures, and lose the compassionate relationship to see them as the young human being they unquestionably are. The same thing happens when we label an adult, a teacher or educator. Of course that is the label of the job, but if we do not sensitively see the human first, then the need for a new box called SEL will always be needed. There is nothing wrong with SEL as a point of consideration, it is just important to understand why it has emerged and how we can truly integrate a caring, mental healthy approach to the way we run our school day.

Children’s Nature Bill of Rights

In 2000 a movement for each state legislature to adopt a Children’s Outdoor Bill of Rights (COBOR) resulted in all 50 states passing such resolutions. In addition many leading cities have followed suit. Look up your state’s COBOR. California passed its COBOR in 2004.

GREEN SCHOOLYARDS CAN PROVIDE MENTAL HEALTH BENEFITS

THE ISSUE

1 in 5 children has, or has had, a serious mental health disorder at some point in their lives.[1]

MENTAL HEALTH PLAYS A CRITICAL ROLE IN THE COGNITIVE, EMOTIONAL, & SOCIAL DEVELOPMENT OF CHILDREN AND YOUTH.

Green schoolyards can enhance mental health and well-being and promote social-emotional skill development.

GREEN SCHOOLYARDS HELP KIDS FEEL:

CALMER & LESS STRESSED[2,3]
Views of green landscapes from classroom windows helped high school students recover more quickly from stressful events.[4]

POSITIVE & RESTORED[3]
Forest schools enhanced positive and decreased negative emotions.[5]

RESILIENT[2]
Natural areas enhanced feelings of competence and increased supportive social relationships that help build resilience.[2]

GREEN SCHOOLYARDS PROMOTE SOCIAL-EMOTIONAL SKILLS

PRACTICE

RELATIONSHIP SKILLS[2]
Children demonstrated more cooperative play, civil behavior and positive social relationships in green schoolyards.[6,7]

DEVELOP

SELF-AWARENESS & SELF-MANAGEMENT

- Green schoolyards can reduce aggression and discipline problems.[6,7]
- Gardening at school helped students feel proud, responsible & confident.[2]

SUPPORTING RESEARCH

[1]www.nimh.nih.gov/health/statistics/prevalence/any-disorder-among-children.shtml [2]Chawla et al. (2014). Green schoolyards as havens from stress and resources for resilience in childhood and adolescence. *Health Place*, 28, 1–13. [3]Kelz et al. (2015). The restorative effects of redesigning the schoolyard: A multi-methodological, quasi-experimental study in rural Austrian middle schools. *Environ Behav*, 47(2), 119–139. [4]Li & Sullivan (2016). Impact of views to school landscapes on recovery from stress and mental fatigue. *Landscape Urban Plan*, 148, 149-158. [5]Roe & Aspinall (2011). The restorative outcomes of forest school and conventional school in young people with good and poor behaviour. *Urban For Urban Gree*, 10(3), 205–212. [6]Bell & Dyment (2008). Grounds for health: The intersection of green school grounds and health-promoting schools. *Environ Educ Res*, 14(1), 77-90. [7]Nedovic & Morrissey (2013). Calm, active and focused: Children's responses to an organic outdoor learning environment. *Learn Environ Res*, 16(2), 281–295.

ADDITIONAL RESEARCH USED FOR THIS INFOGRAPHIC AVAILABLE AT childrenandnature.org/gsybibliographies

GREEN SCHOOLYARDS ENCOURAGE BENEFICIAL PLAY

THE ISSUE

8-18 year olds in the U.S. spend an average of 7.5 hrs per day using entertainment media.[1]

KIDS NEED TO PLAY: PLAY SUPPORTS PHYSICAL, SOCIAL & EMOTIONAL WELL-BEING.

Natural areas promote child-directed free play that is imaginative, constructive, sensory rich and cooperative.

ENCOURAGING IMAGINATIVE, COOPERATIVE FREE PLAY

GREEN SCHOOLYARDS CAN:

- Accommodate different ages & abilities [2,3]
- Sustain children's interest [4,5]
- Offer a variety of options that appeal to a wide range of play interests [2]
- Promote cooperation & negotiation [4,6]
- Strengthen links between play & learning [2,3,4]

GREEN SCHOOLYARDS CAN SUPPORT DIFFERENT TYPES OF PLAY[2,4,7,8]

DRAMATIC PLAY
Loose parts—such as sticks, stones, acorns & pinecones—engage the imagination.

EXPLORATORY PLAY
Natural areas provide opportunities for children to explore.

SOLITARY PLAY
Areas under bushes or other nooks allow children to engage in alone time and contemplation.

CONSTRUCTIVE PLAY
Building things out of natural materials helps children learn hands-on skills.

LOCOMOTOR PLAY
Natural items such as logs and rocks can be carried. Looping paths allow walking, running and biking.

SUPPORTING RESEARCH

[1]Rideout et al. (2010). Generation M2: Media in the lives of 8-18 year olds. Kaiser Family Foundation https://kaiserfamilyfoundation.files.wordpress.com/2013/01/8010.pdf [2]Dyment & Bell (2008). Grounds for movement: Green school grounds as sites for promoting physical activity. *Health Educ Res*, 23(6), 952-962. [3]Stanley (2011). The place of outdoor play in a school community: A case study of recess values. *Child Youth Environ*, 21(1), 185–211. [4]Dennis et al. (2014). A post-occupancy study of nature-based outdoor classrooms in early childhood education. *Child Youth Environ*, 24(2), 35–52. [5]Luchs & Fikus (2013). A comparative study of active play on differently designed playgrounds. *J Adven Educ & Outd Learn*, 13(3), 206–222. [6]Acar & Torquati (2015). The power of nature: Developing pro-social behavior towards nature and peers through nature-based activities. *Young Children*, 70(5), 62-71. [7]Chawla (2015). Benefits of nature contact for children. *J Plan Lit*, 30(4), 433–452. [8]Cloward Drown & Christenson (2014). Dramatic play affordances of natural and manufactured outdoor settings for preschool-aged children. *Child Youth Environ, 24(2), 53–77.*

ADDITIONAL RESEARCH USED FOR THIS INFOGRAPHIC AVAILABLE AT childrenandnature.org/gsybibliographies

C&NN recognizes that not all studies support causal statements.

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Photo by: Kellie Bainbridge, PUSD

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Pedagogy

Better Learning—Outdoor Learning

In a school context, prioritizing time in the school day to take students outside without other purposes at work can be difficult to justify and sustain. Bundling Vitamin D and other health benefits with scholastic/academic values helps to support teachers who want to make time for outdoor learning. We turn to pedagogy, the very science of teaching and learning. Our third Children & Nature Network Infographic captures the academic benefits of outdoor learning. (see illustration in the previous chapter).

Better Learning—Local Learning

The correlation of academic success and environment–based learning has been well documented. This is not in the abstract. Learning locally is authentic, connected learning to the place on the planet that a child lives. Understanding and caring for the place you live is the only way true care and conservation can happen. Your child can't save the whales from where we live, but we can make sure that the river leaving this place and ultimately feeds the ocean is clean. Your child can't save the rainforest, but we can care for the mixed-conifer Sierra Nevada forest that surround us. It all begins here, wherever your here may be. Most recently in a Stanford study of 109 peer reviewed studies, the learning benefits of environment-based learning were identified. More formally, this is referred to as, Using the Local Environment as an Integrating Context (EIC) for learning.

Public Education is a Public Trust

Public education as a public trust. This legal requirement in every state is a thirteen year journey of every child from childhood to adulthood. During this time, everything taught, and consequently not taught, will train up our youngest citizens as to what the society and culture values. Do we value the natural world? Do we value active and meaningful time outdoors? If we do, we must provide time during the formal school day and year for this relationship and connection to grow. By doing this during the school day we communicate to every child that this has value to their community and culture.

Science Literacy

Scientific inquiry and engineering design are at the core of science education. The accompanying critical thinking and problem solving skills are often referenced by schools and school districts as fundamental outcomes of their efforts but these are seldom actually taught. We want students to know how to do real science, not simply memorize facts about science.

Environmental Literacy

Environmental education has largely been re–framed in the field as environmental literacy. The adoption of state environmental literacy plans throughout the nation includes California's own Blueprint for Environmental Literacy. California's BEL has defined Environmental Principles and Concepts (EP&Cs) to be taught.

EP&C Principles & Concepts

- People depend upon natural systems. (3 concepts)
- People influence natural systems. (4 concepts)
- Natural systems change in ways that people benefit from and can influence. (3 concepts)
- There are no permanent or impermeable boundaries that prevent matter from flowing between systems. (4 concepts)
- Decisions affecting resources & natural systems are complex & involve many factors. (2 concepts)

The California Science Framework integrates the EP&Cs at all grade levels to be an additional design component for learning that is integrated throughout all educational materials. By using the local environment to integrate learning and exploring the relationship between nature and culture you will natural be enhancing the environmental literacy of kids.

The National Academy of Science helped to develop the Next Generation Science Standards to support states in their development of high quality science education. The California Science framework, adopted in November 2016, uses the NGSS 3-dimensional learning design to help teachers do real science with their students. The NGSS breaks down into three dimensions that are simultaneously employed in science study.

children & nature NETWORK

GREEN SCHOOLYARDS CAN IMPROVE ACADEMIC OUTCOMES

THE ISSUE

Only 1/3 of U.S. 8th graders perform at or above standards for science and math.[1]

SCHOOLS ACROSS THE NATION ARE SEEKING WAYS TO IMPROVE ACADEMIC OUTCOMES FOR ALL STUDENTS

Green schoolyards promote academic achievement through hands-on, experiential learning and by enhancing the cognitive and emotional processes important for learning.

ENHANCING LEARNING

Green schoolyards provide **experiential learning across many subjects.**[2,3]

33 of 40 school garden studies (83%) found

IMPROVED OUTCOMES in science, math & language arts.[2]

BETTER GRADES A+

HIGHER TEST SCORES

ENHANCED KNOWLEDGE ACROSS SEVERAL SUBJECTS

2, 3, 4

GREEN SCHOOLYARDS CAN

- Help students focus attention and regulate behavior [5,6]
- Enhance attitudes and engagement with school [7,8]
- Support creativity, critical thinking and problem solving [9]

ROOM WITH A VIEW

Seeing nature and greenery from school buildings can foster positive academic outcomes.[10,11]

HIGH SCHOOLERS WITH VIEWS OF TREES HAD:[12]

- **HIGHER** standardized test scores
- **HIGHER** graduation rates
- **HIGHER** % of students planning to attend a 4-yr college

SUPPORTING RESEARCH

[1] www.nationsreportcard.gov [2] Williams & Dixon (2013). Impact of garden-based learning on academic outcomes in schools: Synthesis of research between 1990 and 2010. *Rev Educ Res*, 83(2), 211-235. [3] Wells et al. (2015). The effects of school gardens on children's science knowledge: A randomized controlled trial of low-income elementary schools. *Int Journal Sci Educ*, 37(17), 2858-2878. [4] Berezowitz et al. (2015). School gardens enhance academic performance and dietary outcomes in children. *J School Health*, 85(8), 508-518. [5] Berto et al. (2015). How does psychological restoration work in children? An exploratory study. *J Child Adolesc Behav* 3(3). [6] Chawla et al. (2014). Green schoolyards as havens from stress and resources for resilience in childhood and adolescence. *Health Place*, 28, 1-13. [7] Maynard et al. (2013). Child-initiated learning, the outdoor environment and the 'underachieving child.' *Early Years*, 33(3), 212 - 225. [8] Rios & Brewer (2014). Outdoor education and science achievement. *Appl Environ Educ Commun*, 13(4), 234-240. [9] Kellert (2005). *Building for life: Designing and understanding the human-nature connection*. Washington, DC: Island Press. [10] Li & Sullivan (2016). Impact of views to school landscapes on recovery from stress and mental fatigue. *Landscape Urban Plan*, 148, 149-158. [11] Wu et al. (2014). Linking student performance in Massachusetts elementary schools with the "greenness" of school surroundings using remote sensing. *PLoS ONE 9(10): e108548: 1-9*. [12] Matsuoka (2010). Student performance and high school landscapes: Examining the links. *Landscape Urban Plan*, 97(4), 273-282.

ADDITIONAL RESEARCH USED FOR THIS INFOGRAPHIC AVAILABLE AT childrenandnature.org/gsybibliographies

C&NN recognizes that not all studies support causal statements.

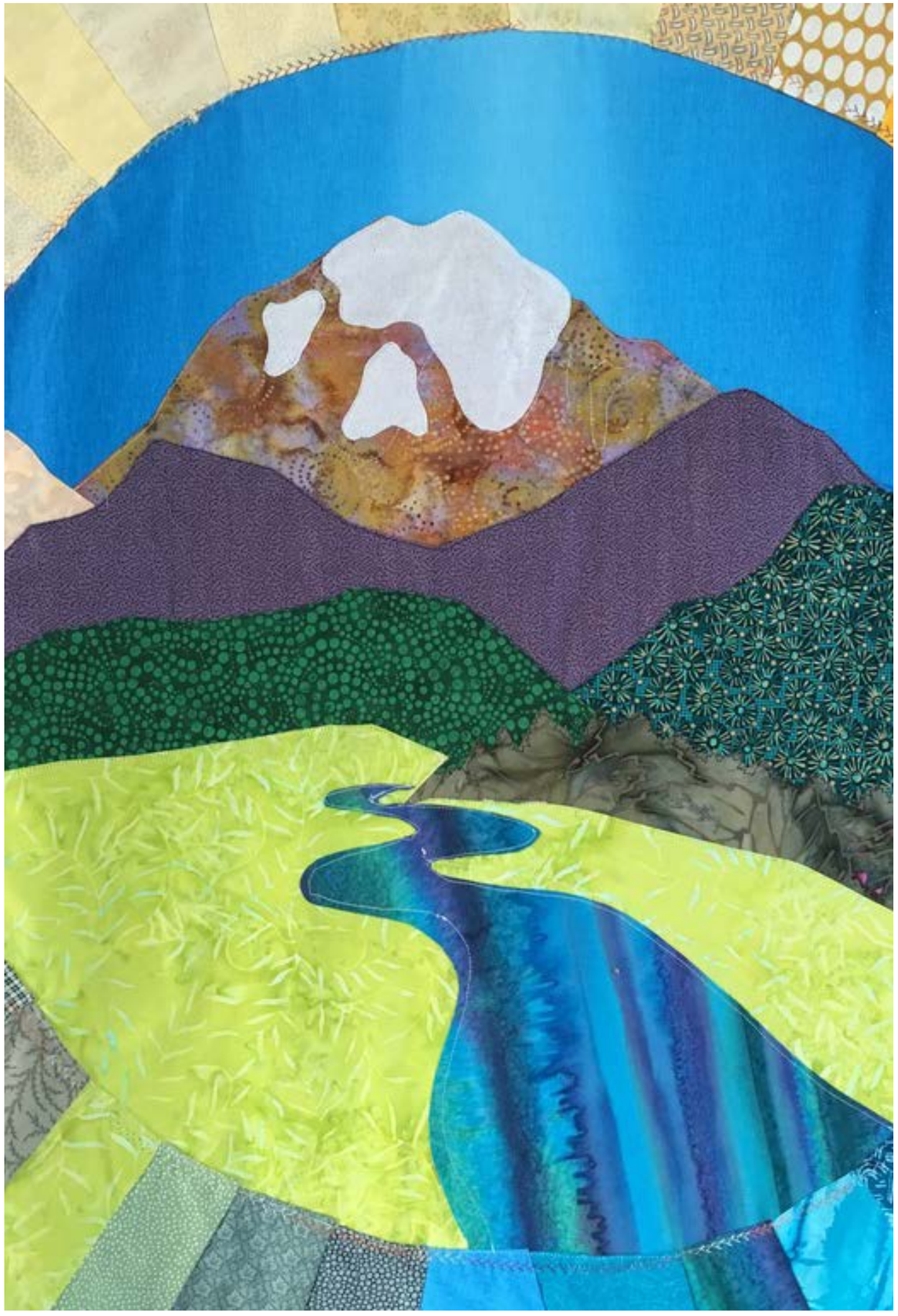

Photo by: Vanessa Vasquez

5

Next Generation Science Standards

Disciplinary Core Ideas (DCIs)

Disciplinary Core Ideas are familiar to most teachers as they have provided the categorical structure for science education for a generation. These are the things that scientists study. They are broken down into the core areas of Physical, Life, and Earth & Space Sciences. They also include the integration of Engineering and Technology.

Science and Engineering Practices (SEPs)

Science and Engineering Practices take the place of the sometimes limited and linear scientific method. These are the things that scientists do. Scientific inquiry leads naturally to engineering design. As we study the phenomena and issues surrounding the place we live we will ask questions and seek answers to those questions. Along the way we may encounter problems that will require designing solutions to those problems. That kind of problem solving is the essence of engineering, when we take creative action to make the world a better place.

The eight science and engineering practices are employed at all times as we do science and engineering. The practices represent the skills and abilities students need to develop in order to do science and be scientists. They are:

- Asking questions and defining problems
- Using and Developing Models
- Planning and carrying out investigations
- Collecting and analyzing data
- Using mathematics and computational thinking
- Constructing explanations and designing solutions
- Engaging in argument from evidence
- Obtaining, evaluating and communicating information

Cross Cutting Concepts (CCCs)

Cross Cutting Concepts are the third dimension of NGSS and provide different lenses through which student will study science. These are the ways that scientists look at the world. An effective way of understanding the CCCs is how scientists may look at the same area of science in different ways that deepens understanding. The CCS are:

- Patterns
- Cause & Effect
- Scale, Proportion and Quantity
- Systems and System Models
- Energy & Matter
- Structure & Function
- Stability & Change

It is helpful to think of a single object of study. In the Earth & Space Sciences students will study weather. If you look at the weather through the lens of Patterns it will lead to a different course of inquiry than when a student is looking at weather through the lens of Stability & Change or Energy & Matter. The same will hold true for a plant, a river, etc. Keep these simple for you and your kids, and the natural richness and depth of how we are looking at something will emerge.

When you try to pick out anything in nature you will find it hitched to everything else in the Universe.

More than Science

While science is the first place most teachers go in their mind when they consider outdoor and environment-based education, science is both the iceberg and the tip. The Outdoors is ideal for math (counting, measuring, estimating, etc.), language arts (writing, reading, speaking and listening), physical education, art and of course social studies. These subject areas can be beautifully integrated in a singular study of the local outdoor environment

Even just the health and well-being derived from making vitamin D on a sunny day, as previously discussed, is of course part of growth and development for every and any child. Benefits of being and learning outdoors have been studied and researched thoroughly. The infographics created by the Children and Nature Network are refernced in the previous chapter, page 28, and also in the appendix.

To spend any significant time during the school day engaged in an outdoor learning adventure, the learning must be core instruction. The more ways to bundle these activities and adventures in multiple subjects/disciplines, the more students can experience learning and life, not as a series of unrelated, deconstructed events, but as an integrated whole. This whole learning, whole life approach employs many essential skills and tools. Every field scientist I know uses every aspect of ELA and mathematics to be successful. You can too.

English Language Arts (ELA)

Speaking, listening, reading and writing are essential skills for any child. However the topic or subject of the literature read, idea expressed, poem written, essay composed, story told, news reviewed, or idea debated can be more or less authentic and relevant to a child's's life. The world outside of the classroom, both natural and civilized, is their world. This is the world worth listening to and talking, reading, writing about. The more deeply a child's real world is brought into this course of study, the more deeply a child will feel connected to their education and the unfolding story of their life.

Math

Counting, measuring, estimating are a few starting points of making number sense of the world. Most math is relegated to the classroom, as the drill and drill and drill hopefully leads to skill year after year. Math is a special language all its own and an incredible stimulator of the brain. And yet if numbers in general and their use in understanding and making sense of the world are not applied to the actual world a child lives in, then math will always feel abstract and disconnected. Every inch, ounce, area, volume, sum and subtraction of the world is out there. You can find it in every tree (height, diameter, circumference, age, leaf length and width), every river (depth, width, length, velocity, discharge), each day's weather (high and low temperature, wind speed and direction, humidity, cloud cover, precipitation amount). Step outside and the potential is limitless and relevance unquestionable.

Physical Education (PE)

Traditional physical education activities, such as sports, that are often used for public school physical education have many benefits, and yet they also do not represent life-long activity opportunities. Most sports activity do not continue after high school for the majority of children. Many children lose interest in physical activity and recreation after elementary school as they do not elect to play sports in junior and senior high school. These games and sports are an absolute highlight for some students, but for many others they are not inclusive nor equitable experiences. Lifelong health and fitness, two goals of physical education, are lacking for most children. Alternatively, walking in nature, hiking, birding, and other outdoor activity represented within Learning Landscapes and similar programs, are lifelong activities that are inclusive and accessible for all.

Art

Very few aspects of life have inspired artists more than the beauty of the natural world. And deep observation and study of the natural world invites the use of different artistic mediums to express the subject of study. These can take many creative forms and are natural ways of expressing understanding and perspective. Using found objects to create sculpture, sketching anything from fine detail to broad landscape, and especially inviting the rich imagination to be unleashed in creativity critical and yet also missing in the modern public school classroom.

Field journaling is an entire integration point for all academic subject areas. Please proceed to page 67 for more information. How one simple tool can be used to integrate all academic subject areas.

Photo by: FRLT

6

Getting Started

First Things First—First Nations

Land Acknowledgement.

A land acknowledgement is a statement used to acknowledge the ancestral past and current right to land for native peoples. Because all land is native land to some tribe this is an important educational step for kids to witness and to be a part of. When the adults in their life take the time to pause and recognize that the place where the school stands, where their homes and community have been built, is native land that was forcibly taken from the native people in the past, it does several important things. First, It begins to repair the wounds that are still open for native people in the present. Some of these native people are at your school and in your class. This quality of repair and justice supports the kindness, fairness, loyalty and trust that we want to exist in every community and every class of kids. Second, a land acknowledgement honors the legacy of native traditional ecological knowledge and inhabitation. In most cases the connection of local native people and the local land is thousands of years old.

I have been working with Trina Cunningham of the Mountain Maidu through the Native Voices Project. Ideally we are wanting the voices of living native peoples to be a part of anything we do that relates to the Mountain Maidu. Working at the “speed of trust” and honoring a commitment to teach “Nothing about us without us” supports a respectful approach to this relationship. Invite a native person to begin your year or first adventure outside, with a native voiced land acknowledgement. When a native person self acknowledges their land connection and welcomes children to be a part of the land, it creates a power that kids will value. I have also written my own land acknowledgement from my own voice that I use with kids when we are on the land.

It does not have the power of a native land acknowledgement but I have found that it is always respectfully received and has also helped native kids to feel acknowledged and valued by their peers when often they have been silent or invisible.

Place Names

There are 170 year old names. They came with exploration and the Gold Rush. There are 250 year old names. They came with the Spanish arrival in California and establishment of Missions. And then there are 10,000 year old names. I invite kids to consider this and pose a simple question. Which name do we use? Which name should we use? Kids have a sense of fairness that many adults give up along the way. I have yet to have a class not feel the value of the old, original names. This is often the name of the local valley, river, or significant mountain. This alone can restore something that has been gone a while but is ready to return. We do not lose the current name, but we add depth when we acknowledge the original, indigenous names.

Species Names

Like the place names we have an opportunity to know the old names or as the Maidu have told me, the names that the species call themselves. This isn’t about rejecting English and the names and words we use. It is about inviting names and words that have echoed off of these mountains and lived in these valleys for thousands of years.

Asset Mapping

In order to use the local, outdoor environment as a resource, it is critical to map the many phenomena, attributes, and resources that will help you to be successful in your endeavors. While mapping has long been used as a geographic tool to look at various attributes of a given place, mapping has far more value than looking at simply the physical features. Map layers, common in digital mapping, have helped people to see that it is literally possible to map anything. This is a wonderful learning tool for kids, but it is also a powerful planning tool for any teacher or guide to organize the outdoor endeavor.

To dig into asset mapping a little deeper it is helpful to use the interrogative—Who, What, Where, and When. Let’s take them one by one.

Who?

Who? You.

Already shared, is the importance of you. You are the one adult in their life that holds the keys to the outdoor kingdom. And you are unique, as you each have your own genius, strengths and vulnerabilities. Be compassionate to yourself and look after your well being first. If going outside is not fun for you, you will likely not take your kids outside.

To make sure it is fun for you by playing to your own strengths and joys. If you are having fun, feeling inspired, and truly interested, your kids will feel it. They know authenticity so be your authentic self. The outdoors is a place for everyone and everything, and that begins with you.

Who? Kids.

While we have already established that every child has genius within them waiting to be ignited and supported, knowing the physical and developmental level of your kids is important. Having appropriate ambition for their learning journey will help you and them to be successful. They may surprise you with their ambition and ability but you will unlikely take your 5 year olds on a 10 mile hike or even a strenuous 3 mile hike. And while the same 5 year olds will not understand the chemistry of a leaf, their ability to wonder and question deeply and widely is amazing. Lastly, if you work at the same grade level for multiple years then you know how different two groups of kids of the same age can be. Get to know them and start where they are.

Who? The Important Others (TIOs)

Tios, in Spanish, means aunts, uncles, or aunts and uncles. I often reference a teacher as the learning parent of a child. Like a parent you are unquestionably the most important learning adult in their life. As that day in and day out edu-parent, no matter how amazing you are your, kids will get used to you and even take your amazingness for granted. So know you are amazing. And know that you are not alone and there are a lot of edu–aunts and uncles out there to help inspire and add a little different amazingness to the learning journey. From my town childhood I sometimes reference:

Who are the people in your neighbor…" Sesame Street

While you may be the core guide of a child or children, you are never alone in a community. There are hobbyists, scientists and stewards, active and retired, who have experience or just passion for your subject. Some of your student's parents may be closeted or even professional scientists. Perhaps grandparents. Ask your kids who they know. A scientists may come disguised as a hunter or fisher or logger. Are there organizations in your community or region that overlap with your focus? Many people want to support children but aren't sure how to navigate the school culture. Reach out or ask a supporter to help you. Beyond individuals there are agencies and organizations that may share a mission or commitment to your area of endeavor. In rural Plumas County we have partnered with over 20 organizations who each contribute valuable time and expertise to support teachers and kids in their science and stewardship. More from a school partner point of view you may wish to attend a meeting and introduce yourself and your need. Many times the way into an organization or agency is just through a single employee who knows the culture and can remove seen and unseen barriers. Regardless, if you are coming from a parental or teacher point of view and need, these local, state and federal agencies and the non-governmental organizations often defined as 501c(3) non profit organizations are out there and many are ready to support you with time and resources.

Equity, Diversity, Justice, Inclusion(EDJI)

Who is missing from your who is important. If we don't recognize a group or person then they can have no voice, no part in what we are doing. Our gaps and and blindspots might include people and so be open and inviting to those who have been missed. This could be in your class, or in your community. They may be the voice you have been missing.

What?

Any place can be mapped to illuminate and identify the teaching and learning assets, attributes and opportunities. The tallest tree. The biggest rock. A vernal pool. These are the whats in your where. You may begin with the adults to create a base layer but part of the learning is to do this with your kids. Brainstorm with what they want to map? Tracks. Scats. Perches. Nests. Flowering plants. Invasive plants. Native plants. Start simple but go as far and deep as curiosity will take you.

Where?

Clearly mapping is a where tool. Of all of the wheres you might map however, asset mapping is all about the here of where. The deeper you go, the better you will come to know the place you live and learn. And the where questions will be defined by the questions that arise from the exploration and focus you choose. Going into the same forest will result in a different map if you are exploring mammals versus birds or following water flow versus rock outcrops.

Asset mapping is a tool for teachers to evaluate the teaching terrain for its instructional qualities. Being able to evaluate places for their assets and obstacles will lead you to accentuate some and avoid others. Learning Landscapes has done that basic work for Schools in Plumas County and the entire Upper Feather River Watershed.

When?

When might seem a strange element to map but it helps you to not miss the timing of wonderful whats. This ties to the earlier mentioned "phenology". As you will recall, phenology is the timing of cycles during the annual cycle of the year. So think of the seasons and when things occur. The timing of sunrise and sunset. The solstices and equinoxes. The budding, flowering, nesting, migrating timing of everything. Mapping when things happen in any place leads to a deeper knowing. Creating a phenomena map of the year to chart when things are happening on your Learning Landscape is a powerful exercise. This can be front-loaded with known or expected events and changes to track. It can also be added to as other phenomena are actually observed. These can include the full moons, eclipses, solstices and equinoxes, Meteor Showers, that are able to be anticipated. Tracking the first budding, flowering of certain species, the storms that arrive and how much precipitation they bring, the windiest days, The return of spring heralds such as Red-winged Blackbirds, Mountain Chickadees, and Sandhill Cranes. The last and first times that certain insect species are observed such as native bumblebees, butterflies, ladybugs. The same for our cold-blooded residents such as Western Fence Lizards (Blue Bellies), Garter Snake, Sierran Tree Frog. Too many species to name here but every one has a story to tell and timing to map.

The School

The school site itself must have the first and last word when considering the value of outdoor education. From the first and last bell rung every day of the 180-day academic year, this is a place to cultivate for outdoor learning.

Campus

Start on your campus. Walk it. Don't assume you know it. Approach it as an explorer who has never seen the space before. Stop often and take a 360 degree view. Look up overhead and down to the ground. From the day—blind stars through the atmosphere to the sky and weather, to the nearer air, high trees, lower trees, low shrubs and lowest grasses and plants, and on into the soil, water, rocks and plate tectonics, and the animals that claim these spaces, there is a vast storehouse of possibility of what can be taught, studied, and cared for. You teach here. Every inch of opportunities that you can see as a teacher adds to the year of possibility.

Room with a View

If your classroom has a window and a view of the outdoors let's turn to those panes of glass. A window often is an escape for your students, the gaze toward recess or the end of the day. Rather than a distraction it can become one of the best resources you have for student engagement. The simple gift of a view of the sky invites seasons and sun, weather and wildlife in flight, into your life. If windows allow for a look at the ground, the fore and background will have attributes, built and natural, that are a bridge beyond the room. This visual is the first sensory connection for you and your students to the outdoors. Making the most of it requires that you map the lay of the world before you. There are many things that are not there but start with what you have. You might be surprised.

What is not seen is also an invitation to make changes to the windows, near campus and more distant. Modifications to the outside of windows can protect and support birds as well as coax insects into view. Planting of native vegetation not only provides for beauty but also habitat for local wildlife. The view also will prime the students for more while providing a controlled environment for you to begin to explore the outdoors and local environment without any of the challenges and complexities inherent in outdoor adventures. In no way am I encouraging you to not go outside. But start where you are. You can always go further as you grow your comfort level and student habits.

The Field

The Field Campus is an off campus site. Learning Landscapes uses the logistical frame of a 10-minute walk from the school. Over many years Feather River Land Trust has conserved access to these field campus sites for every school in the Upper Feather River Watershed. We call them Outdoor Classrooms. Each site has a different landowner, who dictates the educational and stewardship activities that are appropriate on each site. All educational activities are generally allowed. This means if you can map it, you can study it.

Like the campus, asset mapping is about identifying the attributes that you feel will provide the most value for learning. You won't identify everything but clearly identifying the landforms and features, the locations that offer specific explorations and activities. Ask a community partner, a scientist, or a friend who has an eye for the natural to assist you. You won't map everything but the more you practice the art of uncovering the magic and mystery of a place, the better you will become at uncovering more.

Asset Mapping with Kids

Asset Mapping is not just a tool to illuminate places and people for the adult. Asset Mapping is a place-based learning activity for kids to map the natural and cultural phenomena occurring around their school and community. Examples can vary widely, but like mapping/cartography itself, it is a geographical expression of people and place. Students can map the movement of water on their campus. Students can map the plant communities and types, sun and shade, litter, bullying, etc. that make up the values and attributes of their school. They begin to answer the questions: Where are we? Who are we? What do care about?

Also don't underestimate the curiosity and creativity of your kids. Every child does have what Rachel Carson identified as an, "inborn sense of wonder". They live closer to that wonder than most adults, as well as physically being closer to the ground. They will see things that you miss and they will help you to uncover all that there is, whether in plain site or hidden from view.

Photo by: RW

7

Managing the Magic

Kids Outside—Adventure & Misadventure

Taking kids outside has a quality of opening the floodgates. Yes the outpouring of enthusiasm and engagement is also matched by the parallel flow of behavioral possibilities. I often call this the Wild West. While that might evoke visions of the OK Corral, stampedes, and lawlessness, it also conjures up the discovery journeys of Audubon along with the explorations of John Wesley Powell and Lewis & Clark. While the line between adventure and misadventure may be subjective, we still can plan and organize outings that feel like success for both you and your kids.

Setting Expectations

Setting expectations is what teachers already do well and so it is essential to prepare the students for their outdoor adventures in learning. It is not enough for the kids to get their needs met. Teachers have to have a good, manageable time outside or there will not be a second adventure. Students who take responsibility for their behavior and hold themselves and their peers accountable make a teachers job possible.

A proven approach is to create ground rules with the students that every student commits to follow when in the field. These ground rules are then measured by a rubric. The teachers review the ground rules prior to every trip. Upon returning from a field activity, the students provide a score for themselves based upon needed behaviors (listening, cooperating, field journaling, etc.) The teacher can also provide a score that helps to model for students the honest and fair application of the rubric. As students demonstrate their maturity and ability to hold themselves accountable, the teachers rubric can be adjusted or phased out.

Teacher as Gate Keeper

Taking the kids outside is literally in the hands of the teacher. From the first bell to the last, what you do, when you do it and where you do it is your choice. For this reason every teacher is the first and final key to opening up the outdoor world to children. No single factor of a child's relationship to the outdoors is greater than the adult. 180 days of school per year. All of them are spent in the care and guidance of a teacher. If that teacher knows, loves, feels comfortable being in the outdoors and teaching in the outdoors, then any day, even every day, of a school year can be graced with the field. The fundamental question is how do we best support each teacher with this possibility?

How do we work within the strictures of the school campus and school day to optimize support so that the gate of the keeper is flung open and wide. And it is through that gate that the cool breeze and flower scent, the bird call and the forest view and invitation comes daily. Come out and play, come out and stay, and fill your cup full.

Every Day is a Special Day and Date. Don't Throw it Away!

One of my favorite things to remind kids is that there is only one today in the history of histories. There will never be another September 21, 2021 ever. Ever! There will be other Tuesdays. There will be other September 21sts. But September 21, 2021 happens once only. And what happens on that day matters. If you miss it, it is forever gone. What happens on that day may never happen again. So what are you prepared to do with this precious day…today? And the beauty of it, is that it happens every day so we will never run out of this precious resource. Show up in it. Grow up in it. Right now. Will you be there? Will you see it? Or will you miss it? That is the great where of the life learning moment. The where of that when is as equally important. That great where is here. It is the ground at your feet. It is the only place that you can be, hear, see, smell, touch, taste, experience. So here is the only place that matters, because it is where you are. Right here.

Now this place isn't going anywhere but it is always changing in almost invisible ways. Sometimes big ways too. Relay this consistently and it will grow on your kids. The here and now is talked about a lot in some circles but then no one acts like it. Kids naturally are in the here and now. We are often the ones that pull kids out of it I know no enlightened adult that is more present that a child. We wean kids out of many things. Be watchful not to wean them away from being here, now.

Photo by: RW

8

Planning Your Learning Adventure

E.P.I.C.

The term epic is a little overused in our culture however in this example it is an acronym to guide the thoughtful creation of meaningful experiences. In their 2018 book, entitled Moments, brothers Dan and Chip Heath explore why some moments are remembered for a lifetime and others summarily forgotten. While their book is full of nuance and insight, they use E.P.I.C to identify creating memorable life moments that are elevated (above the norm) proud (individual or collective achievement) insightful (the great breakthrough or “aha”) connected (deepening relationships with another person or group). Throughout my career I have intuitively worked to design and deliver experiences that ironically fit into one or even all of these four areas.

A good approach is to consider what you would like your kids to remember 20 years from now. They won’t remember much, but what would be the key takeaways and unforgettables? Once that is clear, design an experience or experiences that are EPIC. It may feel clunky at first but it will become second nature to plan this way. And use your own past experiences of elevation, pride, insight and connection and the moments that you have never forgotten to guide you. We were like they are and we are like they will become.

A Word on Risk & Reward

These outdoor adventures will always contain elements or risk and reward. We seek to maximize reward and minimize the risks of every adventure. What I like to remind kids and teachers is that we do not avoid risk, we manage risk. Climate and weather, topography, activity, conditioning, experience all have ways of increasing or decreasing the risk of any adventure. We can limit risks by planning effectively, getting into better condition, forecasting the weather conditions, going out to ground truth a location or route prior. We then can hack the conditions in advance with clothing and gear, and also make decisions such as postponement. During an activity we can hack risks using tools and training to always make the best decision in the moment.

There is risk in leading students on a nine mile hike. We can anticipate needs of hydration by carrying sufficient water. We can prevent blisters by reviewing footwear and sock prior to the start and intervening when the blister has not yet formed. There are other risks to such an adventure but we proceed because we know the experience will develop confidence and pride. We know the view from the top is amazing and can only be reached by trail. Doing the dance of risk and reward is a life skill, not just for outdoor adventures.

High Tech & High Touch

I have largely seen my work as an high touch antidote for the growing excess of high tech intrusion into all areas of life, including education. I can be a little extreme in that way. And yet high tech tools can be invaluable aids to help you to plan for and manage your activity. Planning is not what it used to be. The digital age has brought fingertip access to Apps (Applications) and websites to assist you at all stages of your high touch field adventure. I still prefer adventures devoid of gadgetry where it is just feet walking my curiosity out into the wide world with all of my senses alive, but below are some of my favorite recommended Apps or App categories.

Citizen Science

So this is where tech really has opened up some deep opportunity. For identifying and documenting birds eBird is the favored tool. iNaturalist is another App that aids in documenting and identifying anything in nature. A final website that I highly recommend is Zooniverse which opens up projects all over the world that you and your kids can participate in. They are not always local but they extend from deep space to deep earth. zooniverse.org

Trail & GPS

Getting a good trail app will allow you to track distance, elevation on your adventures and to check levels of difficulty and other trail details before you go. Many out there but I use Motion X GPS to document my adventures. CalTopo is another with handy topographic maps and many layers you can add, such as fire history, to better understand the terrain. AllTrails is quite popular and shares known and established routes for consideration as you are planning.

Weather

Nothing can impact an adventure more than the weather. It is constantly happening and some grade levels (K, 3, 6) have a strong science focus on the weather. Regardless of grade, if you you are heading out with kids you want to plan with the forecast and then adjust as the day nears. Some storms will dissipate as time passes and your adventure nears. Some will strengthen. Some will go to our north or south and “miss” us altogether. Knowing what is coming allows you to be your own outdoor fortune teller. My favorite website is NOAA and their National Weather Service. I can be a bit of a geek when it comes to weather and there are many Apps to choose from as well as what is right on your smart phone. I use Weatherunderground and Dark Sky as my quick go to sources. weather.gov

Air Quality

Due to our wildfire season, air quality has become a prevalent need for all of us to track. Many weather Apps have quick reference to the AQI (Air Quality Index) such as Weather Underground mentioned above. To go deeper and have more accuracy and depth I recommend AirNow. IQAir is another popular site and app. airnow.gov/

Astronomy

So many good sites and Apps that I hesitate to share. I use Star Walk 2. It shares current and upcoming sky phenomena so that you don't miss a meter shower, eclipse, or other moment It also orients with the night sky in real time as you move your phone. MoonGiant focuses just on our largest natural satellite as it journeys through our 12+ lunar cycles each year. Weather Underground also tracks sunrise and sunset times and moon phase information. moongiant.com

A Note about Scheduling & Permission

Learning Landscapes uses a year–round landowner and parental permission model. At the beginning of the year permission is obtained through MOU agreement with each landowner. A year-long walking field trip permission slip is completed and returned from each child's parent, allowing teachers to do highly planned or spontaneous trips with their kids on any day of the school year. No extra steps. Most teachers choose a regularly scheduled day each week. "Walking Wednesdays", "Field Trip Fridays" are two examples of naming vehicles used. Teachers simply alert the office when they are going off campus and when they return.

The Field Trip Plan

There are a lot of tools out there to plan a field trip or field activity. The outline on the following page is not specifically special but it is a tried a true simple framework to guide your planning. You do want a plan. You don't ever have to stick to the plan. If you are looking at mammal tracks and a bear wanders by or a bald eagle flies over head we pivot to the gift of the moment. That flexibility is not only called for but it is demanded by nature. Sure we your want to keep kids on the trail and task for good reasons but be prepared to get carried away by something unexpected.

The most basic framework for your plan is the interrogative. Your outdoor adventure, like any good story should have all of the components of a good plot. Who, what, where, when, why, and how. It doesn't get more basic than that, however remember that each of these elements will have depth. Below is a checklist, followed by a form to provide planning guidance.

Learning Adventure Checklist

- [ ] Select the learning objective
- [ ] Choose your date
- [ ] Identify the time
- [ ] Choose your destination
- [ ] Identify your route
- [ ] Identify the location of given activities
- [ ] Choose the best activities for the season, day & study
- [ ] Identify the resources needed for each activity
- [ ] Contact & coordinate with your partners or mentors

Learning Adventure Plan

Use this handy checklist to plan your own learning adventure!

When

date _____ time _____

Where

_____

route and location

Learning Objectives & Outcomes

01 _____
02 _____
03 _____

Activities

engage _____
explore _____
elaborate _____

Resources

_____

tools and materials needed

_____

Who

list of those from your grade, class or small group who will be a part of the adventure

_____

Support

list of parents or any others who may be joining you

_____

Mentor

the professional science and stewardship mentor or guide who will be a part of your adventure

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Before You Go

Off-Campus Learning Landscapes Sites

Learning Landscapes is on every campus and on many off-campus properties. Your kids come from many different backgrounds and possible land ethics (the way the land is treated). While all land should be treated respectfully, these Learning Landscapes field sites are owned publicly or privately by land partners. The properties have been opened up for school use by permission. This permission has been granted for all of the right reasons, and as long as trust and respect is maintained we expect these places to always be available. Some of these properties have been purchased by the Feather River Land Trust, many have not. Currently, permission is secured through an MOU. Each MOU has a Property Use Guidelines document that details how the property is to be be treated. Please review this with your kids so that the expectations are known and responsibility is shared by all. The kids should be clear that it is a privilege to visit these sites, that they have permission to visit while they are with you as their adult guide during the School day. The landowners are happy to have them on their property and expect the kids to respect it by the way they treat it.

Ground Truthing

Knowing where you are going before you arrive with kids is a critical pre-trip activity. Especially when a place is new or unfamiliar to you, making a pre–visit to familiarize ourself with conditions and the risk/reward details in play gives you a leg up. I call this process, ground truthing. You are learning the truth on the ground before the full investment of kids and the complexity of the adventure. Being on site before the plot thickens, when you can move slowly and thoughtfully is itself a grounding experience. It also will prime your mind with creative insights and refresh the possibilities. Many times when I have ground truthed, I have changed my plan to include something new or removed an activity or changed the location of an activity based on new conditions I discovered. Regardless, ground truthing is a valuable pre-visit step in your planning and preparation.

Setting Expectations

For the new outdoor leader, setting expectations and meeting those expectations is the difference between “let’s go again…or never again. What does success look like? Give the kids a picture of success. Such as, “I want to go outside every Wednesday. We will call it Wild Wednesdays. But we can only go on a Wild Wednesday adventure if it is fun, safe, interesting, and cooperative.” Ask the kids what fun looks like, what safe looks like, etc. Having the kids involved in the design of the field trips will increase buy-in from each and all.

Rules Rubric

Putting the cool in school isn’t just about a teacher letting kids run around on their own terms. If you pull the letters c, o, o, l out of school, you are left with sh. I use this as a strong “shhh-hhhh” acknowledgement that the play is conditional on their commitment to look out for their teacher/mentor too. Free play is wonderful and essential but students must accept the boundaries that come with the adventure. If the parent, teacher, guide who is leading does not enjoy the experience, then the experience is unlikely to be repeated. I remind kids that if they want to get outside a lot, one of their responsibilities is the positive experience of their adult. One way to help grow that responsibility is to create a field trip rubric for the teacher to score the experience but also the kids to score as a class. Rubric is often 1-5. Each step is defined. Giving a score or grade to each aspect that means success helps the kids to better understand what is needed. I like to make the rubric with the kids. Student voice is key. As the coauthors of the rubric they will be more accountable to what they agreed is important. Kids are often harder on themselves than the teacher. This grows personal and collective responsibility.

Some of these success measurements might be:

- We had fun
- We learned something
- We listened & cooperated with our teacher at the site
- We worked together and got along at the site
- We stayed together traveling back and forth to the site

The teacher gives a score and the student give a score. The final score (applied math) will determine if they get to go out the following week, or whenever the next trip is scheduled. I generally do not use rubrics however for a new teacher/leader with an untried group of kids it is a slow, deliberate and methodical way to set boundaries and hold them. Natural consequences are a good way to grow responsibility and possibility.

Risk, Reward, & Manage

I am going to be a little risk and reward repetitive here as it is a super power you will develop over time to meet the mountain moments that come your way. Every outdoor activity comes with risks, rewards and the opportunity to manage both. Considering every outing with this view is one of my essential approaches, as I seek to maximize the rewards, minimize the risks, and adjust to constantly manage the liabilities and assets for best possible outcomes. You are literally designing

(engineering) your best possible field trip. I use the following common symbols:

Rewards

Assets, positive impacts and outcomes

Risks

Liabilities, negative impacts and outcomes

Changes

Adjustments I would make to increase a reward and decrease a risk

Sharing this with your kids can be part of the learning. Let them know what the risks are before you head out. Have them help you to identify risks in the field. When a risk arises, either expected or unexpected, use it as a teachable moment. What can we do? What should we do? Reflecting on something that was dangerous and or difficult helps to reinforce the important learning that arises when things don't go according to plan. This is a life skill and builds resilience. And to be clear, playing with the edge of risk is a reward strategy itself. Risk is not a negative if it is engaged consciously.Equally stoking expectation beforehand with the coming highlights (you can always hold back one or two for surprise) as well as celebrating in reflection with kids afterwards about their highlight(s) and takeaways shares in the treasure plunder of rewards.

The Weather

In these days of access to information you should not be caught off guard by the weather. Weather was already discussed earlier during the planning portion. As an actual field trip adventure day nears, your confidence can grow in the forecast as the weather rolls in from the west. This is a cocktail of conditions. Temperatures, precipitation, humidity, wind all play a part in the experience. Humidity always deepens the experience of temperature. The cold feels colder and the heat feels hotter. I can manage a wet day when the temps are not too low. Get to know how these conditions mix together and make this a part of the learning with the kids. We want them to be Mountain Kids so they need Mountain Kid skills.

Dressed for Success

Everything we do outside has risks and rewards. Where the risks are related to the weather and climate and related air and ground conditions—temperature, humidity, precipitation, wind, wet, muddy, snowy—we can hack the conditions with gear. And there is no gear more fundamental than the clothes we wear and the shoes on our feet. We do not dress our kids and nor should we. I clearly communicate to kids in the time before any activity that what we wear is a key way to prepare. One of the best ways is to simply lead a lesson or lessons on dressing with the kids. This is life learning and a life skill that everyone should learn at some time. One way of approach regarding before doing any adventures is to go through "boot camp". The idea of basic training is that we don't get into the real thing until everyone is ready. Ready means many things but it will include gearing up and dressing for success.

- Dressing in layers
- Layers - thick and thin
- The costs and benefit of different types of materials (wool, cotton, synthetics)
- Waterproof outer layers
- Hats for warmth and for sun
- Albedo and the color of your layers
- Waterproof or water-resistant
- Shoes, socks, and blisters
- Barefoot, Shoes, Boots

You can even delve into the science of it and do experiments based on questions. Humans are warm-blooded endotherms. We make our heat and adjust our "getup" to meet the external conditions of every environment we are in. How would we dress if… are fun scenario explorations and critical thinking exercises that will help prime your kids' minds for success today and tomorrow.

Dressed for Failure

No one intentionally dresses for failure. And failure can seem a strong word here. Your kids didn't wake up this morning thinking of ways to fail at clothes and shoes. So when they come underprepared (not unprepared as they are dressed in something) setting a boundary or clarifying natural consequences helps kids to grow in that regard. I am a fan of the latter.

Natural consequences can allow a child to experience the consequence of their under-prepared dressing. When they are wet and cold they will not be comfortable. I identify before it ever happens that when you feel the discomfort of your choice you may not share that consequence with the rest of us. You dressed yourself and now you get to bear the results on your own choices. It is not done without care, but it is done clearly and directly.

I also support a strong boundary from adult leaders who deny the activity opportunity because the under preparedness of any child can be a liability for all. You are not prepared and so you may not go. I did not deny you of this activity, you denied yourself by the choices you made. We know what prepared looks like and so your permission for this activity has to look a certain way.

The decision to include or exclude the underprepared also can include important activity factors such as length of exposure, intensity of exposure, distance from relief, etc. I don't mind if a student is cold or wet but the duration and depth of that exposure will often determine my own allowance of options.

Bottom line: If you are not rocking the right clothes, then you're not rolling outside with us.

Dressing & Equity

Not all kids have the same resources. How do we hack that reality to support those kids who don't have the socio-economic, home-supported choice to wear the right shoes and clothes? This has been a consistent question and challenge for me and my fellow colleagues. I am always adamant with students that our field trips and activities don't require their parents to go out and buy anything special. We can make it work with what they have. I also celebrate my own penchant for the thrift store. IF you want to get some outdoor gear don't buy retail. Macklemore's Thrift Store hit

made this more possible with teens. Regardless, a few solutions are shared below. Once kids know what dressing for success looks like we can grow capacity with the following hacks:

Donations & Gear Bags

Put the word out that your class needs gear to get outside throughout the year. Be specific or general but definitely identify size the range of your kids. Start with families in your class. Broadcast to the larger community. Approaching local thrift stores can also prove effective. I have gear bags that are full of quality layers. The one drawback is that class-shared items must be washed after use and that adds another step.

Plastic Garbage Bag Rain Jacket

I am not a fan of this option primarily due to the fact that these are often single use wear and leaves a non-recyclable byproduct. I tend to use this as an emergency carry for kids so they are ready in the event but otherwise it is packed away. It can also be used for other survival uses or picking up garbage or recyclables encountered, but here we use it if we must in an emergency.

Plastic Bags on Feet

A lot like the garbage bag for the torso, this can help in a pinch. Using recyclable bags is one better since you can recycle these even if they are worn through, but they do wear through and sometimes quickly. Layering multiple bags can help with longevity but it is an extreme, temporary fix.

Tarp Walks

This favorite hack turns a normal outing into a cooperative activity as all kids grab a perimeter spot on a tarp and hold it over head. This can get tiring and if not done right the rain will stream down the arm, but it can turn a show stopper into a game changer. And it is fun! It also does not work well on narrow trails but adjusting to terrain and trail is a critical thinking exercise.

Class/School Gear Caches

Much like the gear bags described above. The difference is that these articles are new. Grants with this expenditure, specifically identified, are often successful, especially when it is being done for equitable access for all students. Socio-economic status of the student body will make this more or less compelling. Reference to known resources such as Last Child in the Woods have prepared philanthropy and industry toward greater generosity and concern. Direct requests to retailers and brands (REI, Marmot, etc.) especially for “seconds” with manufacturing defects can result in high quality clothing donations. This approach has resulted in class sets of rain gear and rubber boots.

You and Your Gear

As a good friend of mine once said. The best tool you have in the factory or field is the meat between your ears (brain). This electrical organ is an instrument for good or evil. While curiosity may lead to feline decline but it has also created every wonderful human invention in history. The second most valuable tool in every persons’ possession is their body. No matter the body, it provides the brain

to connect with and literally “make sense” of the world. Every touch, smell, feeling, sight, taste makes meaning and so it matters. Mobility takes us places to experience color, wet, heat, smooth, sweet, dank to name just a few of the many experiences available.

There are many resources that can help the brain and body to amplify and extend our experience in the outdoors. Learning Landscapes provides every school with a class set of local field guides, magnifiers and binoculars. These tools generate their own excitement for a child. These tools are like toys but with an exploration and learning purpose. They are fun to use but it is important that time is taken to teach kids how to properly use any tool. Do not take their effective use for granted. Take the time and slow down, introducing and practicing long before you go out into the field. Once they demonstrate proficiency then they can use them in the field “for real”.

Magnification

Magnifiers

Even if you have 20/20 vision, our eyes can only get so close to an object. Magnification allows us to explore detail beyond natural vision and some of that detail is amazing. The beauty of magnification is the affordability, with many hand-held loupes and scopes costing less than $1.

Binoculars

Bring the distant near. This is critical when you cannot access something beyond the time or ability you have. Whether a flying bird, the other side of a canyon, or the time you have available won’t allow you to get close, binoculars close the distance. They are also important for observing species that require distance for their sense of safety. If you get too close they will run or hide, so keep your body distant but close the viewing distance.

Photo by: Maggie Starbard, National Audubon Society

Field Guide

Field guides are informational tools that help us to get into the details of what we encounter or for what we have curiosity. They can share detail to direct our observations and answer fundamental questions. They also often go beyond what we can observe directly, providing background information such as:

Who is it?
Common and local names and Latin/Scientific names

How long do they live?
Life Cycle

Where do they live?
Habitat; Seasonal Location Map

What do they eat?
Diet

Local Guides

If it isn't yet clear, I am a fan of the local. What lives here, where I live, is far more important to me than something that lives in another hemisphere or on another continent. These are my species and I am theirs. What I do can impact them and what they do can impact me. This closeness and intimacy puts us into the same story. It may be difficult to find local field guides. Sometimes they exist within a smaller naturalist community so ask around. This also can be an invitation for a child or a class to make their own local field guide.

Learning Landscapes uses the Laws Field Guide to the Sierra Nevada. It is a vast improvement to western guides with insightful notes included by the author to extend learning and help in identification. And as good as this guide is, it does not include every local species. So when you get close, there is a perfect opportunity to identify how it is similar and how it is different. Comparing and contrasting is a wonderful skill to deepen any activity.

The Pack

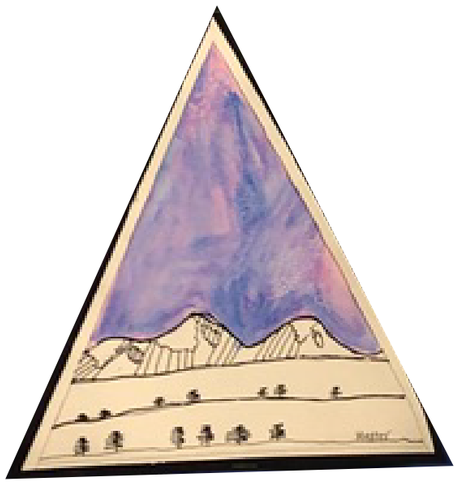
Like clothes, a good pack does not have to be new. Thrift stores often have a surplus of small daypacks, which is all you need. This is something to carry what you want to carry so that your hands remain free. The contents will vary depending on the time of year and the plan in the field but always include:

- Water
- Snack
- Field Guide
- Field Journal
- Pencil
- Binoculars
- Hat - Beanie and/or Baseball (depending on weather conditions)
- Clothing Layers

Remember your pack not only carries what you pack in for your adventure, but also the ability to pack out what you don't use. You may also pack out what others may have left.

Leave No Trace (LNT)

Leave No Trace, means precisely that. I always tell kids that respect is my single rule that rules them all. Spelling out what respect looks like is important. LNT is a long-standing land respect tradition. We literally leave no trace that we were somewhere. Another similar. Maxim is "Take only memories. Leave only footprints." Still another is to "Leave it better than we found it." No matter your final word to the kids, we want to set a clear expectation and instill in our kids a respectful approach to being on and caring for the land.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Heading Out

Adventure & Misadventure

There is a fine line between adventure and misadventure. Sometimes that line is far thicker based on the decisions that you make when an adventure ”goes south”. We are talking about guiding children and so your decision making and choices should always come with their best interest at heart. This is not a place for ego or stubbornness around the idea of being right. Any plan can go sideways. Someone gets sick. A light rain becomes a downpour. I have only been caught in one electrical storm (lightning and thunder) with kids but it was a tough situation to manage 50 kids in that moment. The beauty of Learning Landscapes and “near nature” is that you are never too far away to pivot and return if the conditions become too challenging or unsafe.

Adventure Anchor—Leave a Record of Your Plan

Whether a school field trip or a solo journey, it is important that you have an anchor. An anchor is someone who knows where you are going, when you are leaving and plan to return, and your rough plan. Your anchor may be the school office or a member of your family if this is not at school. If you do not return as planned, your anchor will be a safety net to help support the safe culmination of your adventure. In my experience, this is incredibly rare but you always want to be prepared for the unexpected. I love to give adventures as “homework” and one of your kid’s habits should always be to have an anchor.

Buddy

If this is not a school day field trip and is in fact a kid heading out, it is always best to hike with a buddy. It could be more than one other person, but one buddy guarantees that if something were to happen, there would be support and options. If this is assigned as a homework adventure this is even more important. Identifying which kids share a neighborhood or trusted family connections will help the buddy culture and process. A class buddy can also allow for flexibility in your field trip adventures so that you can pair for activities or mini adventures within a class trip.

Solo

Solos are a favorite personal adventure but they come with increased exposure to risk. If you are coordinating anything with a solo component it is best to keep it near and predictable. Solos within a field trip can be tough to frame and execute but some of the best impacts I have witnessed has been when a child has some solo time. One of my favorite all time memories was with a Quincy Elementary third grader in Boyles Ravine. During a solo activity called, “Sights, Sounds and Smells”, one of the girls, Maria, got distracted by her creekside spot. When I came by to gather the kids she panicked because she hadn’t completed the activity. So I settled her down and we just talked about how her time had been spent. I then walked her through the three sensory reflections. She shared that her strongest sight was the forest, the deepest sound was the creek passing by, and the fullest smell was the air. When I asked her what the air smelled like to her, she paused and simply said, “The air smells like freedom.” The quiet, alone moments can reveal parts of ourselves that a busy mind or activity will exclude. May the Maria’s of the world always have the chance to discover that the air smells like freedom.

Lost & Found

Even here in the Lost Sierra, no one is looking to get lost. Your Learning Landscapes is suited near and known to avoid such moments but still it can happen if you are not careful. Just feeling lost can be a tough moment. While there is learning and growth buried in a sense of lost, we want to help our kids to feel oriented to any place that we take them. Reviewing trails, routes, landmarks can help them to orient themselves to any place. Don’t just follow the leader. Be your own leader by being responsible for your “where”. Make it a goal for the kids to know their Learning Landscape like the back of their hand (very well).

The 100% Rule & Hug a Tree

Like edible plants or poisonous snakes, coming to a fork in a trail is a decision point. Which way do I go? The 100% rule is exactly that. If you are not 100% sure which way is the right way to go, stop and wait. 99% confidence still leaves room for doubt and error and is not sufficient. This is where the hug a tree concept comes in as a survival action. Hugging a tree is simply the choice to be like a tree, root down and stay put. This not only relates to trails but also off-trail experiences. If you aren’t sure, don’t go further or deeper.

Orient to the South

A great skill for your Mountain Kids is to know how to sort out directions. In the northern hemisphere, where we live, during the 9-3:00 day from September through May the sun tracks east

to west across the southern sky. This can always help every child to know general directions. When you are disoriented the best antidote is to move away the “dis” and become oriented. Sorting out cardinal directions (north, south, east, west), creek or river flows, and identifying significant landmarks is a critical thinking exercise that will help any child to invoke their Mountain Kid.

Nature

Being outside will not be a sterile experience removed from nature. They are one and the same. Nature will offer itself to you and your kids, providing a seasonal bounty of flora and fauna wrapped in each place you visit. Much has been and will be said about this but two points of preparation and expectation should be clear when you head out.

Live and Let Live

Anything that is alive out there deserves respect and respectful treatment. The most important part of that respect is to allow the life of any organism to not be cut short but being picked and harvested unless it is specifically part of the thoughtful experience. That might be a foraging and edible activity. Another might be the removal or eradication of a non-native, invasive organism that our local scientists have identified as being harmful. So remember, “Live & let live.”

Take It or Leave It
Nature’s Lending Library

I often have a firm ground rule that we only take memories, nothing else. Everything the kids encounter in nature is a part of nature and belongs where it was found. I do bend this rule. When a child finds a fallen leaf, a rock, a stick that captures their imagination and attention it can be a gift to allow them to maintain that connection and take a bit of nature back to school or even home. This of course would not include animals. Truth is, that most kids will lose interest after a time and will thoughtlessly discard the taken object unless otherwise guided. The way that I manage this dynamic is to establish with the kids that nature is best left, where we find it. However, if they really want to borrow it, they can “check it out”, much as they might do a book from the library. They can “check it out” but then are 100% responsible to return it the next time they visit the Learning Landscape. So if their attention wanes in a day or months later, they will give back what they have taken. Keeping a log of checked out items can formalize the taker, the object taken, the date taken, and the date returned.

Quid Pro Quo

Defined legally as “this for that” this is another option that instills greater awareness and thoughtfulness to taking from nature. This concept I have personally practiced. Simply it is to leave something meaningful if I take something meaningful. It helps kids to look with deeper value at nature and their own values. What is left should feel as meaningful as the desire to have the new item. The trade could also be a song, a story, or an act of service. This practice has roots in many native cultures around the world. This is better practiced as a solitary practice rather than in mass with a school class.

Class Nature Table

This last one combines the lending library concept with a nature discovery table in the classroom. When an item is gathered it ends up on the nature discovery table with a note of where it was found and by whom. This supports the ultimate return but it also allows other students to also enjoy a solo discovery. The table can be very organically managed or be managed thematically as the seasons pass, such as fall leaves or seeds. As with the lending library, ultimately all items are returned to the place from which they initially were taken.

Photo by: Vanessa Vasquez

11

Our Wild Home

Learning Landscapes in the Upper Feather River Watershed

Learning Landscapes has conserved lands with our three general habitat types in each community - Forest, Creek, Meadow. These habitats have varying attributes and species depending on elevation and location in our region. As shared previously in the Handbook, the eastside influence from the Great Basin and the volcanic Cascade relationship from the north creates unique qualities to these habitats depending on where you are.

To move deeper into the species mentioned below, please reference John Muir Laws' Guide to the Sierra Nevada.

Watershed

Another universal exploration for every place and person, everyone lives in a watershed. Whether this is the watershed of your school or your home, it is a similar path forward. This is literally going with the flow. Pretend you are turned into water. Where would you go? Follow that flow. You may have to endure a storm drain and ditches but eventually if you don't infiltrate into the groundwater you will find a creek. What's the name of the creek? If it doesn't have a name, give it a name. This creek's name is also the name of your watershed.

So let's define a watershed. I have used the following definition through my work. A watershed is all of the land that gathers and stores water for a body of water. Simple as that. Remember, the land is the watershed.

Creeks & Rivers

In the west we tend to call our small tributaries, creeks, rather than streams. A tributary is a smaller body of water that flows into and contributes water to a larger body of water. A river is a river. In the Upper Feather River Watershed we have two forks of the Feather River draining the headwaters, the North Fork and its tributaries and the Middle fork and its tributaries.

Flowing through our two higher elevation communities we have the North Fork in Chester and the Middle Fork in Chester. The Middle Fork Feather River is one of the 6 originally designated Wild and Scenic rivers in the United States, and the only one in California to Originally be so designated. It doesn't look too wild or scenic in Portola proper, but heading up into Sierra Valley or down into the Middle Fork Canyon you penetrate a powerful flow that makes its way through Devils Canyon, Bald Rock Canyon, with severe drops such as Curtain Falls and Atom Bomb Falls to name just two.

Our two lower elevation communities in Plumas County have the two main tributaries to the East Branch of the North Fork of the Feather River, that in turn joins the North Fork half way down the Feather River Canyon at Caribou. Spanish Creek passes through Quincy and American Valley, gathering Boyle Creek and Mill Creek, LL tributaries. Indian Creek passes through Indian Valley, gathering Greenville's Wolf Creek and Taylorsville's Taylor Creek, also LL tributaries.

The Three C's

As for the water itself, think of the the three Cs - Cold, Clean, Clear. The main two pollutants in our creeks are turbidity and temperature. Turbidity is a measurement of how much suspended sediment (floating dirt) there is in the water. Some is natural but excessive erosion leads to excessive turbidity. Think Clear & Clean! Temperature is odd to consider when it comes to pollution but when Feather River tributary's cold water warms too significantly, our mountain species that depend on lower temps can't survive. Shade helps to maintain our snowpack fed tributaries. Think Cold!

Riparian

Where there is water, there is life. This is not only true in the water but also along the water's edge in the riparian habitat. Riparian is the non-aquatic area specifically influenced by the presence of water. For example, along a lakeshore or river bank. The key to the riparian plant community is that they require more water than the average forest or meadow species and so they only are found where water abounds. The various willow and alder species, and the Black Cottonwood are the three dominant riparian tree types along with a few other less prolific players.

Meadow & Valley

Our valleys are natural meadows but there are also higher meadows, tucked above our communities but all LL sites tie to the inter-mountain valleys. They are well watered, acting like sponges and filters (see graphic below) and dominated by grasses. They are also powerful meeting places for life as they mash up all three habitats in one as there is often at least a seasonal creek passing through the meadow as well as forested land on the boundaries. These places of boundary

and overlap also form what is known as an ecotone. An ecotone is especially valuable as you will have a natural increase in the species richness and diversity where two habitats meet.

Forest

There are various forest types but due to the inter-mountain valley locations of our Learning Landscapes these forests tend to be either Mixed Conifer Forest (primarily White Fir, Douglas fir, Incense Cedar, aSugar Pine, Ponderosa Pine) or Yellow Pine Forest (Ponderosa Pine and Jeffrey Pine) . Of course the forest is not just trees but we will start there.

Plant Identification

One of the best ways for kids to learn their trees is by using a dichotomous key. It is a "key" in the sense that by following the defining attributes of each identification step, you can unlock the identity of an unknown plant. [Di - chotomous] literally means "two choices". It is a step by step identification key that creates two choices at each step. You continue to follow the key until you have exhausted the choices and can successfully identify. Traditionally a key uses leaves. There are also bark and cone keys. A favorite activity I have done with kids is for each child to author a dichotomous key for their peers or a younger aged group. By so authoring, they will demonstrate mastery or at least competency.

Latin Nomenclature

Nomenclature literally means "name culture". While Latin may be considered a dead language, it is alive and well in the world of science and nature. A weakness in common names is that scientists often named species after themselves. Latin or scientific names are generally not so burdened. Each name actually has wonderful words and meanings embedded. Etymology is the study of word origins. A good example is a Green-leaf Manzanita, or scientifically, Arctostaphylus viscida. In Latin that is translated to "Sticky Bear Grapes". This describes attributes and relationships of the shrub. Fun to dig into the old language and deeper meanings.

Coniferous Trees

Conifer in latin, means "cone bearing". This type of tree is often also referred to as an evergreen, based upon it always bearing green leaves. Needles are a leaf type. The needles do not live forever as evergreen might suggest. Each year more needles form and some needles fall in autumn like all trees (I know you have raked plenty of brown needles at home). The average life of a needle is three years. Below is a listing of our local conifers.

Conifers Found on LL

Common Name	Latin Name	LL Property
Douglas Fir	Pseudotsuga menziseii	W, C, G, Q, P,
White Fir	Abies concolor	W, C, G, Q, P,
Incense Cedar	Calocedrus decurrens	W, C, G, Q, P,
Sugar Pine	Pinus lambertiana	W, C, G, Q, P,
Ponderosa Pine	Pinus ponderosa	W, C, G, Q, P,
Red Fir	Abies magnifica	Various High
Western White Pine	Pinus monticola LNP	Lakes Basin, Bucks
Whitebark Pine	Pinus albicaulis	LNP
Mountain Hemlock	Tsuga mertensiana	LNP, Lakes Basin
Foothill Pine	Pinus sabiniana	Foothills, Canyons
Jeffrey Pine	Pinus jeffreyii	P, C, W
Baker Cypress	Cupressus bakeri	Antelope Lake
Lodgepole Pine	Pinus contorta	P, C, W
Western Juniper	Juniperus occidentals	P

LL Property Legend:

(W) Westwood
(C) Chester
(G) Greenville
(Q) Quincy
(P) Portola
(L) Loyalton

Deciduous Trees

Deciduous, in Latin, means to fall off, which is precisely what the leaves of these trees literally do each fall. They are often called broad-leaved trees. Of course these leaves vary widely in size and shape. There are wonderful names for the shapes of different leaves as well as their margins (outline) and veins.

Deciduous Trees Found on LL

Common Name	Latin Name	LL Property
California Black Oak	Quercus kellogii	G, P, Q
Pacific Dogwood	Cornus natallii	G, Q
Canyon Live Oak	Quercus chrysolepis	Canyon, Foothill
Creek Dogwood	Cornus sericea	G, Q
Black Cottonwood	Populus tricocarpa	W, C, G, Q, P, L
White Alder	Alnus rhombifoia	W, C, G, Q, P, L
Thin-leaf Alder	Alnus tenuifloia	W, C, G, Q, P, L
Quaking Aspen	Populus tremuloides	W,C
Willow (Sp)	Salix (Sp)	W, C, G, Q, P, L
Cascara Buckthorn	Frangula purshiana	Q

Shrubs/Chaparral

These woody plants are a step below the trees. Large areas of the region are dominated by shrubs. More commonly they are called brush. More scientifically these species are known as chaparral. If you have ever tried to cross a brush field (bush whacking) of these species, you will not soon forget. Not an advised field trip activity for a class.

Ceanothus is one of our dominant shrub groups. This genus (think “kin” or generation) makes up the most dominant group of shrubs. Some of the species related to this group are: Mountain Whitethorn, Deer Brush, Tobacco Brush, Buck Brush, Mahala Mat (formerly called Squaw Carpet) Along with our manzanita species they will be the ones you and your kids are most likely to be familiar.

Shrubs Found on LL

Common Name	Latin Name	LL Property
Deer Brush	Ceanothus integerrimus	G, Q
Mountain Whitethorn	Ceanothus cordulatus	Various High
Greenleaf Manzanita	Arctostaphyus patula	G, Q
Whiteleaf Mazanita	Arctostaphylus viscida	G, Q
Tobacco Brush	Ceanothus valutinus	C, G, Q, P
Pinemat Mazanita	Ceanothus prostratus	Various High
Mahala Mat	Ceanothus prostratus	W, C, G, Q, P
California Wild Rose	Rosa California	G, Q
Mountain Silk Tassel	Garrya fremontii	Various High
Huckleberry Oak	Quercus vaccinifolia	Various High
Buck Brush	Ceanothus cutinus	G, Q
Big sagebrush	Artemesia tridentata	L, P, C
Bitterbrush	Purshia tridentata	L, P, C

Forbs/Wildflowers

These non-woody, herbaceous flowering plants are too numerous to be named here. In the forest they are less common due to the conifers overhead and the acidic soil below but a few common species include Prince's Pine and White-veined Shineleaf. Look to the Laws Guide to go further.

Fungus

"The fungus among us" (singular), or, "That mushroom is such a fun guy" (fungi being the plural), are a couple of silly ways these get mentioned. Bottom line, those mushrooms are the fruiting body of the fungus that is in fact under the ground. So when you see a mushroom it is a "tip of the iceberg" idea. One of the largest terrestrial organism in the world is a fungus in Michigan. At 40 acres, this humongous fungus may be A champion but we have many massive underground fungi so don't have fungus envy.

There are many types of mushrooms, with toadstools being the most well known because of their fantastic connection with many children's stories. But where there is decomposition, you will find fungi and mushrooms, and they vary widely in size and shape.

Lichen

Often when kids name something moss it is actually Lichen. Lichen are not technically plants. They are an organism that is a "mix" of fungus and alga. There is much further to go with that description, but that gets you in the door. A popular way kids can remember what a lichen is follows the following: Freddy Fungi took a liking (lichen) to Alice Algae. Silly and yet kids will remember.

There are three general categories of lichen and many species within each. The three types are also very descriptive in their names which helps to define them in the field.

1) Fruiticose - Branching (latin) - This branching group of lichen are some of the most commonly observed. Popular examples are Wolf Lichen, Old Man's Beard and Witches Hair hanging from bark and branches.

2) Foliose - Leaflike (latin) - Think lettuce and you will quickly spot these on branches.

3) Crustose - Crustlike (latin) - Rocks are literally covered with these crusty lichen of various and bright colors. A lime green version has the descriptive name "map lichen".

Moss

Nothing feels like enchantment and evokes fairies more than moss. The legend of moss growing on the north side of a tree for direction divining isn't totally wrong but it has less to do with north as it does the thriving of moss on moist and shady areas. The base of a tree or rock in the Northern hemisphere is just especially ideal. You can in fact find moss anywhere that is moist and cool, including on the south, as long as it is shady. They reproduce by spore, a very small simple seed-like structure. If you get low and close you can see the brown capsules emerging from the moss bed that holds the spores. Moisture is the key to reproducing and thriving.

Ferns

Ferns are another spore-driven group, with conductive tissues like trees for moving water and nutrients. The dark spores sit on the undersides of their elaborate leaves. These leaves begin as rolled up fiddleheads (an edible) and unfurl into fronds. The key is to visit ferns regularly to get to know how they change during their annual cycle. They require a fair measure of moisture and so are often found in the enchanted areas that also commonly include moss and fungus. Together they make for a magical place. Our most common fern is the Brachen Fern. Other Sierra ferns n our area that you might likely encounter include Wood Fern, Sword Fern, and Maiden Hair Fern. Be sure to "look to Laws" for more.

Saprophytes

Translated as "lover of rotten" these memorable organisms lack chlorophyl and live off of dead or decaying organic matter. They are most visibly identified due to their un-green, red appearance. Our most common species are Snowplant and Pinedrops. Look to Laws to go further.

Rushes

Sedges have edges and rushes are round… Yes rushes are round. These are literally older that dinosaurs! The primary species up here is what most call snake grass (look like stiff, vertical snakes) or horsetails (only look like a horse tail briefly in the Spring when in reproductive mode. Our scouring rush also draws its common name from the fact that this silica rich organism is abrasive and was used to scrub the pots of early pioneer residents in the area. It also can remove the yellow paint off of a number 2 pencil pretty quickly. Note and be wary of Mountain kids zealously pulling these living organisms out of the ground to then pull them apart like legos and either drink water inside or blow across the tops to make a whistle. Guide the kids on their impact if you are leading a large group.

Grasses

So to continue from above, Sedges have edges and rushes are round, and grasses have joints from their tip to the ground. There are so many grasses that we tend to leave it just at grass. There are rewards to going further and closer as the blooms of grasses are in fact flowers. There are many non-native species of grass, especially the lawns of our homes and schools. Many others have become common in our valleys, both purposefully and accidentally. Some are considered invasive. It is worthwhile to explore these through the seasons.

Weeds

While some define a weed as a species whose value has not yet been determined, it might be fair to just call them worth-less. They are not worth nothing, but certainly less through a native lens. They are still eaten, they still are pollinated, they also provide stability to soil. The weed or worse label often depends on who the observer is and what values they have to the culture.

Invasives

These species labeled invasive or noxious are named such as they did not evolve in the local landscape with natural balances, such as a predator, to check their competition. Because of that they can often outcompete native species with prolific seed production. These species are carefully watched by local scientists and stewards, from Star Thistle

to Bullfrogs.

The Noxious 8 were named by a friend of mine who works in the world of weeds, and are shown in the following illustration.

To Be or Not to Be … Pulling Weeds

Still as you explore and learn to care for the land with your kids you may have an opportunity to do some good by removing an invasive species. Many of our Learning Landscapes have more than a few of the Noxious 8 and other less desirable non-native invasive plants. Reach out to one of your Learning Landscapes mentors for more information.


Photo by: RW

Soil/Dirt

Soil is a literal and figurative foundation of life in every habitat. Dirt does get a bad wrap in our civilized world although without it we would never have become agrarian and “civilized”. I have a few favorite lessons/activities that helps to drive a deeper love of dirt.

Soil Sandwich

Kids love to dig in the dirt. Before they ever came to school, they likely dug deep and ate hearty. Who hasn’t made and had a few mud pies in their kid time? I like to excavate a hole with kids to teach them what I call a “soil sandwich”. The two natural slices that hold the sandwich are the organic (living) slice and the inorganic (nonliving) slice. One the top we have the organic layers that slowly are decomposing into the topsoil center. These layers, in order of decomposition, from top moving downward are litter, duff, humus and then the horizons (layers of topsoil). On the bottom we have the inorganic layers that are slowly weathering into smaller and smaller particles. As they break down further the bedrock becomes ever smaller sizes until finally in the topsoil middle we have the smallest particles, sand, silt, and clay. Can you dig it?

FBI

The FBI are not what to kids these days what it meant to me when I was a kid but in my nature world the FBI are the Secret Agents of Decomposition. Fungus, Bacteria, Invertebrates. This FBI is sticky in a kids brain and so I have long used it to help kids remember three words that m might otherwise be hard to hold.

Photo by: RW

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Field Journaling

Field or nature journaling is my single favorite learning resource for outdoor learning. All you need is something to write on and something to write with. Field Journaling allows every child to become an explorer, adventurer, and scientist of literal and figurative note. I remind kids often that every great discoverer is remembered not because they remembered, but because they recorded. Because they wrote it down, they didn't lose what they encountered even as their brain forgot the details and accuracy melted into generality. We are going to get deep into Field Journaling here now.

There are several qualities of a great field journaling page. I will describe them below and then diagram them on the page following.

Step 1 is about getting off on the right foot. I tell kids that this is important because if you do this correctly you are actually creating a, historic record that every other scientist and explorer will accept because we know where you were and when you were there.

Step 1a. Date Stamp - This identifies when in history this adventure is taking place

Step 1b. Geo-Location - This identifies exactly where you are

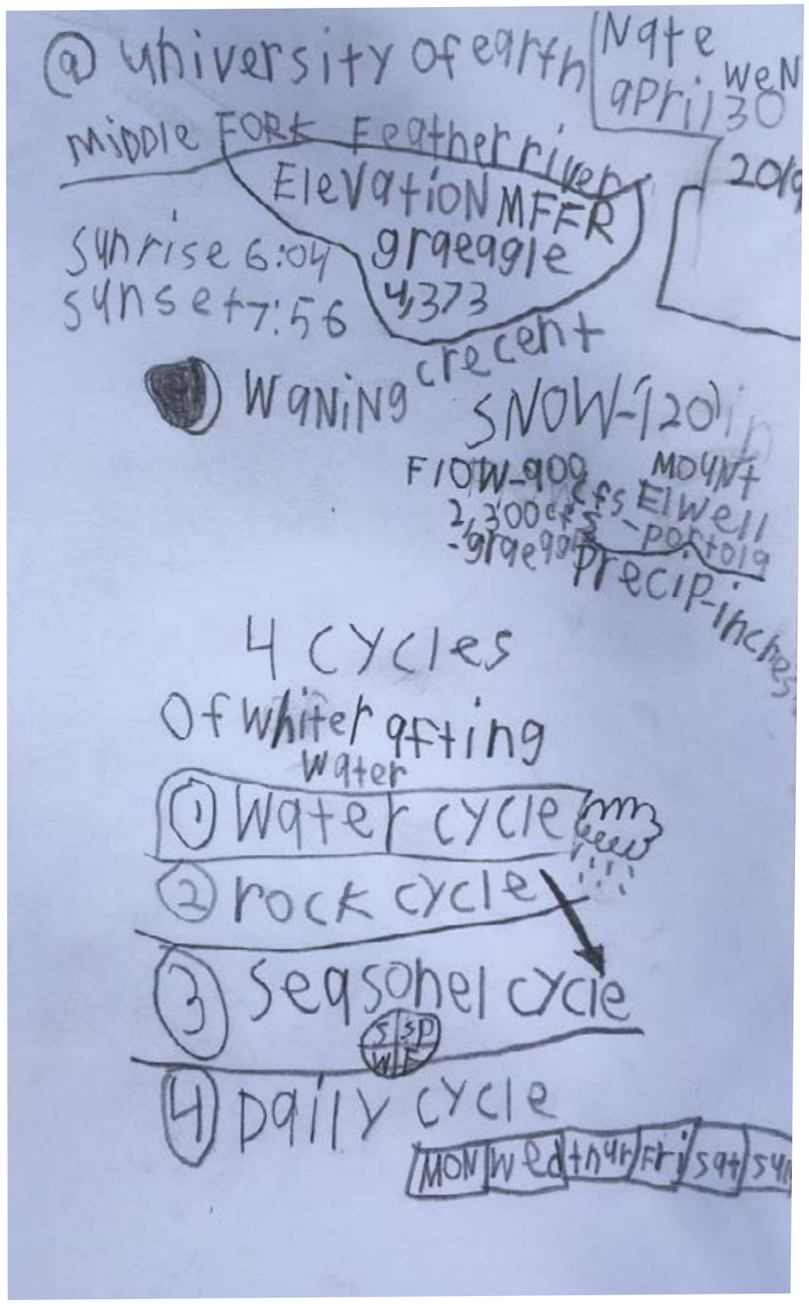
Step 2 is about the content of the page. Developing this skill to fill a page with creativity and curiosity takes time but it is also simple. To fill the page we spill the guts of your what observations using 3 languages - pictures, words, and numbers. Allow me to explain further.

Step 2a. Pictures - Use illustrations, sketches, diagrams and maps to record your observations

Step 2b. Words - Use titles, labels, descriptions, questions, to record your observations

Step 2c. Numbers - Use counting, estimating, measuring to record your observation

The more you field journal the more comfortable you will become but at first it will feel not interesting enough. Let kids know that if they use all of their senses, observe closely, and record accurately, they will always learn something new, but they might also discover something scientifically important.



Field & Nature Journal

One of my mentors in field journaling and a supporter of Learning Landscapes is John Muir “Jack” Laws. Jack, is a friend of the region and has visited regularly to support the field journaling development of our teachers and kids over many years. He is an exceptional educator and has also curated the finest resources available in the field. Some are available in hard copy and some digital. Below is a listing of the best.

Website

johnmuirlaws.com

A lot in here to explore. I will leave that in your capable hands. Below are some specific locations to get to know that have been set up for teachers and other adults of kids

Archive

johnmuirlaws.com/blog-archives/

An almost bottomless archive of video tutorials and blogs to help you with almost anything in the realm of nature journaling.

Teaching Nature Journaling

.johnmuirlaws.com/journaling-curriculum/

This book is available digitally and in hard copy. It has 31 distinct activities, clearly explained and modeled that will open up nature journaling further for you and your kids. Every teacher in the Plumas Unified School District has a hardcopy of the book. A generous, downloadable copy can also be accessed on his website

Nature Journal Connection

johnmuirlaws.com/the-nature-journal-connection/

This 40 lesson webinar series was created and curated for teachers and kids. Jack has created a real treasure trove for you to use.

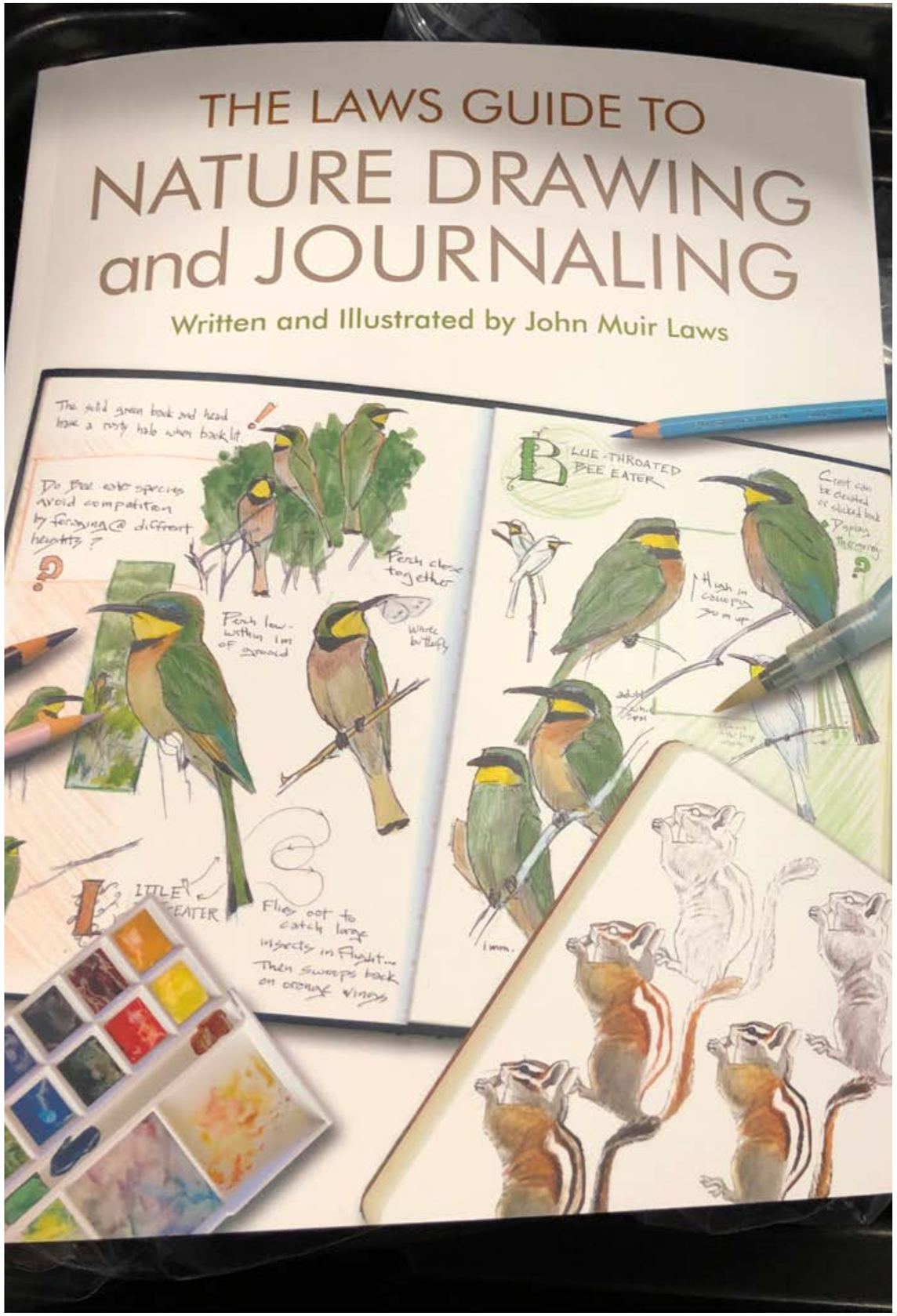


Photo by: RW

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Activities and Ideas for Your Adventure

Play: Structured and Unstructured

I already shared a little about this previously but want to lightly belabor the point for the benefit of our kid-constituents. Free, unstructured play is as important for kids as structured time. For school teachers this can be difficult as it invokes fears of Lord of the Flies-like behaviors. It isn't a baseless fear however the freedom to choose ones own plot and pace is not a part of many children's lives. Some of my most amazing experiences as an educator has come from free play.

I recall one outing with 30 First graders in Boyle's Ravine that had consistent learning structure. At the end of our time I gave them 20 minutes to choose anything as long as it didn't hurt anyone and they could see me. Kids quickly dispersed and found their own unique ways of being in the woods. I watched, amused as 3 boys ganged up on a decomposing stump, speeding up the process with their own energy and enthusiasm while another boy from a very different background sat on another stump nearby in the lotus position, eyes closed, meditating. The joy they each felt from being able to choose their play was only contrasted by the difference in how they chose to spend it.

1-4-9-36-180 Revisited

- 1 Year
- 4 Seasons
- 9 Months and Moon Cycles
- 36 Weeks
- 180 Days

Within each is an opportunity to arrange and orchestrate the year ahead of you. I will take each in turn to assure that we turn over every stone under which are the moments that are remembered and the learning that remains.

1 Year

Each year we take the grand celestial tour around the sun. It is a big hunk and chunk of time but 2022 will never be repeated and so we need to pay attention. This year is also a special year of their own life. They will only 5, 6, 7, 8… once. This makes this year special and historical.

4 Seasons

This is the very beginning and the very end of the school year. This varies around the country but in the Upper Feather River Region we start in the fading swelter of August and finish in the growing swelter of June. To not acknowledge this beginning and end is to miss all of the living that has happened in the break between the grade level years. During that break was the Summer Solstice. Many flowers came to bloom and all flowers went to seed, along with the grasses. We missed some things on summer break but it is an opportunity for your Mountain Kids to import their Outdoor Core into their free time play of Summer, and also export some of that into the new year.

Fall

Fall is the heart of our start of school. It is officially punctuated by the Fall Equinox, near September 20th, when we reach the light and night equilibrium of 12 hours and 12 hours. This is a big change season when life cycles come to an observable end. Final fruits are harvested, leaves turn color and fall, many animals begin to adapt, migrate, or hibernate. This shoulder season is toward the end of things, the waning and slowing. A time for departures. Watching when these ends and shifts occur is important noticing. Documenting when these happen is part of the science of phenology and valuable to the scientific community.

Winter

Technically every place has four seasons, but when we say that in the Upper Feather River, it is winter that punctuates and accentuates the truth of four. I sometimes define it as a "hard", fourth season. Winter is not the inside season for Learning Landscapes. We still seek to venture out weekly to experience the changes and difference. The qualities of our adventures shift but the opportunity awaiting out the door is the same.

Our school communities experience winter a little differently. Quincy and Greenville/ Taylorsville sit close to 3500' in elevation. Portola and Chester both sit above. SnowSchool is a defining resource for us when it comes to the defining characteristic of the Winter Season. Each grade has defined activities to make them unique but also repetition to build over many years, deepening knowledge about the world slowed, but very much alive in the world outside.
winterwildlands.org/snowschool

Spring

Just as fall was the ending and closing season, Spring is the beginning and opening season. Punctuated by the Spring Equinox on March 20, when we again reach the 12 hours of light and 12 hours of night inn the day, we usher in a growing abundance. The hibernation turns to awakening. The migration shifts to returning. That which ended now begins again. Just as the fall noticing was important, Spring noticing of when beginnings and return occurs is =equally valuable. The first

Red-winged Blackbird. The budding and leafing of trees. The blooming of wildflowers. Life begins again and it is a wonderful celebratory time for our Mountain Kids.

9 Months

While a month is not an exact, moon cycle, the origin of both words is shared in Latin. At 29.5 days it is easy to see and measure. The course of the school year lasts for almost 10 lunar cycles although September through May rounds it off closer to 9 complete cycles. Not every grade level studies this celestial body but it is a natural way to measure the passage of time and most indigenous cultures used the moon intimately to know where in the year they were. The many names for various full moons carries great wisdom. With each season residing within a 3- month period it is a way to naturally organize your year.

36 Weeks

A year passes slowly but the weeks move quickly past us. Learning Landscapes has long held the encouragement of kids venturing meaningfully outside at least once a week. 36 adventures during the year seems a reasonable number. That requires that a day each week be identified as THE day for outdoor learning and play. It does not have to the entire day, but identifying a day of the week for outdoor, nature time communicates value to your Mountain Kids. Mountain Kid Mondays. Walking Wednesdays. Field Fridays.

180 Days

What is in a single day? I remind our Mountain Kids that this day, any day, will only happen once… ever. Never to be repeated. Any day that we pay attention to and live fully is historic and it will never happen again. It is our privilege to know this and live and learn into it completely and deeply. If we are wide awake and we venture outside we may discover something that no one has ever seen before. Who wants to miss that?!

Core Field Activities

There are so many different activities available to the teacher afield with children. Just going from one point to another on a hike and seeing what emerges is all that is required. I know one teacher that does the same Learning Landscapes hike weekly but always has a game of camouflage up her sleeve. The kids wait expectantly for the moment of surprise at any point during the adventure and joyfully scatter into the woods when the magic word is said. It can be that simple.

Below I do share just a few of my favorites that I have used dozens if not hundreds of times to further seed the raised bed of possibilities.

Creek to Peak

This is the low road to the high place. We all live in a watershed and you are no different. Your watershed is defined by the nearby creek and the ridges that are its boundary, dividing the land from one creek to another. Follow the path of water or gravity from where you live to the creek. From there you can venture up the winding way of the water. Try to find the source of your creek. Try to reach the high divide where the entire watershed begins. Once you know your own, doing it a different times of the year is powerful. You can also do a Creek to Peak for another nearby creek To contrast and compare.

River to Ridge

Like the Creek to Peak, but this takes the higher boundary path to the top of your watershed by following a ridgeline up as far as you want to go. Besides the watershed divide quality to such a route it affords good views, geological features and sometimes a more clear path.

Sit Spot

You don’t need to go far to enjoy nature. One of the most powerful activities, a sit spot, is simple, repetitive, and nearby. For a school-based sit spot, your Learning Landscape will afford many options. It should be a solo spot without the distraction of others. At home, a sit spot might be right in a child’s yard. A sit spot should be chosen because it feels right and “fits”. It feels welcoming and inviting. The key with a sit spot is to visit it regularly, at least weekly to notice, through your senses, the changes in one place, through the 4 seasons. No two sit spot sessions will be the same.

The differences may be subtle from one week to the next, but through the course of a year the changes will be profound. This is also a place for quiet and reflection.

Returning again and again will ultimately lead a child to become the expert of their place, whether it is on a Learning Landscape or at home. Using a field journal in your sit spot is a way to focus with a little structure. A child can name their sit spot. Over time a child will know their sit spot inside and out. I have two sit spots, one between two pines on my property and facing a beloved nearby peak. My second sit spot is down beside my nearest creek. They are only 200 feet a part but they are worlds away. I also have chosen a few sit spots on different Learning Landscapes properties around the Upper Feather River. Whenever I visit that site, I spend a little extra time there by myself.

Barefoot Walk

To slow down and focus anyone, have them take their shoes off. Even the most common ground and paths for kids isn’t felt until it is walked with vulnerable bare feet. Even the summer hardened feet of Mountain Kids slow down and take more careful steps when they are de-shoed or unsheathed. Try it. It is a kind of magic and it may become your new favorite way of walking from A to B. And explore different times of year or different habitats.

Sense of Place Map

The scope of the map may vary, but a Sense of Place Map is an ongoing project to create a living map of the larger home terrain. It should include the most important places to a child. Starting with their school and their home they can fill in their favorites. A favorite tree. A fort. A favorite swimming hole. Their sit spot. Their best friend’s house. The paths/routes they take from one place to another. You can identify ten and ask them to come up with the other ten. Brainstorm with your class so that there are many ideas in flow. They can map senses (their favorite smell, the best view, etc.) This should be a work of creativity and no two maps would look the same since no two kids nor their sense of place is the same.

They can put their map right in their field journal. Encourage each child to use the 3 languages of field journaling on their map - pictures, words and numbers. A sense of place is a living, changing thing and keeping their map nearby encourages them to add to their map over time.

Outdoor Autobiography

This writing activity isn't so much about being outdoors but it invites the story of their outdoor life. Beginning from a child's earliest memories, what outdoor places are the most significant in their lives? Who has led them outdoors, through their lives? What activities are the most defining when they are outside? Have them walk through the seasons to open their memories up - summer fishing and swimming holes give way to changing trees and leaf piles and then snowy sledding and icy play and then back to wildflower picnicspots. Some places may be far a way but many will be local. This is a wonderful companion to their sense of place map.

Sound Map

This is a quick and oft repeated activity, to capture the sounds of a given place and at a given moment. They begin by placing a X in the middle of the page to represent themself. The top of a page is the direction they are facing. Over the course of the map activity they record the general location and relative distance from their X-spot. They can draw the sound, label the sound by name, describe the sound. This can easily be done in a field journal and becomes a part of the field record of their adventures and experiences.

A variation of this without making a recorded map is to have the kids close their eyes to minimize distraction and as they hear each sound they will point in the direction the sound came from. Another addition to this would include having the kids keep track of how many different sounds they hear during the activity.

Poetry

Nature itself is poetry and is one of the easiest subject to write about. Unfortunately most kids tend to think all petty is the "roses are red.." variety. Free verse, by its very name, lends itself far more to the open space that the the kids occupy outside. Nothing needs to rhyme but it should describe richly the sights, sounds, smells, thoughts and feelings that show up.

One of my favorite poetry activities uses a short descriptive line for different aspects of every natural moment. For example:

1. Weather
2. Water
3. Wildlife
4. Landform
5. I wonder…

This can be more specific or more general but in. No time a child is writing compelling poems of any moment in any place. These are snapshots of a place and so like photographs can be taken again and again.

Haiku, the well-known nature-oriented, Japanese short form of poetry should be a part of every child's written expression. Kids are naturally attracted to their brevity and consistency.

Line 1 - 5 syllables
LIne 2 - 7 syllables
LIne 3 - 5 syllables

It can help some kids to be given the focus for each line as they get the hang of it.

Games

This Handbook is not intended to be a storehouse of activities. There are now so many resources out there. I have long-valued the contributions of Joseph Cornell's "Sharing the Joy Of Nature" and "Sharing Nature with Children." His Flow Learning philosophy looks a lot like the current 5E model of Engage, Explore, Explain, Evaluate, Elaborate. And in this very digital era the proliferation of online resources, one click will bring you to more activities than you will ever need. However, below are 10 tried and true activities that always inspire and never fail.

Pre-brief & Debrief Note

Games are intended to be playful and fun and yet they also can be a source of deep, joyful learning with just a little bit of framing. Starting and ending a session by sharing the purpose and lesson embedded will help a child to take away more than just a rugged, satisfied smile. We call this the pre-brief and the debrief. While the pre-brief is coming from you, be sure to elicit the kid's prior learning. The debrief on the other hand is students sharing and discussing what they experienced, and learning with only light but clear facilitation from you. Over time, the pause prior and the reflection post will establish a culture of thoughtfulness and "aha", even if the frenetic fun in the middle is wild and free. Be clear about the magic hidden in the game and the kids will go with it, go for it, and remember it.

Photo by: RW

Camouflage

This is a little more purposeful game of hide and seek. There are many versions of this Camouflage. In every version the kids hide and use the surrounding environment to help them to survive periods of being hunted. I have adjusted aspects of the game to emphasize a different insight or learning outcome I want the kids to have. I have called this the Hunger Games, the Thirst Games, Hide and Eat, Predator Prey, and of course Camouflage. All emphasize the importance of a good habitat, physical adaptation, and behavior to aid in survival.

One round or three, the hidden prey have to keep an eye on the predator or just stay fully hidden. In every version there is a period during which time the kids hide, followed by time when the predator seeks. As kids survive and others are ”eaten” and sent to the “animal graveyard”, excitement grows. Kids will play this again and again and yet again.

Skunk Game

This one is a little more mellow, focusing on stealth and adaptation to survive. All you need is a squirt bottle (skunk spray) and a blindfold to accentuate the importance of sound and the sense of hearing. The predators are in a circle around a sitting, blindfolded skunk. The only things that will keep the skunk from being eaten is an acute sense of hearing and that spray. Rules: A predator, once chosen, must take 5 slow steps on the way to sneaking up on the skunk. The skunk for its part does not have a bottomless spiral bottle to machine gun its paranoid protection. The skunk has only 3 “shots” during each hunt to target the predator. I have also done pack hunts to spice things up. Setting these clear rules will keep the game on track. And there is legitimate learning about the behavioral adaptation of stealth and the physical adaptation of hearing to aid in survival. Playing this in different habitats and at different times of year help to nuance the insight of the hunt and the challenge of stealth. This is a game that kids will also want to play again and again, and in the different roles. A good game to slow and focus the kids.

Screaming Toes

A fun way to break a group of kids into pairs. Kids are standing in a large circle. When you say “toes” they look down at their toes. When you say “eyes” they look up and choose someone else in the circle to make eye contact. When two eyes meet, the pair scream out loud and step out of the circle to join one another for the rest of the screaming circle and be prepared for the next activity paired.

With a large group and many eyes to choose from, not every toe–eye cycle will result in an eye–lock scream but it’ll happen. Keep it moving and soon everyone will have had a fun scream and be paired up.

Hand Clap Lap/Toe Tap Lap

Giving kids an engaged and fully inclusive challenge as a group is valuable in building the cohesion and identity as a community of peers. There are a lot of team building, cooperative, challenge activities. This one is just all of the kids sitting in a tight circle, no one in front or behind anyone else. Every student extends their righthand, palm up, and their left hand, palm down. Next kids then move their hands outtoward their classmate sitting beside them. Each right hand is now hovering above the left hand of the child to their right, and their left hand is suspended below the right hand of the child on their left. A lot of lefts and rights here but basically we now have a pair of hands. The activity is to see how long it takes to send the clap counterclockwise around the circle, back to the person of origin. Normally that is the teacher. Once a child receives a clap in their left hand, they pass the clap onward with their right hand.

When then the first revolution is complete. You share the time record and compliment the group on full inclusion. The activity can only be successful if everyone participates and does their part. Each child is essential and important. Of course the bait is now set to the question, “Do you think we can do it faster?” Of course they do! And they will want to do better and better, faster and faster. Pausing between revolutions to celebrate the increased speed and to share and to ask for ideas that might speed up the hand clap lap.

The toe tap lap is a less germ transmitting version of the same activity, when that is of concern, and just as fun.

Ro–Sham–Bo Down

This isn’t about the aka “Rock, Paper, Scissors” one to one. This is using the well known activity to do more or learn more. One that focuses on building energy, letting go of losing, and rallying for support is the Ro Sham Bandwagon. In this activity, whenever someone loses, they immediately become the biggest supporter of the winner, cheering their name as the winner seeks another competitor. This continues until there is a final showdown between the last two players, with half of the class cheering on each. Once the final winner is determined the entire class cheers the winner, celebrating collectively.

Eclipse

This activity has been a modified to teach many things. One version is called predator–protector–prey, to playfuly explore the dynamics between three subjects or objects. My favorite version teaches a much under–understood concept, the eclipse. Whether a solar or lunar eclipse, you need three objects. The sun, the moon, and the earth. In solar eclipse version of the game the kids will disperse widely and widely. In the lunar eclipse version of the game the kids will find themselves in an impossible smashed crowd. No what you are getting yourself or the kids involved with before you start.

Solar Eclipse

Each student is the Earth. They will secretly choose one other student to be the sun and another to be the moon. Discuss what a solar eclipse is and how these 3 objects relate to one another. Once the activity begins, the kids will move around to try to place the moon classmate between their earth-self and the sun classmate. If they succeed then they have created an eclipse. What they don’t realize is that this is nearly impossible (especially for a larger group) because every student has the same eclipse objective with two other classmates. It is a lot of running fun and it will sear into their minds the eclipse dynamic.

Lunar Eclipse

Each student is still the earth and they keep their solar and lunar classmates selected. Discuss how a lunar eclipse happens. Now each student will attempt to put themselves between the solar and lunar classmate. This is also an impossible task as everyone heads for the same spot in the middle.

This one can be chaotic and physical. You can minimize this physicality, by setting the rule that no one can touch anyone else. You can also play this like the solar eclipse but each student would have to switch roles and become the moon.

Because you cannot be technically successful in this game by achieving the goal of eclipse, the true purpose of the activity is to better understand the concept and have fun.

Clumps

It is important to have kids find connection with peers whom they don't normally associate. Clumps will help you to do that. In each "clump" students find those that share a common value or preference. This can be on the topic of study or just from their interests. Examples include:

- Birth Month
- Birthdate Day
- Neighborhood
- Favorite Food (you can specify)
- Favorite flavor of Ice Cream
- Favorite Sport
- Favorite Musical Instrument
- Favorite Mammal
- Favorite Tree
- Favorite Bird
- Favorite Mountain
- Favorite Swimming Hole

Habitat Hunt

Everywhere is a habitat.This universal truth for every species in the animal kingdom has 4 basic features that defines that a place is suitable to sustain life. Not every habitat is suitable for every animal but the place you take a child is certainly a habitat for certain species. Which ones. Clearly you can look for an animal or look for signs or an animal past presence. But even in the absence of evidence that an animal is living in a habitat is the question—

Would this be a good habitat for a _____?

Once you identify your animal, go on a Habitat hunt. Where would it get water? Where would it get food? Where would it find shelter? Would it find enough space here? How many of this species could live here? This is inexhaustible as there are so many different birds, mammals, reptiles, amphibians, fish, insects, other invertebrates and each is its own habitat hunt.

Watershed Exploration

Now explore it…Does it have water in it? Is it seasonal or does it run all year long? How wide is it? How deep is it from the channel edge? Use your measuring powers to estimate. If this is a small, seasonal tributary then follow it until you find a tributary that has running water. Once you reach the primary watershed there are two natural directions to follow,up and down.

This is where it gets more adventurous but you want the right kind of adventure. A misadventure is when an adventure goes a little, or a lot wrong. We want to avoid that if possible. One of those wrongs would be private property and trespassing. While more than 65% of the region is public land, the rest is private. Most rural landowners will grant permission for the right reason. Schools have ways of providing an insurance Certificate of Coverage if you want to take an entire class. If this is a homework solo or buddy adventure then parents can help reach out, but know before you go.

Once access and permission are sorted out then the up or down adventure lies before you. We always want to leave the land better than we found it so 1) Bring your pack to carry what you need and take out what you may find that doesn't belong, and 2) Leave No Trace (as mentioned on page 53). Creeks and their inhabitants are especially sensitive to thoughtless feet so be sure the kids are careful and quiet. Here is also where you can employ the slow and sensitive "barefoot walk" (as mentioned on page 75).

Walking all the way up to the source of a creek or all the way down to the confluence where your creek becomes the tributary to a larger creek or river is a big sense of place moment.

Your Geographical or Ecological Address

How well do your ecological or nature address? See how many layers you can put on your home address. What habitat. Mountain Range. Forest Type. Watershed. Aspect. On and on.

Nature Directions

Could you give directions from the school to your home using only natural features? No streets. No streets or corners. Go down the creek. Turn left at the 3–hug Incense Cedar. It's harder that it sounds but rewarding in the deep and new noticing.

You are Your Own Ruler

Measuring is one important way we size up the world around us. One of the best ways to engage kids in these measurements is to learn to use their body to to measure. While a child is growing they will need to repeat this yearly, but it will become natural and habitual and really takes little time.

Earth Distances—Inches & Feet

What is an inch on your hand? Combine fingers for a width or tip of finger to the knuckle segment lengths.

- Finger Gun—Distance between tip of thumb and index finger
- Peace Sign—Distance between spread index and middle spread
- Rock On—Distance between pinky and index
- Surfer—Distance between pinky and thumb
- Karate Chop—Distance between elbow and finger tips tip
- Spread Eagle—Distance from right hand finger tips to left hand finger tips when arms are outstretched

And for going longer and further, let your feet do the walking. Rather than focus on a single step or pace, measure 100 feet and have the kids walk the distance. Using that number, figure out longer distances (1,000 feet) or shorter distances, even down to a single step or pace. A good multiplication a division activity.

- Step - Distance of one step, heel to heel
- Pace - Distance of two steps (every left foot or every right foot)

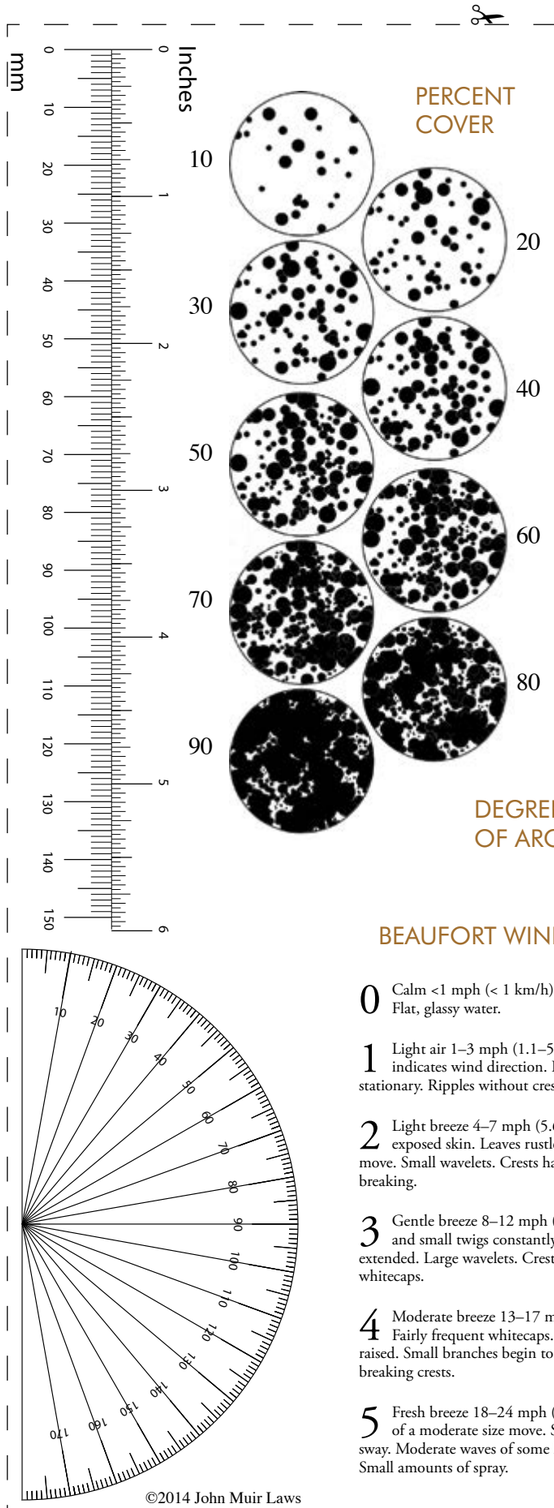
Sky Distance in Degrees

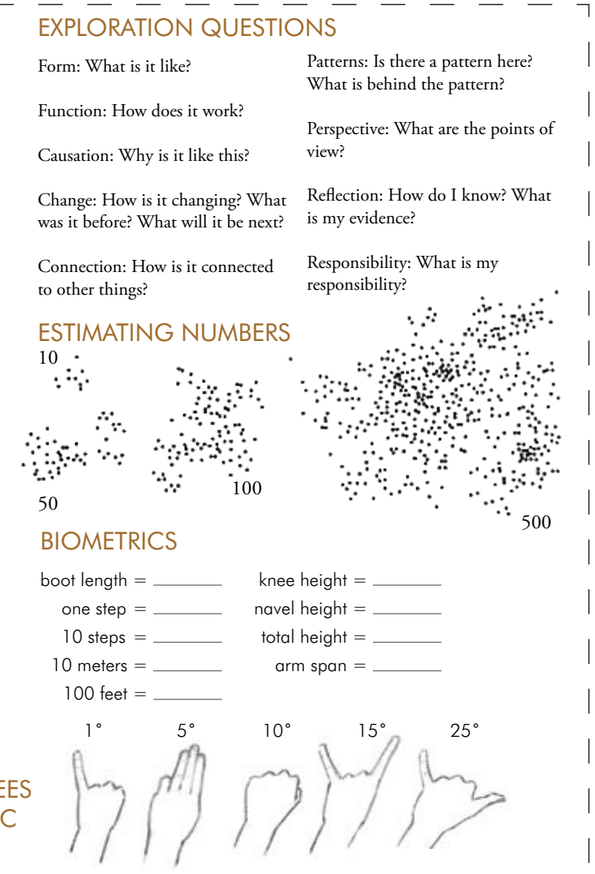
Very much like the inch measurements above but this is used to measure the sky. If you were on the ocean or the great plains, the total degrees from horizon to horizon would equal 180. Directly overhead to a flat horizon would be 90. One of the wonderful qualities to measuring the sky by degrees is how this will work for any age and size. A long-armed and large-handed adult will have close to the same measurement as a short–armed and small–handed child. It comes down to ratios. That's just a little background for you.

Remember these are distances when held at arm's length. Combine hands for greater distances.

- Pinky width = 1 degree
- Index, Middle, Ring Fingers held together = 5 degrees
- Fist = 10 degrees
- Rock On = 15 degrees
- Surfer = 25 degrees

Largely used to describe distances between celestial objects, such as moon, planets and stars. This can also be used to locate any object that is not moving fast. It can also orient distances between objects on the horizon such as mountains. When measuring the horizon remember that the full distance surrounding you, like a compass is 360 degrees. Whe describing this to kids they sometimes orient to degrees by aerial tricks on skateboard, snowboard, bike - "Doing a 180 or a 360"





BEAUFORT WIND SCALE

0 Calm <1 mph (< 1 km/h) Smoke rises vertically. Flat, glassy water.

1 Light air 1–3 mph (1.1–5.5 km/h) Smoke drift indicates wind direction. Leaves and wind vanes are stationary. Ripples without crests.

2 Light breeze 4–7 mph (5.6–11 km/h) Wind felt on exposed skin. Leaves rustle. Wind vanes begin to move. Small wavelets. Crests have glassy appearance, not breaking.

3 Gentle breeze 8–12 mph (12–19 km/h) Leaves and small twigs constantly moving, light flags extended. Large wavelets. Crests begin to break; scattered whitecaps.

4 Moderate breeze 13–17 mph (20–28 km/h) Fairly frequent whitecaps. Dust and loose paper raised. Small branches begin to move. Small waves with breaking crests.

5 Fresh breeze 18–24 mph (29–38 km/h) Branches of a moderate size move. Small trees in leaf begin to sway. Moderate waves of some length. Many whitecaps. Small amounts of spray.

6 Strong breeze 25–30 mph (39–49 km/h) Large branches in motion. Whistling heard in overhead wires. Umbrella use becomes difficult. Empty plastic bins tip over. Long waves begin to form. White foam crests are very frequent. Some airborne spray is present.

7 High wind, moderate gale, near gale 31–38 mph (50–61 km/h) Whole trees in motion. Effort needed to walk against the wind. Sea heaps up. Some foam from breaking waves is blown into streaks along wind direction. Moderate amounts of airborne spray.

8 Gale 39–46 mph (62–74 km/h) Some twigs broken from trees. Cars veer on road. Progress on foot is seriously impeded. Moderately high waves with breaking crests forming spindrift. Well-marked streaks of foam are blown along wind direction. Considerable airborne spray.

9 Strong gale 47–54 mph (75–88 km/h) Some branches break off trees, and some small trees blow over. Construction/temporary signs and barricades blow over. High waves whose crests sometimes roll over. Dense foam is blown along wind direction. Large amounts of airborne spray may begin to reduce visibility.

10 Storm, whole gale 55–63 mph (89–102 km/h) Trees are broken off or uprooted, structural damage likely. Very high waves with overhanging crests. Large patches of foam from wave crests give the sea a white appearance. Considerable tumbling of waves with heavy impact. Large amounts of airborne spray reduce visibility.

Songs

The Banana Slug String Band was my own introduction to the power of song in outdoor education but songs and music have been around for thousands of years to inspire connection to places, subjects, and one another. Some old, traditional songs are just fun and playful, think “Froggy Went a Courtin” or “The Bear went over the Mountain”. A lot of newer songs stay with the play but have a bigger message or even science content to build understanding. Sing for fun or sing for science, but don’t be afraid to sing and your kids won’t be either.

I will not catalog every song as online resources are vast. But we will start off on the right foot by sharing some favorites of kids through my career. Some are campfire songs that have been handed down and altered from year to year, while others are from singer songwriters or other established artists like ‘The Slugs’. Some teach fundamental facts about their subjects and some are just absurd and fun. All are fun.

Those that came from campfire country often are singing and doing songs and are prefaced with, “This is a repeat after me song/chant!” Because of the difficulty of describing this in written word, please use online video resources to look these up to get an idea and then play with them and make up your own way. You may just come up with the best version ever!

This Santa Cruz California Band has a deep canon with too many great songs to offer here so please just look them up and explore the various titles. “Black oak Black oak, Oh Baby Make the Xyleum flow…” “Dirt Made my lunch…” See page 89.

And the number of contemporary artists playing in the nature genre is vast and growing but I want to give a shout out to my friend Willie Tea Taylor, from his children’s collaboration “Color This Album”. His 13 Bears romp as well as Jake the Frog will make and stay on the playlist.

Scat Song

It starts with an S,

It ends with a T,

It comes out of you

and it comes out of me

I know what you’re thinking, but sonnet call it that,

be scientific,

and call it SCAT

Little Green Frog

Mmm-Blah Went the Little Green Frog one Day

Mmm-blah went the little green frog

Mmm-blah went the little green frog one day

The frog went Mmm-Blah-Gnng

But we Know frogs go (clap) tra la la la la (clap) tra la la la la

(clap) tra la la la la

We know frogs go (clap) tra la la la la

They don’t go Mmm-Blah Gnng

Crazy Moose
“Juice Moose”

There was a crazy moose

Who liked to drink a lot off juice//

Singing wayoway-o

Wayo way-o way-o way-o

Waaaayo, Waaayo

Wayo way way way

The moose’s name was FREd

He liked to drink his juice in bed//

Singing…

One day he saw a bear

And spilled his juice right in his hair//

Singing…

He took a bath in a lake

And then he gave a little shake//

Singing…

Da Moose

Da Moose! Da Moose!

Swimming in the water

Eating his supper

Where did he go?

He went to sleep!

Quiet Part (Repeat above)

Loud Part (Repeat above)

Sad Part…

Dead Moose! Dead Moose!

Floating on the water

Choking on his supper

Where did he go?

He DE..COM..POSE!

Yes I am fully aware that there are no moose in the Sierra Nevada but these are too good not to sing!

Wild Thing

Wild Thang

You make the forest sing

You make everything…groovy

Wild Thang

(name of a wildlife species)… I think I love you

But I want to know for sure!

(Describe what the wildlife species eats)

I guess that makes you a _____ (the missing answer)

This is built on the classic rock song but tied to any natural habitat, and a bit of a “fill in the blank” quiz built in. The missing answers are carnivore, herbivore, omnivore, scavenger.

Banana Slug String Band

“Sun, soil, water, and air

Everything you eat and everything you wear!”


Jake
2018


Matthew
2018

14

Learning Landscapes Nutshells

This is the quick and clean of Learning Landscapes facets and functions, referenced throughout the handbook.

Learning Landscapes Background

Learning Landscapes was designed and developed as a new model for K-12 environmental literacy programming. Conceived in 2002 by Rob Wade, Outdoor Education Coordinator of the Plumas County Office of Education and Paul Hardy, Executive Director of the Feather River Land Trust (FRLT), Learning Landscapes was intended to be a new EE model that, like land conservation, would endure in perpetuity. The core concept behind Learning Landscapes is to conserve land within a 10-minute walk of every public school in the Upper Feather River Watershed region and support teachers to autonomously use these field sites as part of their regular instruction. Identified outcomes included academic, mental and physical health, and stewardship.

Learning Landscapes Design Principles

- Proximity
- Near nature. Easy to reach—just a 10 minute walk.
- No budget. No bus. Just a group of kids called us.
- Frequency
- We have a place. It is a good place. It is a safe place.
- It is a place we have permission to visit.
- Autonomy
- I can go there by myself. I know how to lead a field trip.
- I know what to do when I arrive. I am free.
- Perpetuity
- This is here today. It will be here next year.
- It will be here for my kids. It will be here forever.

Outdoor Classrooms—On Campus

Nearer Nature - the nearest nature you have access to is the campus itself. Every day. Any day.

In 2002 when I first started working with teachers to better understand their needs, desires and concerns, we identified an optimal distance for an off-campus site. That distance as we often measure in rural areas is not measured in yards or miles, but time. The magic distance was and is 10 minutes. While some teachers will brave a further distance to walk with their students, time, safety and other important considerations resulted in this ten minute proximity framework. Over time it has held up and experienced as the universal threshold of “near nature”adventure.

Partnership Model

The core foundation of Learning Landscapes is based upon the relationship between FRLT (land), local K-12 schools (learning), and local private and public properties (landowners). Further partnerships to support science inquiry and environmental stewardship support for teachers and kids have been developed to provide every teacher with professional expertise and support when and how they need it.

Land Trust

Feather River Land Trust was only two years old and without full time staffing when Learning Landscapes first began to emerge. As the land conservation organization in the Upper Feather River Watershed, they were formally suited to help identify and conserve access to lands near schools. Their mission, Protecting the places that make the Feather River Country special, was extended to the young. A commitment was made and a program was born.

School

Top down and bottom up was the approach to bring this into each school district. Plumas Unified School District was the first LEA to become involved. This was a concurrent process from leadership support and grassroots cultivation. Superintendent interest and support led to board agenda item and a 2004 PUSD board resolution to support Learning Landscapes. At the same time staff meetings with all teachers were conducted to interview, survey, and identify the needs, and obstacles of a proximity (near nature) based program. Teachers, knowing there was board approval for administrative support, and that they were driving the design and decision making of the program felt more trust that this was going to be different. The commitment to only take the steps forward that could be held long term further built trust. As these steps continued, slow in coming but long to endure trust grew and grew.

Landowner

As teachers identified places near their school sites that were of value to them, FRLT began the process of working with those landowners to establish and conserve access.
Initially fee title purchase and easement acquisition were the lead tools but it quickly became obvious that a lighter and initially less permanent tool was needed. FRLT brought forward a Memorandum of Understanding (MOU) as the true starting point for most landowners. Signed by the landowner, Executive Director of FRLT, and the Superintendent of the local school district, it also established Property Use Guidelines that were developed with each landowner, and an Insurance Certificate of Coverage issued to each landowner by the school district's insurance provider.


Photo by: Vanessa Vasquez

Scientists, Stewards & More

Later but not least in this partnership are the scientists and stewards who support the field activities of each class at each school. This relationship is still developing and deepening but is proving to be an important annual support for the kids and teachers. More detail can be found below but the primary message to every teacher and every child is that YOU are not alone. In your community are people who value nature and value kids.

The core, weekly participation in Learning Landscapes does not require significant assistance, however in the course of science inquiry and environmental stewardship you may want the support of local scientists and stewards to assist with planning, understanding, instructing around various topics, issues and phenomena. It is here that is is critical to have fostered good communication and relationships with individual scientists as well as science/stewardship agencies and non-profit organizations who employ local "ologists". The Learning Landscapes program in the Upper Feather River region has curated relationships with local agencies and individuals to pair up schools and agencies and in most cases, each teach with a scientist. Employment can change regularly and so any list will need to be updated but in 2021 below is a short list of those organizations and contacts who are actively supportive of our local educators.


Photo by:RW

Landowner/Property List

Community	Property Name	Landowner Name	Method
Westwood	Gateway	Feather River Land Trust	Acquisition
Westwood	Walker Woods	Walker Family (Beatty & Associates	Agreement
Chester	Collins Pine Trail	Collins Pine Company	MOU
Chester	Chester Meadows	Pacific Gas & Electric Company	Agreement
Chester	Olsen Barn	Feather River Land Trust	Acquisition
Greenville	Wolf Creek 1	Farris Family	MOU
Greenville	Wolf Creek 2	Papenhausen	MOU
Greenville	Cemetery Forest	Indian Valley CSD	MOU
Quincy	Boyle Ravine	American Valley CSD	MOU
Quincy	Leonhardt Ranch 1	Rick Leonhardt	Easement
Quincy	Leonhardt Ranch 2	Feather River Land Trust	Acquisition
Quincy	Q Trail	Plumas Unified School District	Land Transfer
Quincy	Mill Creek Lower	Plumas Unified School District	MOU
Quincy	Mill Creek Upper	Maciel	MOU
Portola	Kids Creek	Plumas National Forest	USFS Agreement
Portola	Tierra De Los Venados	Plumas Unified School District	MOU
Portola	Wildcat Creek	City of Portola	MOU
Loyalton	Smithneck Creek Meadow	Grandi Family	Easement

Photo by: Roger Walden

Partnership List

Name	Resource
Feather River Land Trust, Stewardship	Private Land Science & Stewardship, GIS
Sierra Buttes Trail Stewardship	Trail Stewardship
Plumas Audubon	Ornithological Science / Stewardship
Plumas Corporation	Watershed Science
Feather River Trout Unlimitedl	Fisheries & Aquatic Science/Stewardship
Plumas National Forest	Public Land Science & Stewardship
Lassen National Forest/Almanor	Public Land Science & Stewardship
Collins Pine Company	Forestry, Wildlife, Land Management
Beatty & Associates	Forestry, Land Management
Sierra Pacific Industries	Forestry, Land Management
Sierra Institute for Community and Environment	P-Crew, Indian Valley & Almanor Basin
California Department of Fish & Wildlife	Wildlife & Fisheries
University of California Cooperative Extension	Forestry, Fire, Land Management
Feather River College Outdoor Rec. Management	Adventure & Recreation Activity
Feather River College Environmental Studies	Environmental Sciences
Plumas/Sierra Fire Safe Council	Fire
Sierra Musica	Nature-Related Music
Plumas Arts	Nature-Related Arts
Point Blue Conservation Science	STRAW, Bird and General Conservation Science
Maidu Summit Consortium	Various Member Orgs of Mountain Maidu
Plumas Eureka State Park	History & Ecology, Museum, School Support
Grizzly Creek Ranch/Sierra Nevada Journeys	Residential EE & Field Science Supports
Sierra Buttes Trail Stewardship	LL Trail Tuesdays, Trail Crew
Lost Sierra	Food Security, Farm Visits, Ag Education
UC Cooperative Extension/4-H	4-H, Garden and Ag Education

Photo by: RW

Photo by: RW

15 Appendix

children & nature NETWORK

GREEN SCHOOLYARDS CAN INCREASE PHYSICAL ACTIVITY

THE ISSUE

Less than 3 in 10 high school students get 60 minutes of physical activity every day.[1]

REGULAR PHYSICAL ACTIVITY ENHANCES WELL-BEING & ATTENTIVENESS IN THE CLASSROOM.

Green schoolyards can promote physical activity by offering a variety of active play options that engage children of varying fitness levels, ages and genders.

MORE OPTIONS, MORE ACTIVITY

85% OF EDUCATORS AND PARENTS said green schoolyards support a wider range of play activities than other types of schoolyards.[2]

PROMOTE running jumping climbing lifting[2]

trees logs shrubs rocks

Variety in landscaping increases variety in active play.[2]

MEETING DIVERSE & CHANGING NEEDS

GREEN SCHOOLYARDS COMPLEMENT CONVENTONAL PLAYGROUNDS WITH OPPORTUNITIES FOR LIGHT & MODERATE PHYSICAL ACTIVITY that are more appealing to some children.[3,4]

GREEN SCHOOLYARDS CAN CONTRIBUTE TO GIRLS' PHYSICAL FITNESS

Physical activity decreases as children grow, especially for girls. Green schoolyards sustain activity as children age and preferences change.[5,6,7]

SUPPORTING RESEARCH

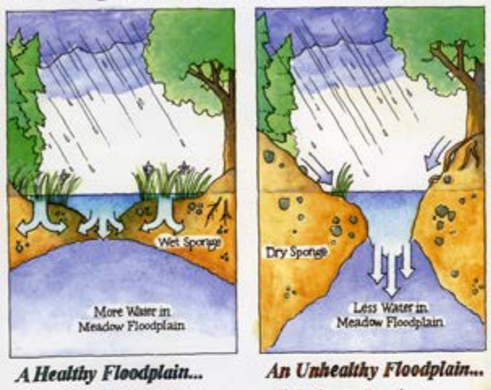
[1]www.cdc.gov/physicalactivity/data/facts.htm [2]Dyment & Bell (2008). Grounds for movement: Green school grounds as sites for promoting physical activity. *Health Educ Res*, 23(6), 952-962. [3]Barton et al. (2015). The effect of playground- and nature-based playtime interventions on physical activity and self-esteem in UK school children. *In J Environ Health Res*, 25(2), 196-206. [4]Dyment et al. (2009). The relationship between school ground design and intensity of physical activity. *Child Geogr*, 7(3), 261-276. [5]Brink et al. (2010). Influence of schoolyard renovations on children's physical activity: The Learning Landscapes Program. *Am J Public Health*, 100(9), 1672-1678. [6]Mårtensson et al. (2014). The role of greenery for physical activity play at school grounds. *Urban For Urban Gree*, 13(1), 103-113. [7]Pagels et al. (2014). A repeated measurement study investigating the impact of school outdoor environment upon physical activity across ages and seasons in Swedish second, fifth and eighth graders. *BMC Public Health*, 14(1), 803.

ADDITIONAL RESEARCH USED FOR THIS INFOGRAPHIC AVAILABLE AT childrenandnature.org/gsybibliographies

C&NN recognizes that not all studies support causal statements.

UPPER FEATHER RIVER WATERSHED

Floodplains: Water In The Bank



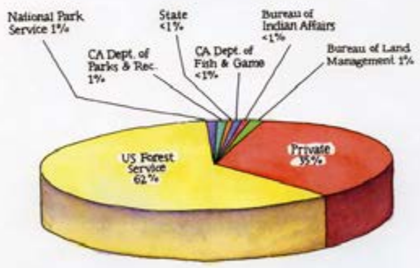
A Healthy Floodplain...

- Is well-vegetated and connected to the stream channel during high flows.
- Slows down floods.
- Allows spring floods to spread out, soaking meadow soils that act as a giant "sponge."
- Replenishes groundwater. Slowly releases water during dry months for fish, wildlife, livestock and crops.

An Unhealthy Floodplain...

- Has lost its connection to the stream channel.
- Confines floods to a deep gully, allowing water to race downstream and erode streambanks.
- Restricts water's ability to spread out and soak the "giant sponge."
- Lowers groundwater levels. Streams may stop flowing during crucial summer months.

Land Ownership in the Upper Feather River Watershed*



Source: Feather River Land Trust and Greenindo Network, 2004
*Upper Feather River Watershed is located in Plumas, Lassen, Butte and Sierra Counties

PLUMAS to the PACIFIC
Journey of the Feather River

Here's Where You Come In...

A clean and healthy environment promotes values that add to our quality of life. Here's how you can be a watershed steward...

In Your Backyard:
- Limit fertilizer and pesticides used around your home
- Plant native plants and grasses

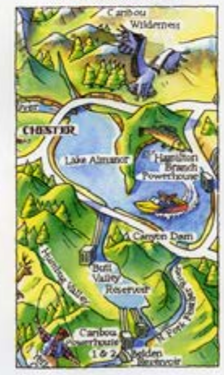
In Your Community:
- Keep leaves, pet wastes, oil, brake fluid, and antifreeze out of street gutters and storm drains which empty into nearby creeks without passing through a water treatment facility
- Properly dispose of used oil, paints, and household chemicals at drop-off centers or events
- Use a car wash business or wash car on a permeable surface such as lawn or gravel

In Your Environment:
- Stay on designated roads and trails to control soil erosion
- Join in the clean-up of local creeks and rivers
- Become a volunteer monitor and help collect stream measurements

And Don't Forget...

Explore and enjoy our watershed and share it with your friends and family!

Upper Feather River *Watershed*



FEATHER RIVER COORDINATED RESOURCE MANAGEMENT GROUP
PLUMAS CORPORATION
Funding provided by: Plumas Watershed Forum
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Rob Wade

Rob Wade is a place–based educator working in the Upper Feather River region of California's northern Sierra Nevada. As the Outdoor Education and Science Coordinator for the Plumas County Office of Education (PCOE) since 1995, he has designed, developed, and implemented successful and sustainable K-12 programs in the region, built upon strategic partnership with over 32 agencies and organizations. He is a founding board member of the Feather River Land Trust, and in 2004 he worked with FRLT board and staff to vision, create and launch Learning Landscapes, an acknowledged successful local and national model.

Rob has a B.S. from the University of California–Berkeley in Conservation & Resource Studies, and an M.A. from the School of Education at the University of San Francisco. In addition to his regional work in California, Rob is a national facilitator and consultant supporting K-12 program development. He is the 2017 recipient of the Excellence in Environmental Education Award, presented by the California Environmental Education Foundation and a 2020 recipient of the Environmental Law Institute's National Wetland Award.

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