

GUIDELINE FOR INCORPORATING HEALTH INTO OUTDOOR EDUCATION



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A product of the Oregon Health and Outdoors Initiative

Audiences

Oregon's school administrators, principals, and district staff
Outdoor educators for residential and day programs

Authors



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I. Introduction

The health & outdoors connection

Oregon is known for its natural resources, beautiful outdoor spaces, and its commitment to sustainability. For decades, stakeholders from state and local government, education, conservation, philanthropy, and other sectors have worked to preserve these resources and places by creating outdoor education opportunities designed to develop future generations of leaders. These opportunities include outdoor schools as well as offerings of programs and settings outside the outdoor school context.

However, the potential impact of engaging students in outdoor education extends beyond environmental stewardship. When we consider the interrelatedness of the natural environment, individual health, and community health, tremendous opportunities in connecting outdoor education and human health emerge. Research continues to show that getting people into the outdoors and bringing the outdoors closer to people increases access to opportunities for physical activity, reduces stress, fosters community and social relationships, and improves air quality. By intentionally integrating a health focus into curricula and program design, outdoor education providers can bring these benefits to participants while they are engaged in on-site activities, and also help them develop the habits, perspectives, and skills that will allow them to make the connection between health and the outdoors in their independent lives.

The guidelines that follow are intended to shape thinking about opportunities to integrate health in outdoor education, but they do not focus on specific standards. As such, they are also useful to school administrators who are considering how much time to allocate to outdoor education; capital improvements to bring greenspace into schools; the capacities and training their educators need to provide public health; and other decisions related to public health and outdoor education.

Excerpt from the [Health and Outdoors Action Framework](#)

The evidence linking time outdoors with better health is substantial,¹ and research exploring this link continues to grow ([Children and Nature Network site](#)). Existing research demonstrates significant correlations between time outdoors and different aspects of health. For example, a 90-minute walk in green spaces [outside can reduce brooding](#)—that feeling of not being able to shake a negative thought.² In [one study](#), having 10 more trees in a city block increased health perceptions in ways similar to an increase in annual personal income of \$10,000 or being 7 years younger.³ High densities of [urban tree canopy can reduce exposure to airborne pollutants](#), reducing risks of respiratory and cardiac disease.⁴ Spending time outdoors is also connected with more physical activity,⁵ and if kids can get outside for 20 minutes a day in a safe, green place, they demonstrate better attention performance in the classroom.⁶ A neighborhood’s perceived “greenness” and street trees have been positively associated with local social interaction.⁷

Findings like these are growing in number. They show correlations between time outdoors and better health, but important questions remain: What types of nature are linked to better health outcomes? How do different people react to the outdoors? Is there an optimal dose of the outdoors in terms of frequency, duration, and type?⁸ Also, time outdoors is not always positive for mental or physical health: Framework advisors told stories about how being outdoors can increase stress for people who have felt unwelcomed or experienced trauma in the outdoors, or who are exposed to air, water, or soil pollutants. Greenspaces will not be used by people who do not view them as safe.⁹ Other advisors reminded us that for people with respiratory conditions, going outside can exacerbate symptoms on days with high pollen counts or heavy air pollution. How can we help remove these barriers to make sure everyone receives the full benefits of outdoor activity?

Web Links for Compilations of Evidence

[Children and Nature Network](#); [Green Cities Good Health](#); [EPA’s Eco-Health Browser](#); [The Intertwine Alliance](#)

¹ Hartig, T., Richard, M., De Vries, S., and Frumkin, H., (2014). Nature and Health. *Annual Review of Public Health*. Vol 35. pp 207-228.

² Bratman, G.N., Hamilton, J.P., Hahn, K.S., Daily, G.C. and Gross, J.J. (2015). Nature experience reduces rumination and subgenual prefrontal cortex activation. *Proceedings of the National Academies of Sciences*. Vol 112 no 28 pp. 8567-8572.

³ Karden, O., Gozdyra, P., Misic, B., Moola, F., Palmer, L., Paus, T., and Berman, M. (2014). Neighborhood greenspace and health in a large urban center. *Scientific Reports*, 5.

⁴ Rao, M., George, L., Rosenstiel, T., Shandas, V., and Dinno, A. (2014). Assessing the relationship among urban trees, nitrogen dioxide, and respiratory health. *Environmental Pollution*. Vol 194. pp. 96-104.

⁵ Hartig et al. (2014). *See note 2*.

⁶ Faber Taylor, A. and Kuo, F.E. (2009). Children with attention deficits concentrate better after walk in the park. *Journal of Attention Disorders*. Vol 12. pp. 402-409.

⁷ Hartig et al. (2014). *See note 1*.

⁸ Kuo, M. (2015). How might contact with nature promote human health? Promising mechanisms and a possible central pathway. *Frontiers in Psychology*. Vol 6. Article 1093. Pp 1-8.

⁹ Kuo, F.E. (2010). Parks and Other Green Environments: Essential Components of a Healthy Human Habitat. *National Parks and Recreation Association: Research Series*.

At the same time that we are developing our understanding of the connection between health and the outdoors, we are seeing inequities in health widening along racial and income lines. The groups experiencing inequities in access to the outdoors are often also experiencing significant health inequities. Outdoor education programs that use a culturally-responsive lens in their outdoor programming, their health considerations, and their connection of these two concepts can help ensure that all participants have access to the health benefits of being outdoors, and that they're able to pass these benefits on to their diverse communities as tomorrow's health and conservation leaders.

Why this guideline was developed

This Health and Outdoor Education Guideline is designed to assist outdoor education providers in incorporating human health considerations into their programming. It is intended for use in any outdoor education program currently or potentially engaging K-12 populations facing health inequities and lack of access to outdoor recreation. The guideline is applicable to both overnight/residential outdoor education programs and day or part-day programs.

The guideline includes:

- Suggestions for adjustments and additions to outdoor education curricula, delivery, and engagement strategies to improve health outcomes and reduce health disparities.
- Strategies for tracking the health outcomes of outdoor education programs and communicating those outcomes to families, communities, potential funders, policy makers, businesses, and others.

What we mean by "health"

In this guideline, "health" refers to a state of complete physical, mental, and social wellbeing and not merely the absence of disease or infirmity. This guideline considers the health of individual outdoor education participants as well as the health of the communities where they live, learn, and play. Its recommendations for integrating health into outdoor education align with the health goals set forth by [The Oregon Action Framework for Health & Outdoors](#): increased physical activity, decreased stress, improved social cohesion, and cleaner air.

What we mean by "equity"

Equity is the guarantee of fair treatment, access, opportunity, and advancement for all students, faculty, and staff, while at the same time striving to identify and eliminate barriers that have prevented the full participation of some groups. The guiding principle of equity acknowledges that there are underserved and underrepresented populations and that fairness regarding these unbalanced conditions is needed to assist equality in the provision of effective opportunities to all groups ([Emory University Office of Equity and Inclusion](#)).

Communities of color, low-income communities, and people with disabilities experience inequities in both health and access to outdoor recreation. Due to structural and institutional barriers, some people in these communities feel that the outdoors is “not for them.” For others, past individual or cultural traumas have created barriers to having positive experiences outdoors. Outdoor education programs that use an equity lens and integrate health can help alleviate inequities in these areas by offering culturally responsive programming that recognizes the broader context in which students engage with the outdoors and meaningfully engages and supports them in becoming leaders in outdoor recreation, health, and their communities.

What we mean by “outdoors”

The clean, safe, and green places that let individuals, families, and communities be in the open air.



II. Guidelines for integrating health into outdoor education

The suggestions for integrating health into outdoor education in Table 1 are mapped onto the “Best Practices for Environmental Literacy Instruction” from [Oregon’s Environmental Literacy Plan](#) (2013). For each best practice, suggestions of how to incorporate health into programs and practices are provided.

These suggestions focus mainly on outdoor education curricula, and this list is not exhaustive. Additionally, better health and equity in outdoor education programs will not be fully achieved simply by changing curricula. Organizational culture, policy, staff development, and other elements of outdoor education programs must be addressed as well (For resources on these topics, see the end of this guideline).



Table 1. Opportunities for improving the health impacts of outdoor education

Best practices for environmental literacy instruction, from Oregon’s Environmental Literacy Plan (2013)	Opportunities to incorporate and impact health	Ideas & examples
<p>Focus is on the environment and sustainability: The ultimate goal is environmental literacy and fostering participatory citizenship.</p> <p>The whole school, including its infrastructure (e.g., buildings and grounds, energy, water and material resource management, food systems, transportation) is integral to the development of environmental literacy.</p> <p>Practice is applied to the whole school/district culture.</p>	<p>Connect conservation and sustainability topics to human health.</p> <p>Program content: Teaching the connection between climate change and human health, or human health and fish, wildlife, and the natural environment.</p> <p>Program infrastructure: Sourcing food from local, sustainable food systems, and practicing recycling.</p>	<p>Example: Eco-literacy guidelines to integrate emotional learning and ecological issues</p> <p>Example: Oak Woodland Learning curricula</p>
<p>Instruction and learning take place in a variety of settings, making appropriate use of the classroom, school, outdoors, community, and state as appropriate.</p>	<p>Include connection to place and land as a curriculum component, including the connection between health and how diverse groups (e.g. racial, ethnic, class, disability, etc.) live, work, and play in the outdoors.</p> <p>Serve and create opportunities for students to prepare healthy meals.</p> <p>Include sustainable food systems learning in cooking activities and meals.</p>	<p>Example: Outdoor mindfulness exercises</p>

	Teach the restorative benefits of nature by including outdoor daily meditation and mindfulness exercises in programming.	
Learning is interdisciplinary – integrated across science, math, reading, writing, social studies, and art, and incorporates initiatives such as STEM and career pathways.	Include in outdoor education curricula the scientific connection between health and the outdoors.	<p>Example: The neuroscience of awe, happiness and stress relief</p> <p>Example: Physical activity’s impact on the human body</p> <p>Example: How trees clean the air</p>
Curriculum/activities are tied directly to educational standards and diploma requirements – especially the essential skills.	<p>Create opportunities for students to apply reading, writing, mathematics, and other Essential Skills to health and outdoors topics.</p> <p>Wherever possible, integrate physical activity into programming.</p>	Example: Align programming with Next Generation Science Standards and state-specific standards for science and health.
<p>Instruction supports evidence-based exploration and investigation:</p> <ul style="list-style-type: none"> • Emphasis is on the inquiry process; • Learning is student driven; • Uses the natural world and home community to identify, address, and solve problems; • Encourages hands-on interactions with the natural world. 	Apply systems thinking principles, so students connect individual and societal choices that impact the environment with individual and community health.	Example: Invite diverse community experts and professionals from relevant fields to visit with students, provide feedback on projects, provide a connection to a potential internship/career pathway opportunity, etc.
Partnerships with local agencies, non-profit organizations, businesses, resource	Foster partnerships that continually strengthen the connection between health	Example: Build partnerships and funding relationships with healthcare systems,

<p>professionals, and others are forged and sustained.</p>	<p>and the outdoors and support for outdoor education programs--especially for programming/scholarships that benefit students who wouldn't otherwise have access to outdoor education.</p> <p>Form mutually supportive relationships with community partners who can help you tailor your program structure and content to engage students who do not typically have access to outdoor education.</p>	<p>providers, insurers, and other health stakeholders.</p> <p>Example: Partner with organizations serving communities of color, low-income communities, and people with disabilities.</p>
<p>Instruction fosters a respectful, supportive learning environment that nurtures:</p> <ul style="list-style-type: none"> • An understanding of multiple perspectives; • 'Caring' relationships – students-to-students, teachers-to-students, etc.; • An understanding of personal stages of change in teaching practice; • An appreciation of differing world views and global and cultural perspectives. 	<p>Include activities that foster empathy--between students, students and teachers, and students and the natural environment.</p> <p>Create opportunities for students to learn and share with fellow students and staff about their cultures and communities' historic and/or contemporary connections to nature and land.</p> <p>Ensure teaching and communication materials and content are culturally relevant and inclusive.</p>	<p>Example: Cultivate Social and Emotional Skills with Eco-literacy</p> <p>Example: Incorporate trauma-informed approaches into staff training and instruction</p>
<p>Education extends beyond school – students share learning with families, partners, and other community members</p>	<p>Design learning to help students recognize health improvement opportunities in the outdoors outside of outdoor education--in their home communities, schools, backyards, etc.</p> <p>Connect personal and civic responsibility to curricula, so students understand their</p>	<p>Example: Partner with community organizations to deliver programs in the primary languages of participants (if other than English).</p> <p>Example: Launch a Health & Outdoors community challenge independently or with a health or community organization,</p>

	<p>individual and collective roles in creating and preserving healthy, sustainable environments, and communities.</p> <p>Design outdoor education opportunities to have take-home components that make the health-and-outdoors connection, such as local trail maps, recipes for healthy local foods, or students' individual plans for getting the family outdoors in the four seasons of the coming year.</p>	<p>encouraging participants and their families to spend active time outdoors after completing the Outdoor Education program.</p>
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III. Evaluation

The evidence-based connections between human health and the outdoors remain an emerging field of research. There is still a lot we don't know, and the concepts are still new to many in the healthcare community and other sectors. Measuring and communicating the health benefits of outdoor education is crucial to developing this evidence base. In general:

- We know there is a correlation between time outdoors and better health outcomes;
- We know less about how different populations respond, whether an urban street tree has the same effect as wilderness forest, how much time in nature is needed for a particular response, and the biophysical mechanisms.

It is important that community health priorities drive decisions about which health outcomes to focus on in Outdoor Education. Some places to look for these community-level health priorities include:

- [Community Health Improvement Plans](#): Every community in Oregon is covered by a Coordinated Care Organization (CCO), which coordinates delivery of the Oregon Health Plan (Medicaid). Every CCO has a community health improvement plan that defines priorities, such as increasing physical activity, reducing chronic stress, etc.
- Every nonprofit hospital is required to have a community health needs assessment, which guides its required investment of [community benefit](#) dollars. If you want your local hospital to invest community benefit dollars in outdoor education, it needs to be supported by their assessment.

Providence Center for Outcomes Research and Education has begun building health and outdoors evaluation tools that will include questions that have been deeply tested and proven in the health community. Some sample concepts and questions examining adult health outcomes are included in Table 2.

In choosing evaluation methods, it is also important to:

- Consider the need or ability to compare your program to similar programs in other places, or to other types of health interventions;
- Use language appropriate for your community; and,
- Understand the privacy protections required when asking questions about health, particularly for certain populations (e.g., children and youth or people with cognitive disabilities).

Table 2. Sample health evaluation concepts

Concept	Sample Question																				
Physical Activity	<p>1. Compared to other people your age, would you say you are more physically active, less physically active, or about the same?</p> <p><input type="checkbox"/> More physically active <input type="checkbox"/> Less physically active <input type="checkbox"/> About the same</p> <p>2. During the past month, other than your regular job, did you participate in any physical activities or exercises such as running, dancing, golf, gardening, or walking for exercise?</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>3. How many times per week do you engage in intense physical activity (enough to work up a sweat)?</p> <p>1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/></p>																				
Mental Health	<p>1. During the past 2 weeks, about how often have you been bothered by the following problems:</p> <table border="0" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 15%; text-align: center;">Not at all</th> <th style="width: 15%; text-align: center;">Several days</th> <th style="width: 10%; text-align: center;">Over half the days</th> </tr> </thead> <tbody> <tr> <td>a. Little interest or pleasure in doing things</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>b. Feeling, down depressed or hopeless</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>c. Feeling nervous, anxious, or on edge</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>d. Not being able to stop or control worrying</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </tbody> </table>		Not at all	Several days	Over half the days	a. Little interest or pleasure in doing things	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	b. Feeling, down depressed or hopeless	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	c. Feeling nervous, anxious, or on edge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	d. Not being able to stop or control worrying	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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This section begins to provide some resources that outdoor educators can use to measure and track health outcomes. Table 3 provides suggested short- and long-term outcomes and associated metrics that could be used to evaluate the effects of particular activities. The Health and Outdoors Initiative is currently developing evaluation tools for several different types of outdoor programs (e.g. hiking programs) and will make tools available [on its website](#) as they become available.

Table 3: Sample activities, outcomes, and measures to evaluate health outcomes

Activities/outputs	Short-term outcome	Long-term outcome
<p>Outdoor Education provider serves healthy food, connects to food system, and provides take-home recipes relevant to communities served.</p> <p><i>Sample measures: # of meals meeting relevant healthy food standards, # of healthy recipes provided to participants; # of experiential activities about food system; # of recipes that are culturally relevant</i></p>	<p>Participants have healthy outdoor education experience and learn how healthy food is connected to healthy environment.</p> <p><i>Sample measures: # of participants served healthy meals; % of students demonstrating knowledge of food system and healthy meal preparation</i></p>	<p>Participants know how to prepare healthy food in their independent lives, and how to engage in sustainable food systems for health and environmental benefits.</p> <p><i>Sample measures: % of participants reporting preparing provided recipes at home; % of participants sharing food system knowledge with family</i></p>
<p>Outdoor Education provider teaches the health-outdoors connection, in theory and practice.</p> <p><i>Sample measures: # of units/activities that teach students the health-outdoors connection; # of activities that allow students to experience it (e.g. outdoor meditation, hikes, socialization outdoors, etc.)</i></p>	<p>Participants understand and experience the connection between time outdoors and physical activity, stress reduction, social cohesion, and clean air.</p> <p><i>Sample measures: % of students demonstrating knowledge of the connection between outdoor activities and these target health areas; % of students reporting personally experiencing these during outdoor education</i></p>	<p>Participants consider outdoor recreation a health benefit; become environmental stewards; make lifestyle changes to spend time outdoors.</p> <p><i>Sample measures: % participants reporting attitude change in health and stewardship; % participants reporting increase in time spent outdoors at x intervals after outdoor education</i></p>

IV. Communicating the health connection

There are several current and potential outdoor education audiences who might respond well to health benefit messages:

- Schools, parents, and teachers who need more and different reasons to support time spent in outdoor education;
- Communities of color and low incomes communities who have disproportionately less access to outdoor education and worse health; and
- Healthcare providers and systems that might fund or otherwise support outdoor education.

Different messages will resonate with these different audiences. The [Intertwine Alliance](#) has begun crafting these messages as part of its efforts to expand the RxPlay program in the Portland metro area¹⁰. The messages below are adapted from the work of the Intertwine Alliance and are listed by target audience.

School-aged children

- *The outdoors is a fun place to play. There's lots to see and do outdoors. You get to learn cool stuff and make new friends.*

Parents of school-aged children

Children need regular vigorous physical activity and time outdoors--at least an hour each day--to be healthy. Play time is better than screen time! Giving them daily active play time can boost their chances of a longer, healthier, happier life; help them focus better and pay more attention to schoolwork; and reduce future health expenses for your family.

- *Keeping children indoors so they're safe is not so safe after all, according to research.*
- *Time spent outdoors is essential to the healthy development of children's minds, bodies, and spirits.*

Teachers & Educators

- *Children learn better and can focus on their lessons and homework better if they engage in vigorous physical activity and time outdoors each day. Children learn even better when learning is combined with physical movement.*

Healthcare providers

- *Outdoor education can be an important part of a community health and preventive care strategy. Research shows that time outdoors can improve physical activity, mental health,*

¹⁰ For more on the Intertwine's communication work, contact Lauren Gottfredson at lauren@theintertwine.org.

and social cohesion for kids and families. Try to connect your community health work with your local outdoor education provider—we're pretty sure you'll like it.

- *Outdoor education is an organized way for children to be active and thinking with documented improvement in obesity, ADHD, anxiety, depression, and sedentary lifestyle.*

Outdoor educators

- *You may not think of yourself as a health provider, but you are! Connecting your work to health can bring in new partners and new communities. Try it out—we're pretty sure you'll like it.*
- *Read your local hospital's community health needs assessment and your county's public health strategy to learn the health goals for your area.*
- *Make sure your marketing, educational, and curriculum materials speak to the diversity of people experiencing health disparities in your community.*
- *The health benefits you provide go far beyond physical activity: You're improving mental health and social connections, too, which are important for a lifelong habit of healthy living.*

V. Additional resources

- For background and guidance on developing and delivering culturally relevant outdoor programs, see the "[Guide to Cultural Relevancy](#)" by Youth Outside.
- [For examples of culturally-specific outdoor programming for the Latino population, see Latino Outdoors.](#)
- [For tools and resources about the connection between time outdoors, health, and wellbeing, see the Children & Nature Network.](#)

VI. Gaps and Needs

Reviewers of the draft guideline identified several areas where they need support in incorporating health into their outdoor education programs. Topics included:

- A need for more examples of activities and lesson plans explicitly designed to maximize health and other environmental literacy objectives;
- Tension between the desire for very specific recommendations linked to education standards and the flexibility of general guidelines that allow programs to tailor their curricula to their audiences, communities, and specialties;
- Linking guidelines to the national standards for physical education; and
- Apprehension about how outdoor education providers can do health evaluations and data collection themselves. They may need support or a health evaluator to collect and analyze health impact data.