

OUTDOOR SCHOOL FOR ALL!

DIVERSE PROGRAMMING AND OUTCOMES IN OREGON



**2018 Pilot Study
Evaluation**



“I am a huge supporter of Outdoor School — a great example of environment-focused, project-based learning. Outdoor School leads to healthier and happier kids and promotes critical thinking.”

– Nancy Golden, former chief education officer



CALL TO ACTION:

Outdoor school has been an Oregon tradition for over 50 years. We know that engaging students in applicable, relevant and engaging experiences outside the classroom contributes to academic success and environmental literacy. However, quantifiable measures of these outcomes are limited statewide. How do we track and compare best practices without a common

measurement system? A common measurement system enables programs to track their outcomes, consider changes within their individual programs over time, provides consistent measurement among diverse programs and examines the collective impact of outdoor school in Oregon.

PROJECT OVERVIEW:

Outdoor School for All! Diverse Programming and Outcomes in Oregon is a project of the Oregon Environmental Literacy Program, which began in 2014 and is supported by the Gray Family Foundation. The intent of this project is to build understanding and knowledge about current outdoor school programming and its intended outcomes. The common measurement system is based on legislative requirements, a wide variety of data sources, an existing literature/knowledge base and substantial input from stakeholders. The data gathered will support elements of the statewide program. These include:

- Legislative reporting requirements (OR-SB 439)
- Diversity, equity and inclusion
- Professional development and learning
- Community engagement and outreach
- Program and curriculum development



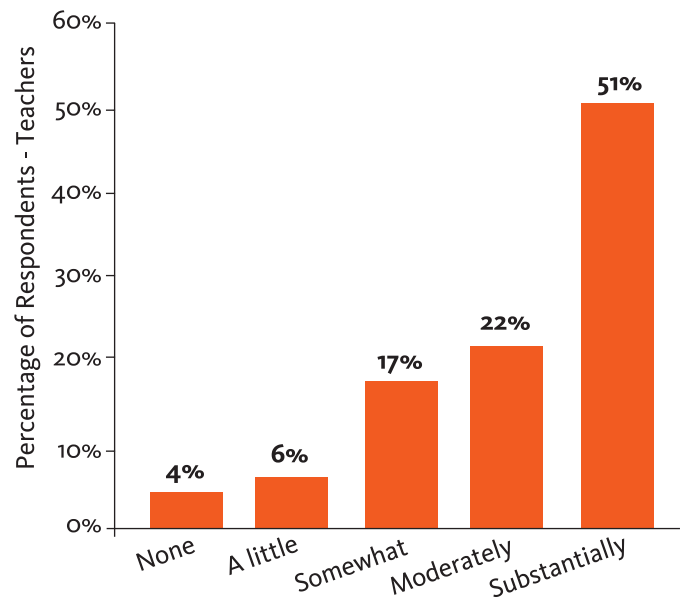
“Why Outdoor School? Like we teach the kids: facts matter. Students who attend Outdoor School perform better in school, bonding with their classmates and engaging more fully. They also learn to think like scientists—asking questions, demanding proof. Skills they need as adults and as citizens.”

– Rex Burkholder, former Metro Councilor and Lead of Outdoor School for All

RESULTS AT A GLANCE:

The common measurement system was piloted with six outdoor schools of differing length, programming and size — 82 teachers and 680 students participated during the 2017/8 school year. Initial results show significant positive gains and strong influence on many educational outcomes. These include:

To what degree does outdoor school improve/develop overall school engagement?



- ODE Essential Skills (critical thinking, teamwork)
- 21st Century Skills (problem-solving, collaboration)
- Interest in learning
- Positive school behaviors (paying better attention)
- Students' self-efficacy
- Legislative requirements (behavior, engagement, performance)
- Student learning: overall and specific to environment
- Environmental attitudes
- Social Emotional Learning Core Competencies (empathy, responsibility)

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SECTION 1 – ABOUT THIS PROJECT

1.1 – Project Overview

Outdoor School for All! Diverse Programming and Outcomes in Oregon is a project of the Oregon Environmental Literacy Program, which began in 2014 and is supported by the Gray Family Foundation. The intent of this project is to build understanding and knowledge about current outdoor school programming and its intended outcomes. The common measurement system is based on legislative requirements, a wide variety of data sources, existing literature/knowledge base and substantial input from stakeholders to measure these intended outcomes overtime. The data gathered will support elements of the statewide program. These include:

- Legislative reporting requirements (OR-SB 439)
- Diversity, equity and inclusion (DEI)
- Professional development and learning
- Community engagement and outreach
- Program and curriculum development
- Research, evaluation and assessment.

“Outdoor School for All” is a strong state mandate that represents Oregon’s deep values — equity, education, place and outdoors. Similarly, the legislative charge set forth in the Oregon Environmental Literacy Plan (OR-HB 2544) calls for outdoor education to occur in Oregon. The plan includes making outdoor experiences part of regular school curriculum. Oregon Senate Bill 439, with supporting funding from Oregon Measure 99, calls on Oregon State University Extension Service to assist school districts and education service districts in providing outdoor school programs and evaluating their outputs and impacts. This project does not fit this legal requirement. Rather, it fulfills a need for high-quality assessment and evaluation of outdoor school programs which were readily available throughout the state.

Indeed, the project will continue to provide critical and timely information to OSU-Extension school districts and outdoor schools necessary to provide high-quality outdoor education for all. What are the best practices to achieve equitable outcomes across all communities?

What innovative strategies are schools and outdoor school providers using that could be shared statewide? and where are there opportunities for growth that could improve the outdoor school experience for participants? *Outdoor School for All! Diverse Programming and Outcomes in Oregon* seeks to answer these questions for the benefit of all students in Oregon.



1.2 – Methods

The common measurement system used in this study was created using an iterative participatory evaluation process. Various stakeholders from public schools, universities, communities and programs have been involved from around the state. Further, the common measurement system was informed by several data sources and various partnerships during a preliminary investigation¹. The preliminary investigation involved group interviews, an online survey and analysis of grant project evaluation reports. There were three objectives of the preliminary investigation:

- Programmatic Features: Identify the primary programmatic characteristics associated with diverse outdoor schools throughout Oregon.
- Practitioner/Instructional Features: Identify the primary factors associated with successful instruction and implementation of diverse outdoor schools throughout Oregon.
- Youth Outcomes: Identify the primary youth outcomes associated with diverse outdoor schools throughout Oregon.

Meaningful differences among outdoor school programs (pedagogy, facilities) and associated outcomes (attendance, skills) emerged during this investigation. Analytic procedures were used to code qualitative data (focus groups, survey, artifact analysis) and understand key themes. Open and axial coding occurred. Key themes were considered and synthesized, along with relevant literature, legislative requirements (OR SB-439), OSU-Extension reporting/application materials and stakeholder input, to create a common measurement system. The variables we identified and subsequent questions we asked were created from thorough and specific study of Oregon's outdoor schools. Our system is fully grounded in (i.e. driven by and reflective of) the Oregon outdoor school experience. Throughout the development process, outdoor school providers and stakeholders have confirmed that their programs, students and outcomes are represented in the common measurement system.

The three-part system also uses one survey, Environmental Education Outcomes for the 21st Century (EE21) (Powell et al. in press²), in entirety. EE21 was designed for youth eleven and older and was validated, in part, using Oregon students attending outdoor school. In order to determine appropriate 'fit' of EE21 for this study, all qualitative data (interviews, focus groups, survey, artifact analysis) were re-coded and examined. The Crosscutting Outcomes which are measured in EE21 (Powell et al. in press) were used in a pre-determined (i.e. a priori coding) manner to understand these qualitative data. The Crosscutting Outcomes 'fit' the data well. This 'fit' demonstrated the appropriateness for use of EE21 in the common measurement system. Additional confirmatory feedback on EE21 involved committee, teacher and student review. The survey, which was designed for use nationally, had to be appropriate for Oregon, which our thorough analysis confirmed.

“Students who did not necessarily perform well in the classroom environment frequently became the “stars” at camp.”

– Survey respondent



Environmental Education Outcomes for the 21st Century (EE21)

Outcomes and corresponding questions used in the student survey table provide a list of crosscutting outcomes and corresponding questions used in the student survey. For more information, see Powell et al. in press.

<i>Outcome</i>	<i>Definition</i>	<i>Questions (Items)</i>
Enjoyment	Positive emotions toward an experience	1. How would you rate the program on a scale from 0 to 10?
Place connection (attachment)	Appreciation and the development of personal relationships and meaning with the physical location and its story.	1. Knowing this place exists makes me feel good. 2. I want to visit this place again. 3. I care about this place.
(Environmental) learning	Knowledge regarding the interconnectedness and interdependence between human and environmental systems.	1. How different parts of the environment interact with each other. 2. How people can change the environment. 3. How changes in the environment can impact my life. 4. How my actions affect the environment.
Interest in learning (motivation)	Enhanced curiosity, as well as increased interest in learning about science, the environment, or civic engagement.	1. Science. 2. How to research things I am curious about. 3. Learning about new subjects in school.
21st century skills	Critical thinking and problem-solving; communications; collaboration; and creativity and innovation.	1. Solving problems. 2. Using science to answer a question. 3. Listening to other people's point of view. 4. Knowing how to do research.
Meaning/self identity	Individual purpose and identity as well as positive character traits. These may include a heightened sense of purpose, gratitude and optimism.	1. Taught me something that will be useful to me in my future. 2. Really made me think. 3. Made me realize something I never imagined before. 4. Made me think differently about the choices I make in my life. 5. Made me curious about something.
Self-efficacy	Individuals' belief of their ability to use critical thinking to solve problems, make a difference in their community, address environmental issues and influence their environment.	1. Believe in myself. 2. I feel confident I can achieve my goals. 3. I can make a difference in my community.
Environmental attitudes	Sensitivity, concern and attitude toward the environment.	1. I feel it is important to take good care of the environment. 2. Humans are part of nature, not separate from it. 3. I have the power to protect the environment.
Action orientation	Intentions to perform behaviors relevant to the program's content or goals	1. As a result of the program, do you intend to do anything differently in your life? (yes/no)
Actions: environmental stewardship (intentions)	Intentions to perform stewardship-related behaviors.	1. Help to protect the environment. 2. Spend more time outside. 3. Make a positive difference in my community.
Cooperative and collaborative actions.	Cooperation and collaboration actions.	1. Listen more to other people's points of view. 2. Cooperate more with my classmates. 3. Work together with other people to solve problems
Actions: school (positive behaviors)	Educational choices.	1. Work harder in school 2. Pay more attention in class

The common measurement system has three primary components designed to measure educational outcomes and characterize programming. Students, teachers and providers participated. Both students and teachers provided critical information about effects and outcomes of outdoor school. Program providers give critical information about their programming. More specifically, the first component is for the outdoor school program provider — someone very familiar with the actual program. Variables include pedagogy, DEI and partnerships. The second component is for teachers— people familiar with the outcomes of the program. Variables include Social Emotional Learning Core Competencies³, elements of Environmental Literacy⁴ and legislative requirements. The third component is

for youth — the people whom the program is intended to affect. Variables (i.e. outcomes) include self-efficacy, interest in learning and cooperation/collaboration. Several of these variables were measured using multiple survey questions (i.e. composite scores measuring one construct). Tests of internal reliability, confirmatory factor analyses and stakeholder feedback supported using composites scores to represent these outcomes. It is expected that the common measurement system will be further refined and modified based on stakeholder needs and future findings. The refined version(s) will be implemented with many more outdoor schools throughout the state as the project scales up from a pilot to full study (data collection spring 2019).

Common Measurement Evaluation System

Table provides overview of common measurement evaluation system. It highlights three main elements of the system, characterized according to the subject. For each subject, the type of measurement, objective and important notes are listed. To view each of the three components of the common measurement systems, visit <https://extension.oregonstate.edu/outdoor-school>.

Subject	Type of Measurement	Objective of Evaluation Measure	Notes
Outdoor school program provider	Questionnaire	Objective: characterize the nature of outdoor school programming. Details: measure some aspects of the program related to basic program arrangement, subject area, instruction, diversity/equity/inclusion, partnerships and facilities/materials.	Providers complete the questionnaire no more than annually, ideally only when programming changes. Take one questionnaire for each program, rather than provider.
Teacher	Online survey	Objective: measure the perception of outcomes associated with outdoor school programming. Details: measure educational outcomes related to legislative requirements, social emotional learning, ODE essential skills, 21st century skills and environmental literacy.	Teachers who attend outdoor school take survey after outdoor school and presumably witness educational and behavioral outcomes associated with outdoor school.
Youth	Hard copy survey	Objective: measure the outcomes associated with outdoor school programming. Details: measure educational outcomes related to enjoyment, connection/place attachment, learning, interest in learning, 21st century skills, meaning/self-identity, self-efficacy, environmental attitudes, action orientation, environmental stewardship, cooperation/collaboration and positive school behaviors.	Youth take survey at the end of outdoor school. The survey, <i>Environmental Education Outcomes for the 21st Century</i> (Powell & Stern 2018), was adapted slightly. Crosscutting Outcomes listed here (Powell et al in press) fully aligned with results from preliminary study.

The common measurement system was piloted during the 2017-18 school year. Nine programs were originally identified for participation, yet five fully participated in the pilot study (spring 2018). These programs were spread throughout the state, varied in size and duration of programming. Both overnight and consecutive day-only programs were involved. Some programs were school-specific and others were administered by providers.

We made an important distinction with the lengths of programming. In the case of schools or providers that hold outdoor school with different length of time (3-day and 6-day programs), we considered those distinct programs. It became clear during the preliminary investigation, based on a wide variety of data sources, that the length of programming had a significant impact on youth outcomes. We did not consider programming of the same length of time occurring at different facilities to be different programs. While facilities have a big influence on youth experience, we did this partially out of convenience and recognizing that bigger programs (those using multiple sites) often have relatively commensurate facilities. Two of these five participating programs were administered by one provider.

Eighty-two teachers from 42 different public and parochial (private faith-based) schools took the online teacher survey. Six hundred and ninety 5th/6th grade students from 17 different public and parochial schools took the survey which was administered at the end of their outdoor school experience. Several genders were identified. Students who indicated *I don't know yet*, *boy/girl*, *trans* and *other* were, for convenience of analysis, collapsed into one category *other/nonbinary*. In total, the students identified as female (303), male (323) and other/non binary (13). There were 51 students who did not provide a gender or indicated something like *none of your business* and were excluded from analysis related to gender equity. Students who indicated two or more racial or ethnic backgrounds (like *Hispanic and Asian*) and did not indicate *Mixed (two or more races)* remained as indicated (i.e. *Mixed (two or more races)*) was not added. Therefore, an underrepresentation of the racial identity *Mixed (two or more races)* may have occurred.

Demographics

Table shows demographics of teachers and students.

Subject	Statistic
Teacher	Total Number of Survey Respondents: 82 Number of Different Schools Represented: 42
5th/6th grade students	Total Number of Survey Respondents: 680 Number of Different Schools Represented: 17
	Gender Identity Number of Female Respondents: 303 (44.5%) Number of Male Respondents: 323 (47.5%) Number of Other/Nonbinary Respondents: 13 (1.9%)
	Racial Identity American Indian/Native Alaskan: 57 (8.4%) Asian: 43 (6.3%) Black, not of Hispanic descent: 30 (4.4%) Hawaiian/Pacific Islander: 19 (2.8%) Hispanic: 63 (9.3%) Mixed/Two or More Races: 130 (19.1%) Other: 83 (12.2%) White, not of Hispanic Descent: 392 (57.6%)

There are limitations to this study and opportunities where bias may affect results. This includes subject selection, response and measurement bias. The programs who participated in the study were selected because their differences in size, capacity and geographic location. However they were all established programs and their results may be higher than the statewide average which would include newer, developing programs. Results from the teacher survey



“All youth participating, not just kids from wealthy communities. Diverse cultures represented in programming and among program partners.”

– Survey respondent

are also limited as they are based on teacher perception of youth outcomes. Further, teachers who enjoy outdoor school may have inflated their responses. For example, providing high scores to precise questions about youth skills simply because their positive associations to the outdoor school experience (i.e. social desirability bias). Finally, the student survey was provided only in the English language and designed for 5th - 12th grade audiences. Therefore, certain populations are either limited or excluded in their ability to take the survey. This may include students with visual impairments, below-grade reading levels and limited English proficiency.

Section 1.3 Community Engagement

Several stakeholders and community members were involved, to various degrees, in the creation of the common measurement system and subsequent implementation. The original project committee involved several outdoor school program directors, public school teachers with strong ties to outdoor school and local leaders in outdoor and environmental education. This committee was later expanded to include the OSU-Extension Outdoor School's Research, Evaluation and Assessment workgroup when the state program convened its advisory committee and workgroups (see Section 1.4 for project committee members). Advisory committee and workgroup members represent a broad and diverse group of experts statewide.

Surveys, focus groups, interviews, committee meetings and feedback sessions occurred over a two-year planning period. Feedback from over 150 educators, outdoor school providers and community members guided the process of creating a common measurement system representative of and accessible to all outdoor school programs and attendees. However, there are still substantial issues related to inclusion (braille format, English language level) and diversity (racial diversity of project leadership). As previously discussed, our measurement tools (i.e. surveys/questionnaire) are exclusive to some populations. Further, recognizing that our project committee is not especially diverse, our methods and thinking may further inequities: they may communicate or reinforce barriers to culturally sustaining participation and success (i.e. oppressive forces). As the project moves forward, beyond the 2017/18 pilot study, these issues can be further addressed. The project team continues to change and collaborate with diverse community partners and OSU-Extension, is working on an iterative, design-based evaluation process (cyclic process of prototyping, testing, analyzing and refining). Therefore the common measurement system, surveys, methods and beliefs are expected to change over time according to community feedback, results and need.

Section 1.4 Project Committee, Partnerships and Financial Disclosures

Project Lead (Program Evaluator)

- **Steven M. Braun**, Ph.D., Environmental Science and Education Consultant - eeRISE
Chair - Outdoor School Research Evaluation and Assessment Workgroup (OSU-Extension)
Council Member - Oregon Environmental Literacy Program (OSU-Extension)

Project Committee

- **Charlie Anderson**, Director, Camp Tamarack Outdoor School
- **Emily Anderson**, Educator, 4-H youth development, Oregon State University Extension Service
- **Jennifer Basham**, Coordinator, MESD Outdoor School
- **Spirit Brooks**, Ph.D., Research Coordinator, Oregon State University Extension Service
- **Amy Busch**, Board Chair, Environmental Education Association of Oregon
- **Norie Dimeo-Ediger**, Director of K-12 Education Programs, Oregon Forests Resources Institute
- **Susan Duncan**, Ph.D., Science Teacher, Meadow Park Middle School
- **Jen Grube**, Outdoor School Director, Philomath Middle School
- **Karen Hans**, Salmon Trout Enhancement Program, Oregon Department of Fish and Wildlife
- **Alison Heimowitz**, School and Teacher Liaison at the Oregon Zoo
- **Bill Hunt**, Director, Klamath Outdoor Science School
- **Kathryn A. Lynch**, Ph.D., Co-Director, Environmental Leadership Program, University of Oregon
- **Jenna Mendenhall**, Project Coordinator, Oregon Environmental Literacy Program

- **Jason O'Brien**, Master Naturalist Program Coordinator, Oregon State University Extension Service
- **Judi Peters**, 4-H youth, Oregon State University Extension Service
- **Dan Prince**, Associate Director, Friends of Outdoor School
- **Susan Sahnaw**, Director, Oregon Natural Resources Education Program; Coordinator, Oregon Environmental Literacy Program
- **Brenna White**, Regional Conservation Education Partnership Coordinator, US Forest Service



Financial Disclosure:

Outdoor School for All! Diverse Programming and Outcomes in Oregon is a project of the Oregon Environmental Literacy Program (OSU-Extension). Financial support is provided by the Gray Family Foundation. Procedural and administrative support is provided by the Oregon Environmental Literacy Program, Oregon Natural Resources Education Program and the Outdoor School Program (all OSU-Extension) and the Friends of Outdoor School. Several organizations provide in-kind staffing support (see project committee above). Use of *21st Century Environmental Education Outcomes* occurred in collaboration with Drs. Bob Powell & Marc Stern and was developed as part of a National Science Foundation AISL grant.



“I work at a Title I school. The impact is huge. We have students who have never been outside of Salem—they have never visited a natural setting or stayed overnight away from their parents. So I want them to gain independence, develop of love for being outside and build relationships with community members who work in life science fields.”

– Survey respondent

SECTION 2 – PILOT STUDY RESULTS: INDICATIONS OF STUDENT OUTCOMES

Outdoor school has a positive influence on students' educational outcomes including learning, dispositions (affective outcomes), their skills (school and community relevant competencies) and behaviors (via intention and motivation). While we measured outcomes with student and teacher data, this section only addresses outcomes measured and evident with student data. Results indicate significant positive gains and strong influence on many educational outcomes. Student responses show strong indications of outcomes for questions phrased “as a result of the experience ...” and retrospective pre-post questions⁵. Students' open responses also support these survey results. Average values for students' outcomes ranged from somewhat to strong for all outcomes measured on the student survey. Positive influence on environmental attitudes was relatively the strongest ($\bar{x} = 8.7$), while 21st Century Skills ($\bar{x} = 6.2$) and interest to learn ($\bar{x} = 6.3$) were relatively the weakest. Furthermore, there were statistically significant gains (retrospective pre-post) in students' indications of environmental attitudes ($Z = -19.04, p = 0.00$) and self-efficacy ($Z = 18.25, p = 0.00$) before and after outdoor school. Data show that outdoor school was most effective in developing students' environmental attitudes and self-efficacy - both are dispositions. The relatively lowest gains were found with 21st century skills and interest/motivation to learn, suggesting that while outdoor school positively affects academics, it is most effective with character and social emotional development. Student responses ($n \geq 680$) from 17 different public schools and six different outdoor school programs indicated:

- Students learn at outdoor school.
- Students' interest and motivation to learn increases because of outdoor school.
- Students further develop purpose and identity because of outdoor school.
- Students develop a connection and appreciation to their outdoor school site/location.
- Students (further) develop sensitivity and concern for the environment because of outdoor school.

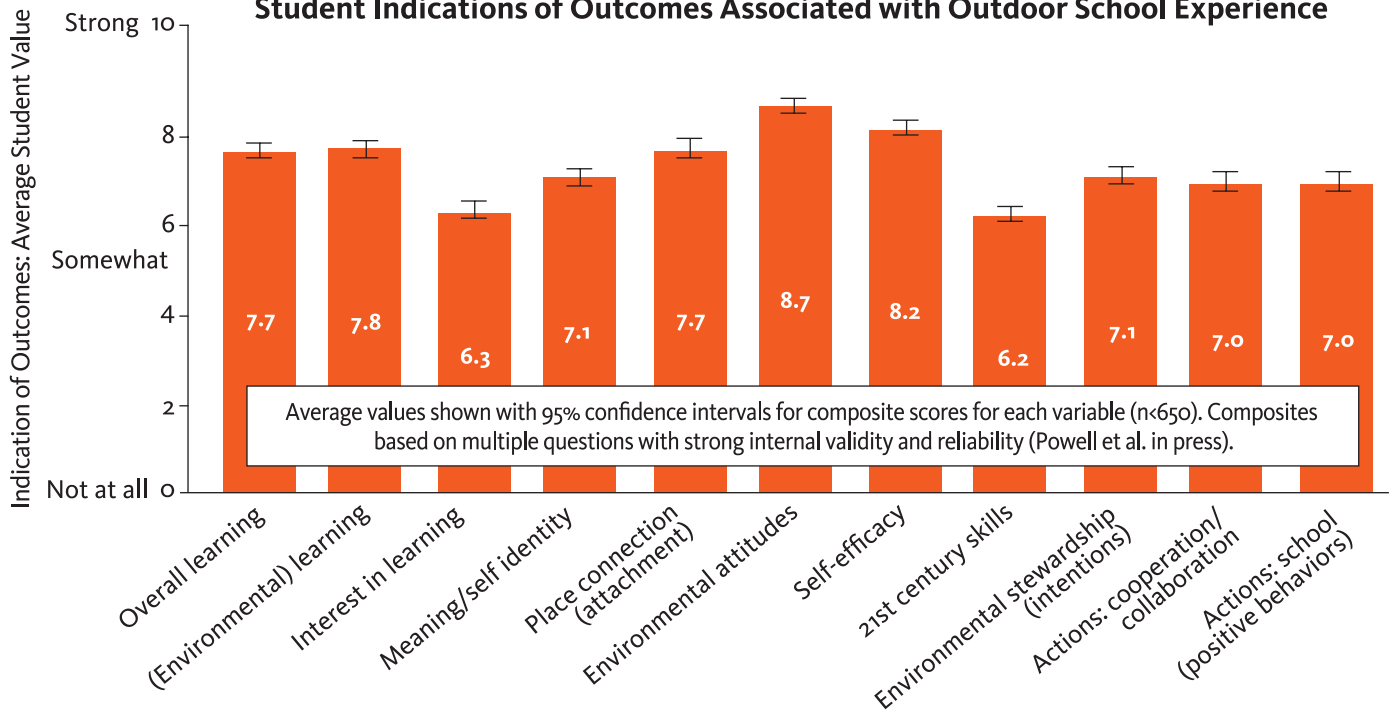
- Students' self-efficacy (i.e. belief in their ability solve problems) is increased because of outdoor school.
- Students' 21st Century Skills (e.g., critical thinking, communication, innovation) is increased because of outdoor school.
- Students are more likely to perform environmental stewardship behaviors.
- Students are more likely to positively engage with school (e.g., pay attention in class).

“[Students develop] an ability to think of interactions and solutions using systems thinking — with the living and non-living parts of the ecosystems.”

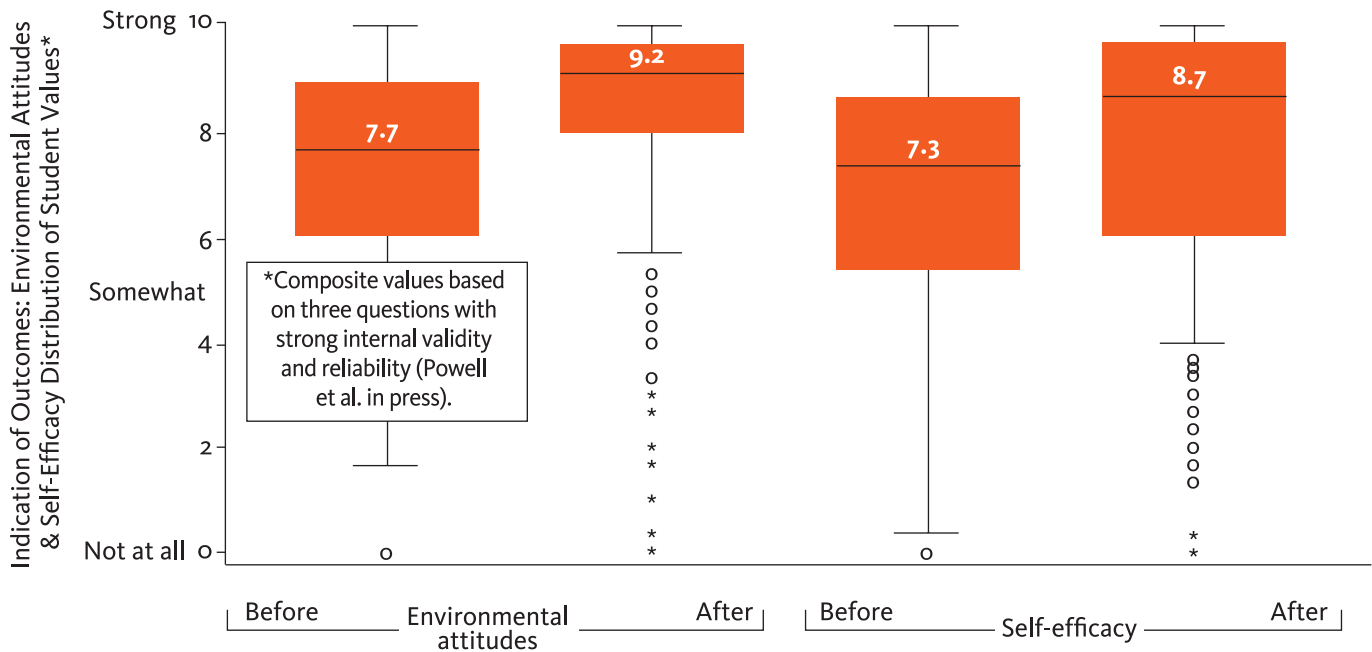
– Survey respondent



Student Indications of Outcomes Associated with Outdoor School Experience



Student Indications of Environmental Attitudes and Self-Efficacy Before and After Outdoor School*



"I love this place and I don't want to leave. Plus, I want to be a student leader."

- Student

SECTION 3 – STUDY HIGHLIGHTS: DIVERSITY, EQUITY AND INCLUSION (DEI)

We considered (and disaggregated) youth outcomes according to some identities (racial and gender) and measured several outcomes (empathy or respect of diversity) necessary to promote DEI. Results indicate outdoor school has a positive effect on students' awareness and relationship skills. This may have been because students often work together (across different schools or their social groups) in a novel and intimate environment. Additionally, we discovered some disparities of outcomes among racial and gender identities. When comparing outcomes among gender identities, females consistently had the highest scores (indication of outcome). When comparing among racial identities, American Indian/ Native Alaskan students generally had the highest outcomes, while Asian students had the lowest scores. Finally, teachers indicated that outdoor school had a positive impact on students who need substantial academic and behavioral supports.

“This is by far one of the best experiences our students will ever have in their young lifetime. Our kids come from very low socio-economic backgrounds where I would argue they know very little about the world beyond their own driveway. Outdoor school provides them a glimpse into a world that many of them don't know at all. It exposes them to people and situations that they never would have the chance to experience otherwise. Three days is not enough for them to truly benefit from the program. A week is really what is necessary for this to be the awesome and beneficial program it was designed to be.”

– Teacher

“the outdoor school site accepts everyone no matter their ethnicity, race or gender.”

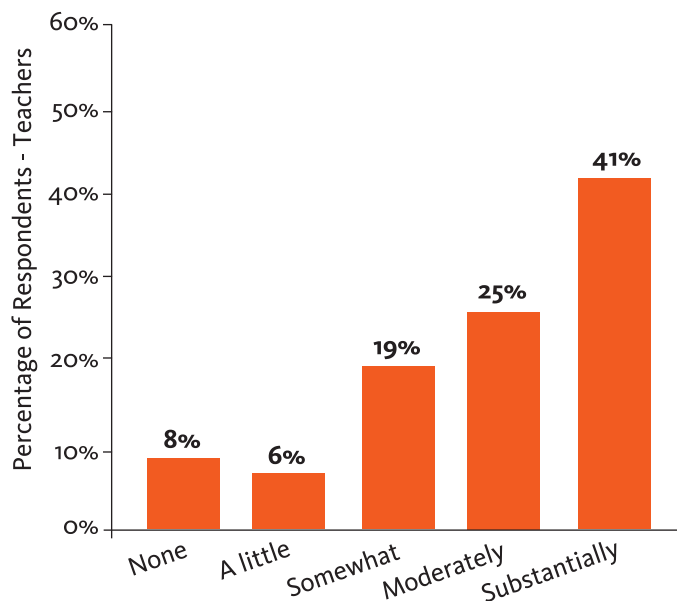
– Student

Section 3.1 – Youth Awareness and Relationship Skills

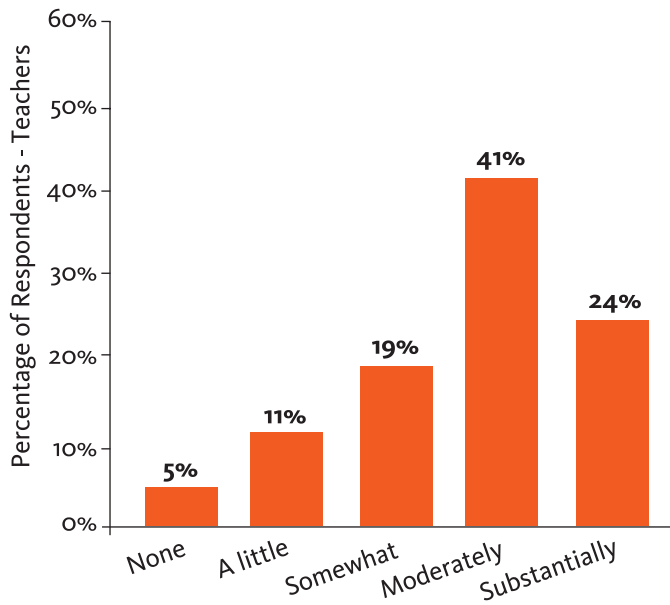
Results indicate outdoor school has a positive effect on students' social awareness and relationship skills. These skills are among the core competencies of Social and Emotional Learning, which if developed and nurtured can help build equity consciousness and capacity⁶. Student responses indicate that participating in outdoor school makes them more likely to cooperate and collaborate. Teacher responses (n ≤ 82) from 42 different public schools and six different outdoor school programs indicate that outdoor school:

- Helps students develop an appreciation for diversity.
- Helps students develop respect for others.
- Helps students develop empathy.
- Helps students develop communication skills.
- Helps students develop responsibility.

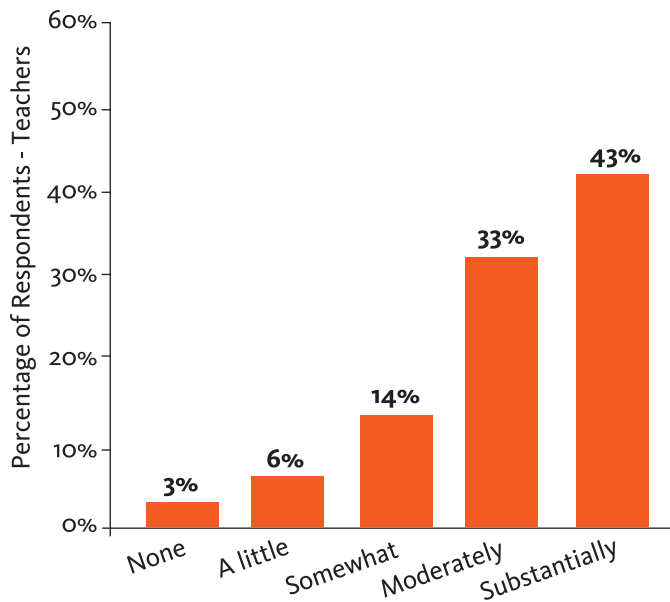
How much does outdoor school help students appreciate diversity?



How much does outdoor school help students develop empathy?



How much does outdoor school help students develop responsibility?



Implication: Results suggest that outdoor school is effective in helping students build equity consciousness. This is particularly important as students (not just teachers) have great power to promote diversity, equity and inclusion in their schools and communities

“ODS provides alternate pathways to success and learning. Kids are mixed with others from different demographics. They learn to build community and unity — in addition to civics, nature and practical sciences.”

– Survey respondent



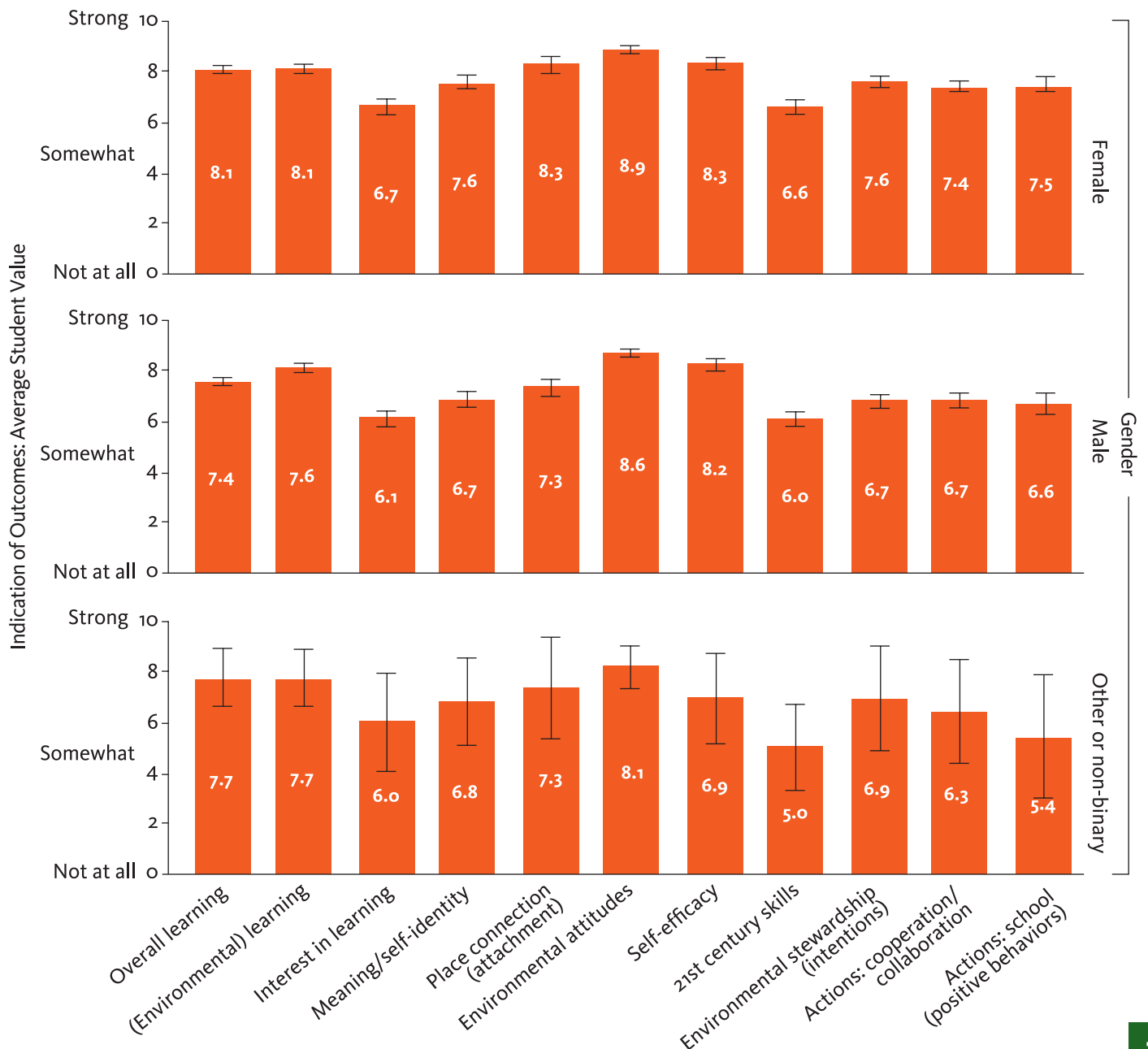
Section 3.2 – Gender Equity in Youth Outcomes

Educational outcomes were not the same across gender identities. Female students scored, on average, higher than males or students in the collapsed gender identity other/non-binary. The differences between males and females were statistically significant (e.g, Meaningfulness of Experience: $\chi^2 = 18.89$, Sig: 0.00) with the exception of self-efficacy. There were also differences among genders in students' indications of

environmental attitudes and self-efficacy before and after outdoor school. Students identified as other/non-binary scored lower, on average, than males and females. Interestingly, the degree of change from before outdoor school to after outdoor school was the highest for this group of students, suggesting that this group both experiences outcome disparities and that outdoor school is making some progress in addressing those disparities.

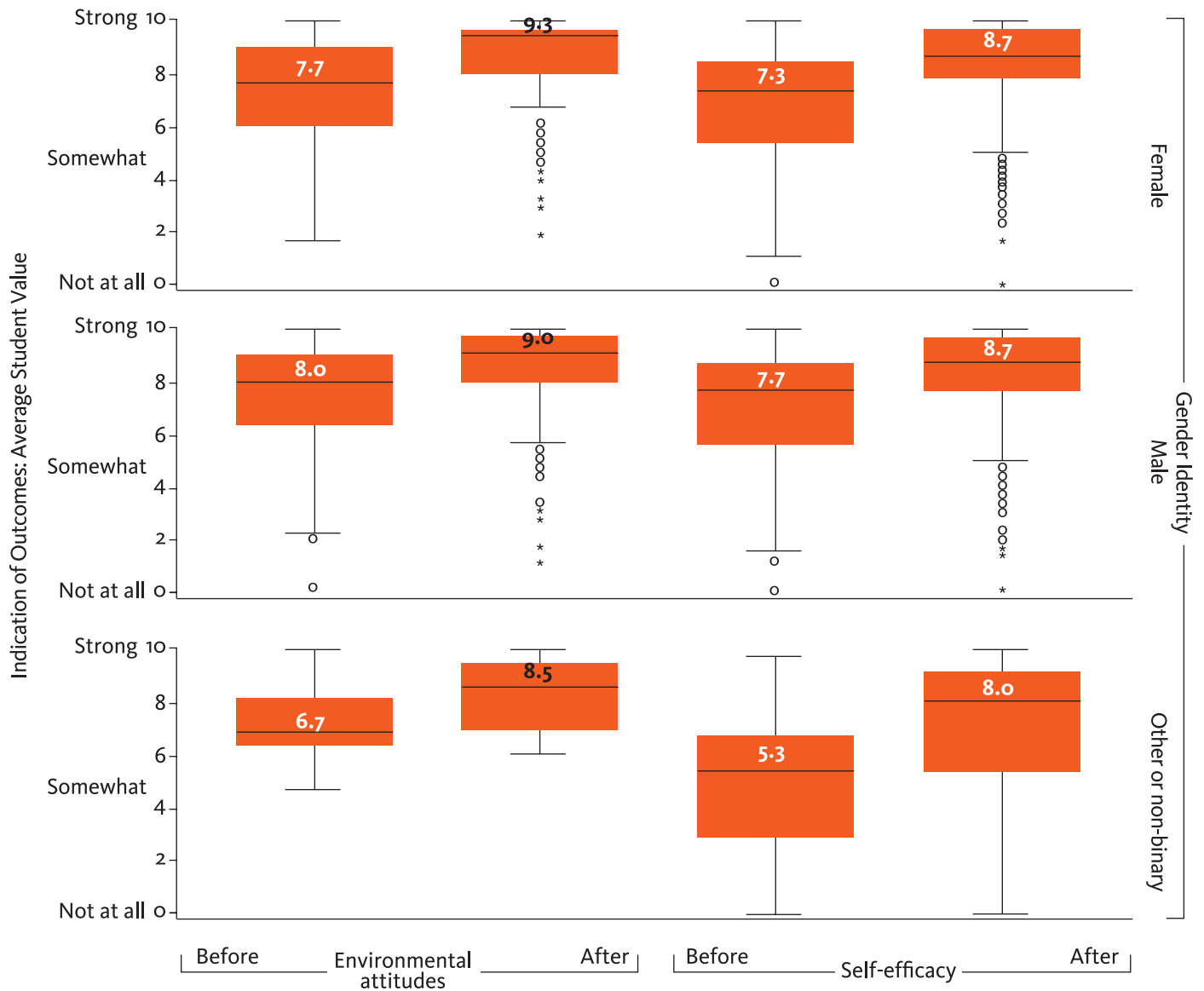
Student Indications of Outcomes Associated with Outdoor School Experience Arranged by Gender Identity

Average values shown with 95% confidence intervals for composite scores for each variable (n=650). Composites based on multiple questions with strong internal validity and reliability (Powell et al. in press). Statistically significant differences occurred among male and female genders in several cases. Insufficient number of respondents for other or non-binary (n<20 for comparison).



Student Indications of Environmental Attitudes and Self-Efficacy Before and After Outdoor School Arranged by Gender Identity

Average values shown with 95% confidence intervals for composite scores for each variable (n<650).
Composites based on multiple questions with strong internal validity and reliability (Powell et al. in press).



Implication: Gender inequities exist. And, results suggest that outdoor school is effectively making some gains in gender equity. The greatest gains (before to after outdoor school) occurred with students identifying with other, trans or non-binary genders.

Section 3.3 – Racial Equity in Youth Outcomes

Educational outcomes were not the same across racial identities. Differences among many groups were varied. However, students who identified as American Indian/ Native Alaskan generally had the highest outcomes. In nine of eleven instances, their average scores were the highest of all the racial identities. In no instances were their scores the lowest. Conversely, students identifying as Asian generally had poorer outcomes when compared to peers: lowest scores in five of eleven instances. Similarly, students identifying as white

performed relatively lower: lowest scores in three of eleven instances. There may be other factors associated with racial identity that affected performance. Factors such as English language acquisition, socio-economic factors (often measured with percent free and reduced lunch) and immigration status may have an influence on students' outcomes, yet were not measured in the survey. Racial identity is not intended to be a proxy for these important factors; rather it is important to recognize race associations.

Racial Equity in Youth Outcomes

Table shows average values of outcomes for each racial identity. Arrows are provided for comparison and indicate the relatively highest and lowest average value for each outcome.

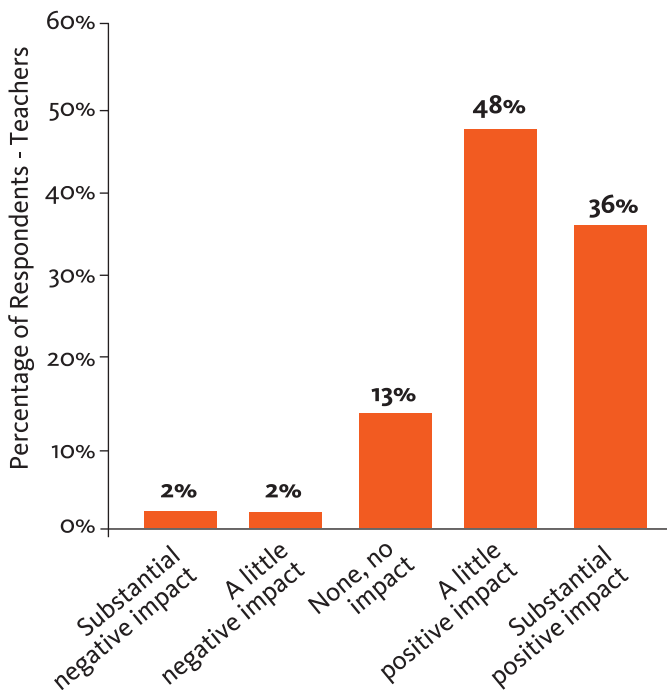
Outcome	American Indian/Native Alaskan (n = 57)	Asian (n = 43)	Black, not of Hispanic descent (n=30)	Hawaiian/ Pacific Islander (n=19)	Hispanic (n = 63)	Mixed/Two or More Races (n = 130)	Other (n = 83)	White, not of Hispanic Descent (n = 392)
Overall learning	7.9	7.3 ↓	7.9	8.3 ↑	8.3 ↑	7.9	7.4	7.5
(Environmental) learning	7.9	7.8	7.9	8.3 ↑	8.2	7.9	7.7 ↓	7.7 ↓
Interest/motivation to learn	7.1 ↑	6.1	6.2	6.3	6.0 ↓	6.7	6.5	6.2
Meaning/self-identity	7.7 ↑	6.9 ↓	7.3	7.3	7.6	7.5	7.1	7.0
Place connection (attachment)	8.6 ↑	7.2	6.7 ↓	6.7 ↓	8.0	8.0	7.8	7.7
Environmental attitudes	8.9 ↑	8.3 ↓	8.7	8.9 ↑	8.8	8.7	8.6	8.7
Self-efficacy	8.8 ↑	7.9 ↓	8.3	8.5	8.2	8.1	8.1	8.2
21st century skills	7.0 ↑	5.8 ↓	6.2	6.6	6.8	6.5	6.8	6.0
Actions: environmental stewardship (intentions)	7.8 ↑	7.0	7.0	7.6	7.5	7.6	7.4	7.0
Actions: cooperation/ collaboration	7.6 ↑	6.9	7.2	7.6 ↑	7.6 ↑	7.4	7.4	6.7 ↓
Actions: school (positive behaviors)	7.8 ↑	6.9	7.5	7.6	7.5	7.6	7.0	6.6 ↓
Instances of highest relative outcome (indicated by # of ↑)	9	0	0	3	2	0	0	0
Instances of lowest relative outcome (indicated by # of ↓)	0	5	1	1	1	0	1	3

Implication: Results suggest that Asian students may need targeted/cultural responsive supports to achieve similar outcomes to their peers. They also suggest that American Indian/Native Alaskan students are excelling at outdoor school.

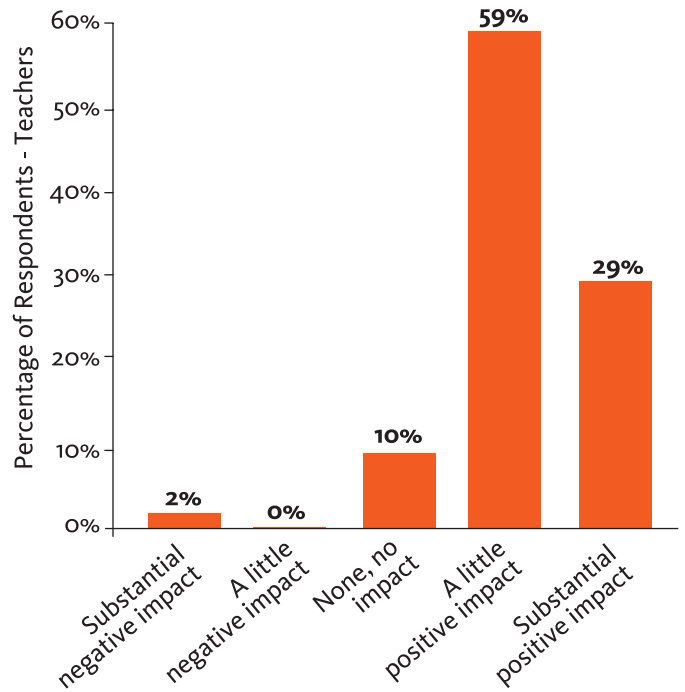
Section 3.4 – Youth Needing Substantial Supports

Results indicate that students who need substantial academic and behavioral supports were positively impacted by outdoor school. Often students are engaged with entirely different modes of learning/thinking and typical classroom/school social dynamics are affected — the latter being especially important for students with substantial behavior needs. Teacher responses (n= 82) from 42 different public schools and six different outdoor school programs consistently indicated positive impact for this group of students.

How much and what types of impact does outdoor school have on students who need substantial behavioral supports?



How much and what types of impact does outdoor school have on students who need substantial academic supports?



Implication: Results suggest that outdoor school is effective in supporting students with substantial needs, potentially making outdoor school a transformative event for youth struggling academically or socially in school.

“Students who were extremely reserved in a typical school setting or had behavioral issues came out of their shells and/or were great leaders at ODS. And they took these experiences back to the classroom.”

– Teacher

“Forging a connection with, and an understanding of the natural world lasts a lifetime. It empowers students’ curiosity and promotes their understanding of environmental concepts and natural cycles, thereby giving them the knowledge and resources to become better global citizens, problem-solvers and caretakers of the earth.”

– Survey respondent



SECTION 4 – STUDY HIGHLIGHTS: LEGISLATIVE REQUIREMENTS

Legislative requirements were measured with student and teacher data. In some instances, teachers were explicitly asked about outdoor school’s influence on outcomes identified in legislative language — this was done verbatim. Results indicate participating outdoor school programs meet several of the legislative requirements identified in Oregon Senate Bill 439. Legislative requirements include educational and behavioral outcomes, program- specific guidelines and governance structure. The results and discussion presented in this section are primarily concerned with educational and behavioral outcomes (increased student engagement and pride in accomplishments). However, these results are also relevant to program- specific guidelines (grants shall be awarded to outdoor school programs that are integrated with local school curricula). Results indicate:

- Outdoor school promotes school and subject-specific engagement.
- Students have greater enthusiasm for school and subjects because of outdoor school.
- Outdoor school has positive influence on school and subject-specific academic performance.
- Outdoor school has positive influence on behavior — there are less discipline issues.
- Outdoor school develops thinking skills.
- Outdoor school develops communication and collaboration skills.

Relevant Legislative Language for Engagement and Enthusiasm

Oregon Senate Bill 439, SECTION 2.

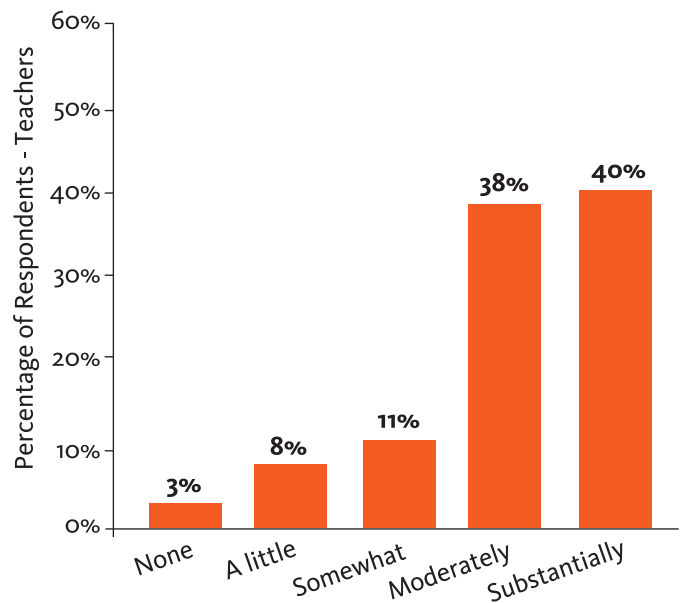
- (4) Priority for grants shall be given to outdoor school programs that promote:
 - (d) Increased student engagement and pride in accomplishments.
 - (h) Greater enthusiasm for language arts, math, science and social studies.

Section 4.1 Engagement and Enthusiasm

Engagement and enthusiasm consider students’ interest in school and subject matter and may determine whether or not they pay attention in class, complete their work and apply effort. In short, engagement and enthusiasm may be prerequisites to academic performance in general and connected to behavior. Teacher responses (n ≤ 82) from 42 different public schools and six different outdoor school programs indicate:

- Positive influence on interest and enthusiasm in science, STEM and natural history (related to science).
- Positive influence on interests and enthusiasm in food, agriculture and forestry (related to social studies and science).
- Positive influence on interests and enthusiasm in sustainability and environmental education (related to social studies and science).

To what degree does outdoor school improve/develop interest & enthusiasm in science/STEM/natural history?

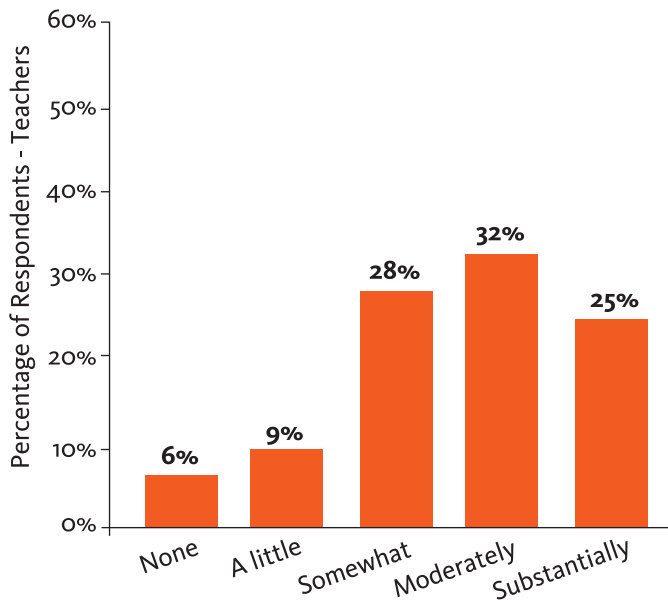


- Positive influence on students' interest and enthusiasm in social studies and geography.
- Positive influence on students' interest and enthusiasm in Oregon studies and multicultural education (related to social studies).
- Positive influence on students' interest and enthusiasm in careers and workforce education (related to social studies).

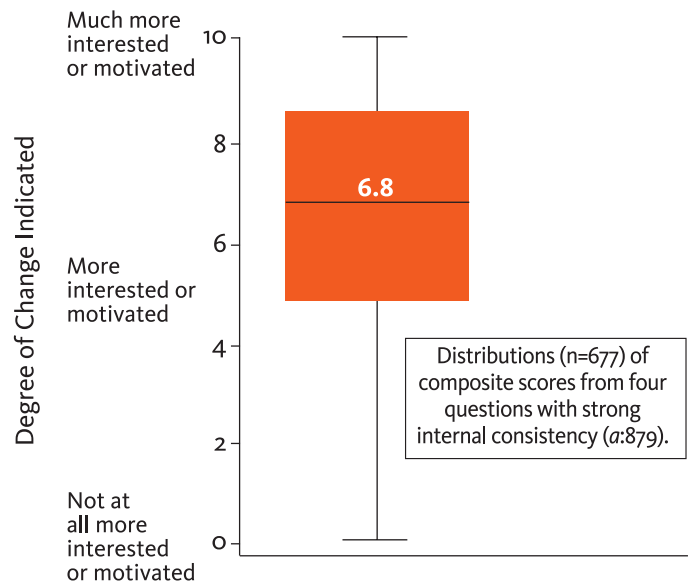
Student responses (n ≥ 680) from 17 different public schools and six different outdoor school programs indicate:

- Outdoor school increases interest in learning (motivation).

To what degree does outdoor school improve/develop interest & enthusiasm in food/agriculture/forestry?



Change in Students Interest in Learning (Motivation) Resulting from Outdoor School



“This is literally the most fun I have ever had while learning.”

“I would like to write about Wallowa County in a journal — and I would not do this if it wasn't for outdoor school.”

– Student



Section 4.2 Academic Performance

Academic performance is one of the primary metrics of school success. How students perform in middle school classes is strongly connected to graduation rates and workplace success, among many things. Results indicate that outdoor school influences academic performance in several subject areas. Teacher responses (n ≤ 82) from 42 different public schools and six different outdoor school programs indicate:

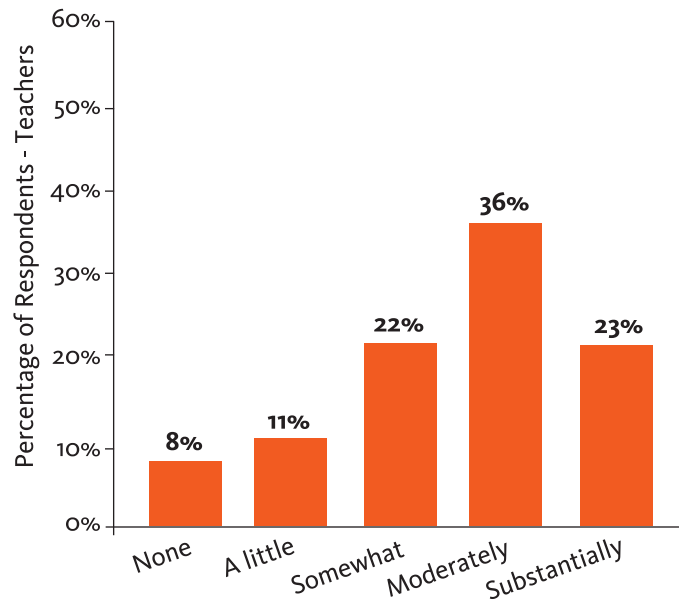
- Positive influence on academic performance in science, STEM and natural history.
- Positive influence on academic performance in sustainability and environmental education (related to social studies and science).
- Positive influence on academic performance in food, agriculture and forestry (related to social studies and science).
- Positive influence on academic performance in social studies and geography.
- Positive influence on academic performance in Oregon studies and multicultural education (related to social studies).

Relevant Legislative Language for Academic Performance

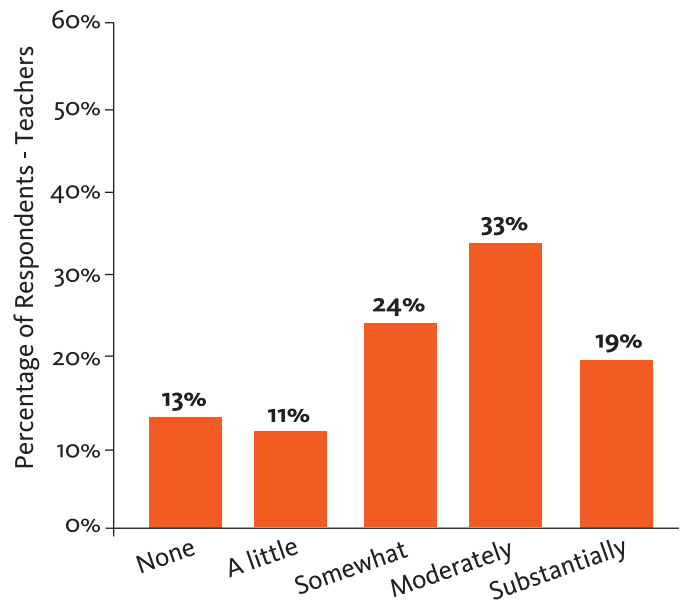
Oregon Senate Bill 439, SECTION 2.

- 4) Priority for grants shall be given to outdoor school programs that promote:
- (a) Higher scores on standardized measures of academic achievement in writing, reading, math, science and social studies.
 - (i) Increased knowledge and understanding of science content, concepts and processes.
 - (m) Better comprehension of social studies content.

To what degree does outdoor school improve/develop academic performance in science/STEM/natural history?



To what degree does outdoor school improve/develop academic performance in sustainability/environmental ed?

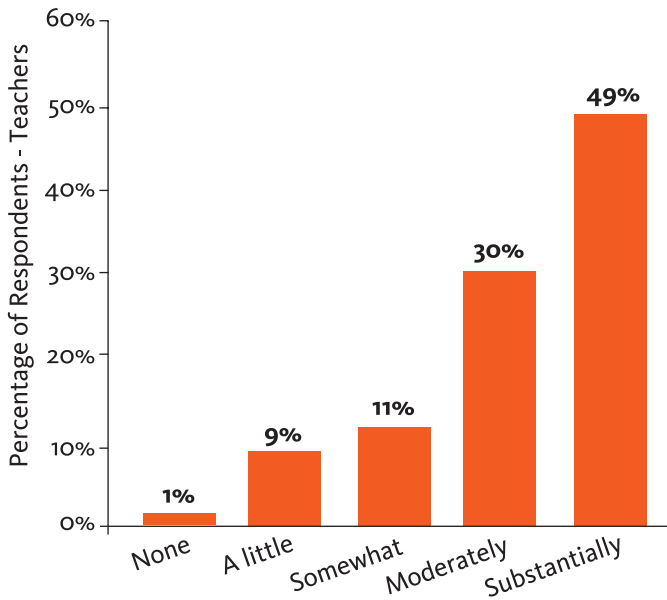


Section 4.3 Behavior and Discipline

Behavior and discipline are associated with academic performance. Schools monitor behavior and discipline closely and report discipline to the Department of Education. Teachers often indicate behavior as one of the most important elements to running an effective classroom. This is especially true for middle school. In short, behavior and discipline is very important. Teacher responses (n ≤ 82) from 42 different public schools and six different outdoor school programs indicate:

- Less discipline and management problems occur in classrooms after students attend outdoor school.
- Positive impact on students who need substantial behavioral supports.

To what degree does outdoor school improve/develop prosocial, school appropriate behavior?



Relevant Legislative Language for Behavior and Discipline

Oregon Senate Bill 439, SECTION 2.

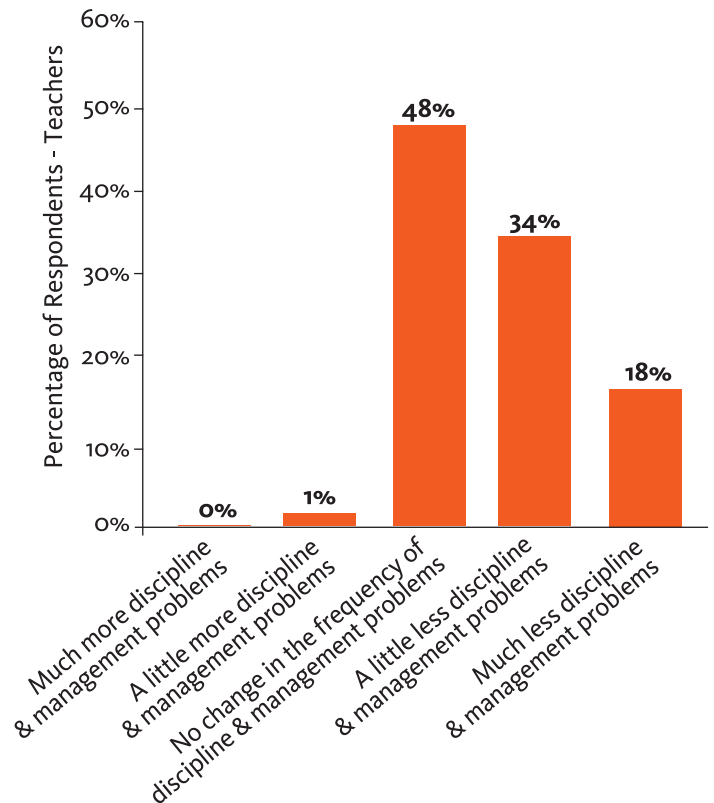
- 4) Priority for grants shall be given to outdoor school programs that promote:
 - (c) Fewer discipline and classroom management problems.

“When I heard about it, I didn’t want to go. But when I got there, it felt like I just had a really big family and I was at a family reunion.”

“Outdoor school really changed me in a good way.”

– Student

What impact, if any, did outdoor school have on your students’ behavior? Do students have more or less discipline and classroom management problems in your class after attending outdoor school?

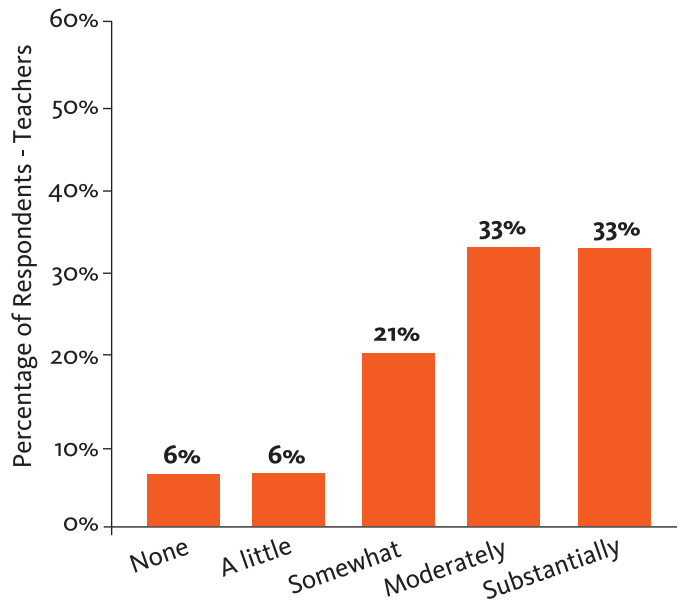


Section 4.4 Thinking Skills and Competencies

The goals of education are and have been shifting away from providing chunks of knowledge to developing thinking skills and competencies (e.g., Next Generation Science Standards). Thinking skills and competencies often cross traditional subject areas and can be applied throughout learners' lifetimes. Teacher responses (n ≤ 82) from 42 different public schools and six different outdoor school programs indicate:

- Outdoor school develops strategic, creative, critical and systems thinking skills.
- Outdoor school develops judgement and decision-making skills.
- Outdoor school develops problem solving skills.

How much does outdoor school help students develop creative thinking skills?

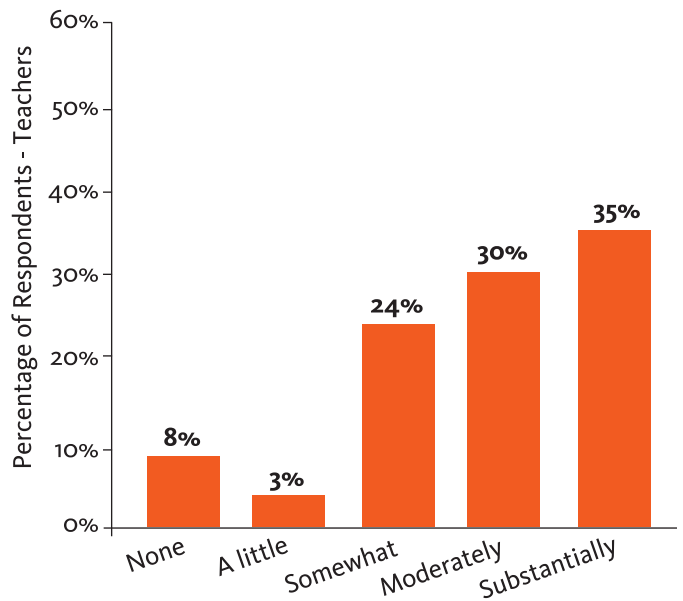


Relevant Legislative Language for Thinking Skills and Competencies

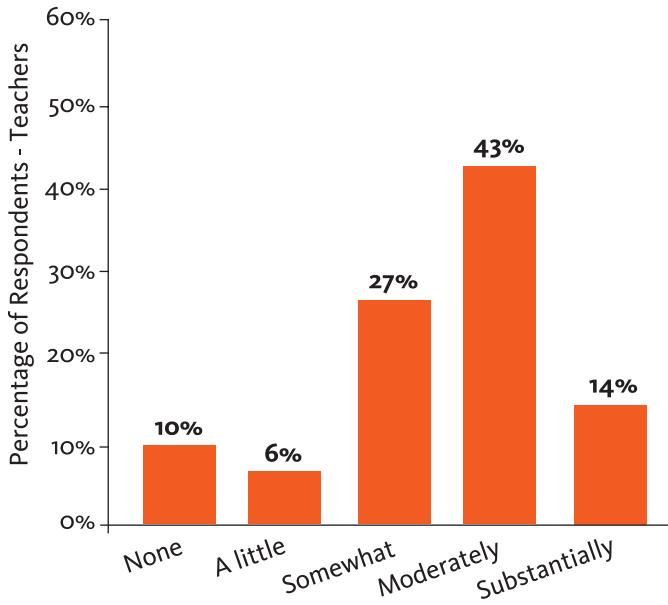
Oregon Senate Bill 439, SECTION 2.

- (2) Grants shall be awarded for outdoor school programs that:
- (c) Provide students with opportunities to develop leadership, critical thinking and decision-making skills.
- 4) Priority for grants shall be given to outdoor school programs that promote:
- (e) Greater proficiency in solving problems and thinking strategically.
- (f) Better application of systems thinking and ability to think creatively.
- (j) Better ability to apply science and civic processes to real-world situations.
- (k) Improved understanding of mathematical concepts and mastery of math skills.

How much does outdoor school help students develop critical thinking skills?



How much does outdoor school help students develop strategic thinking skills?



Influence of outdoor school on students' judgement/decision making, problem-solving and systems thinking skills involved several questions posed to teachers for each of these three skills. Corroborating teacher data were student responses ($n \geq 680$) from 17 different public schools and six different outdoor school programs which indicate:

- Outdoor school increases students' 21st century skills (i.e. civic capacity, problem-solving, communications).

Example questions measuring judgement/decision making, problem-solving and systems thinking skills.

Questions about making judgements and decisions included:

- "To what degree does the outdoor school experience improve your students' ability to...effectively analyze and evaluate evidence, arguments, claims and beliefs?"
- "To what degree does the outdoor school experience improve your students' ability to...synthesize and make connections between information and arguments?"

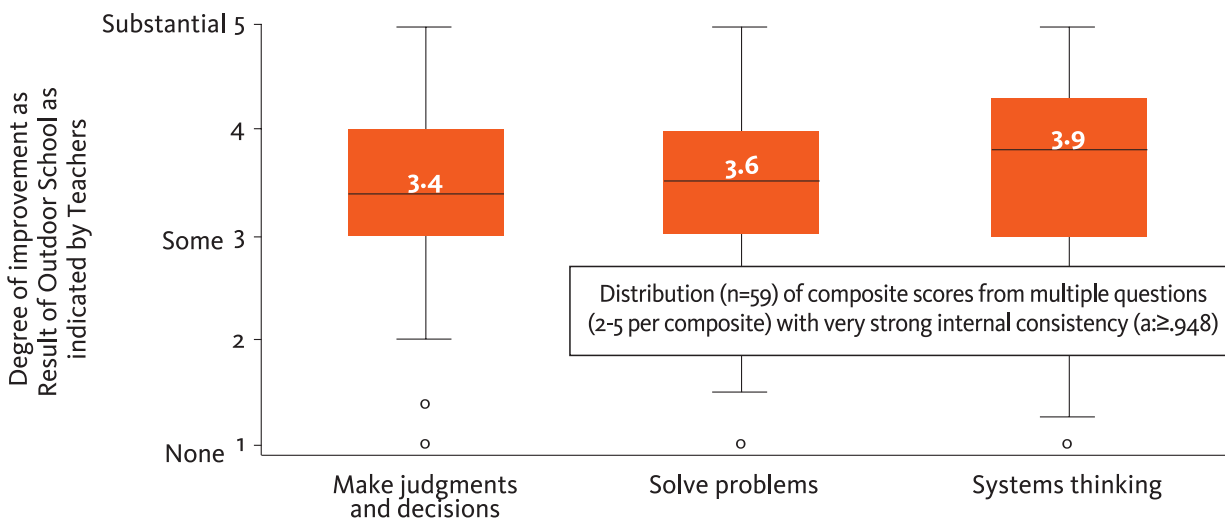
Questions about solving problems included:

- "To what degree does the outdoor school experience improve your students' ability to...solve different kinds of non-familiar problems in both conventional and innovative ways?"
- "To what degree does the outdoor school experience improve your students' ability to...identify and ask significant questions that clarify various points of view and lead to better solutions?"

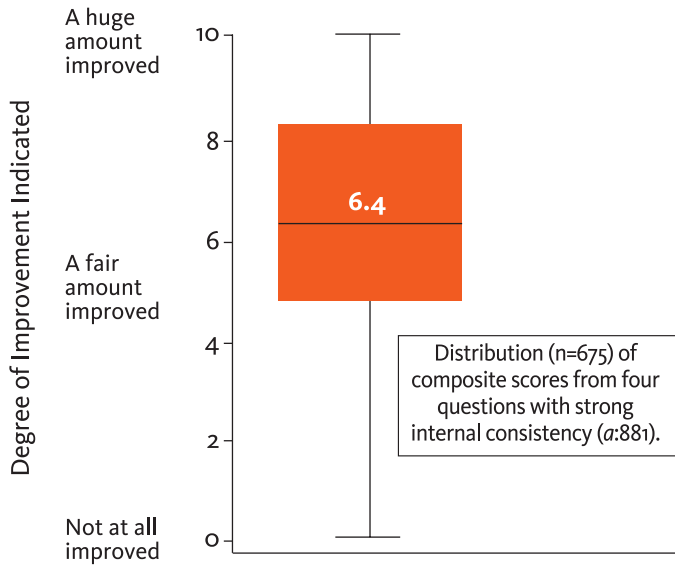
Questions about systems thinking included:

- "To what degree does the outdoor school experience improve your students' ability to...create solutions for systems that are not in balance?"
- "To what degree does the outdoor school experience improve your students' ability to...present the complex inner workings of a system in a simple and succinct way?"

Improving and Developing Students' Cognitive Skills



Change in Students' 21st Century Skills (civic Capacity, Problem Solving, Communications) Resulting from Outdoor School



Section 4.5 Interpersonal (Communication and Collaboration) Skills and Competencies

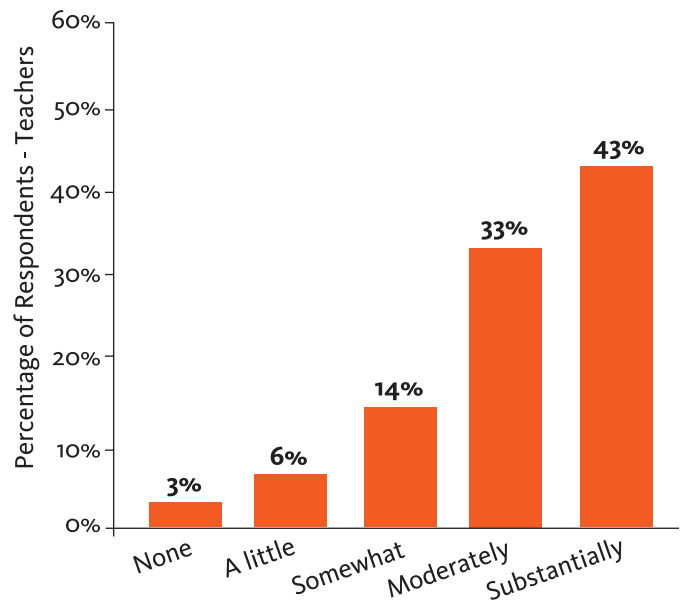
Students capacity to communicate and work collaboratively with another has a strong influence on their academic success and behavior in school. These skills affect their success in the workplace and communities. Further, how students communicate and collaborate has significant influence on DEI. Teacher responses ($n \leq 82$) from 42 different public schools and six different outdoor school programs indicate:

- Outdoor school helps students develop respect for others.
- Outdoor school develops teamwork and leadership skills.
- Outdoor school develops leadership skills.
- Outdoor school helps students appreciate diversity.
- Outdoor school develops empathy.

Relevant Legislative Language for Interpersonal Skills and Competencies

- (2) Grants shall be awarded for outdoor school programs that:
- (c) Provide students with opportunities to develop leadership, critical thinking and decision-making skills.
- 4) Priority for grants shall be given to outdoor school programs that promote:
 - (b) Greater self-sufficiency and leadership skills
 - (g) Improved communication skills and enhanced ability to work in group settings.

How much does outdoor school help students develop respect for others?

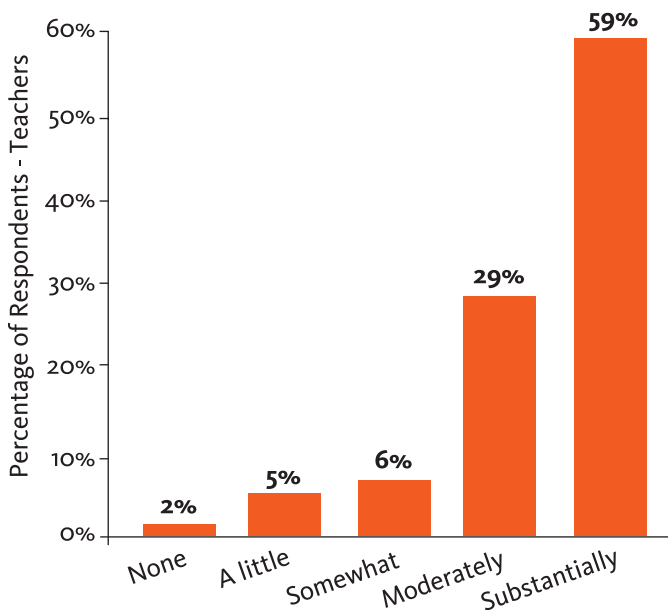


“High school counselors demand the opportunity [to attend outdoor school] and are very upset when it doesn’t happen. They see the value immediately in their students’ leadership development.”

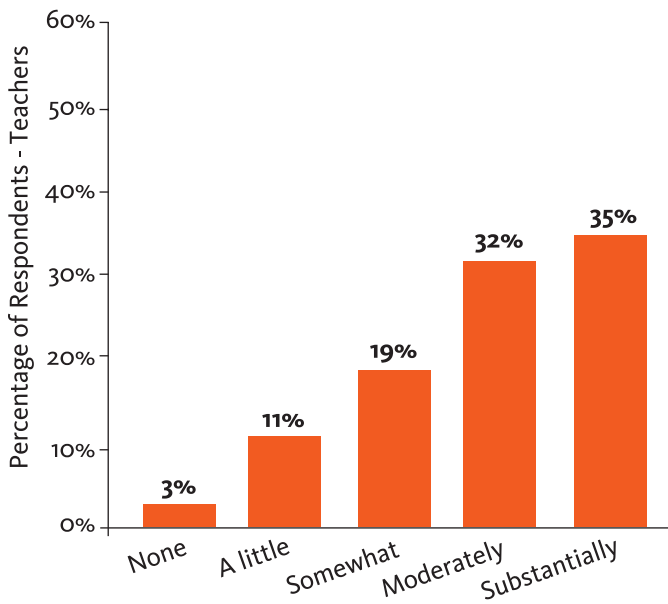
– Survey respondent



How much does outdoor school help students develop teamwork skills?



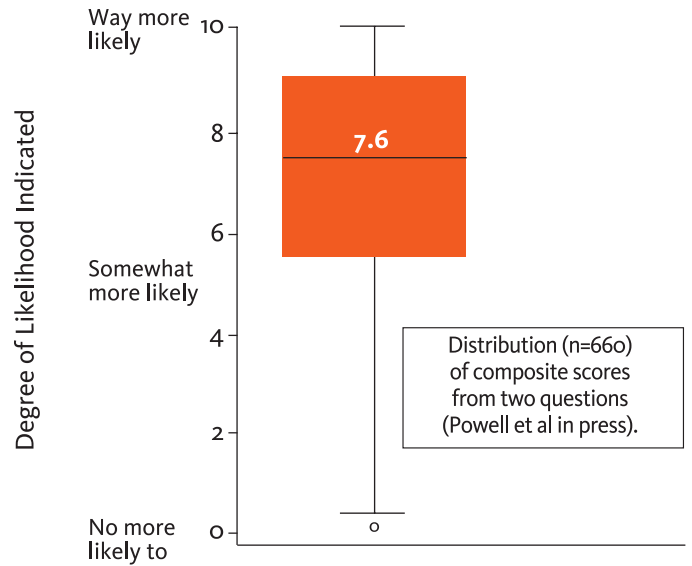
How much does outdoor school help students develop leadership skills?




Corroborating teacher data were student responses ($n \geq 680$) from 17 different public schools and six different outdoor school programs which indicate:

- Outdoor school made them more likely to cooperate and collaborate.

Change in Students' Likelihood of Engaging in Collaborative and Cooperative Behaviors Resulting from Outdoor School





“This is a life-changing experience for 6th graders and even more importantly for high school students. The leadership role they take on is truly challenging and allows for them to explore their strengths and interests in a fully supported environment.”

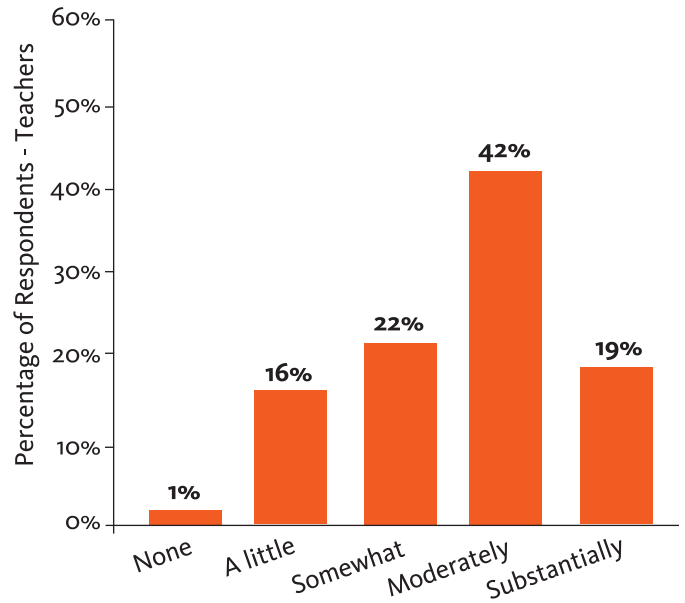
– Survey respondent

SECTION 5 – STUDY HIGHLIGHTS: SCHOOLS AND COMMUNITIES

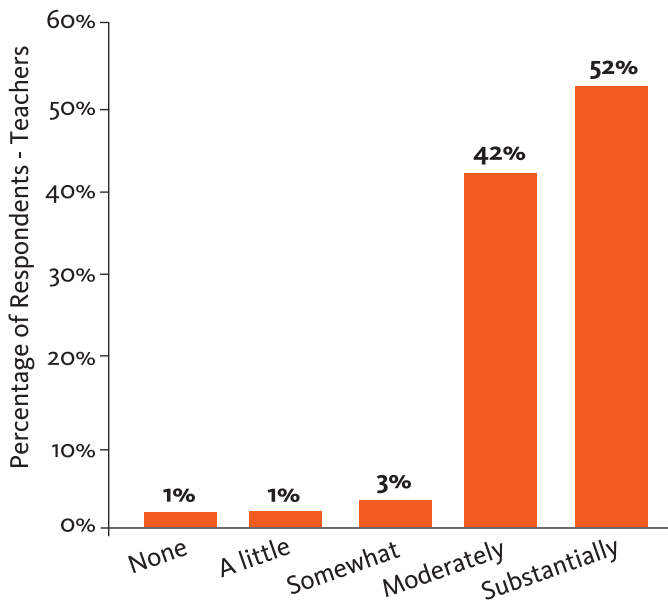
School, teacher and community involvement is both strong and essential for student success. Results indicate that communities are overwhelmingly supportive of outdoor school. Most teachers are very involved, and they fill many different roles relative to the outdoor school experience. Teacher responses (n ≤ 82) from 42 different public schools and six different outdoor school programs indicate the most frequent roles that teachers fill are:

- Discipline support (73%)
- Family and school liaison (61%)
- Publicity/parent information (59%)
- Evaluation and assessment (48%)
- Procuring materials/supplies (32%)
- Student transportation (21%)

While you were at outdoor school how involved were you with activities and instructions?



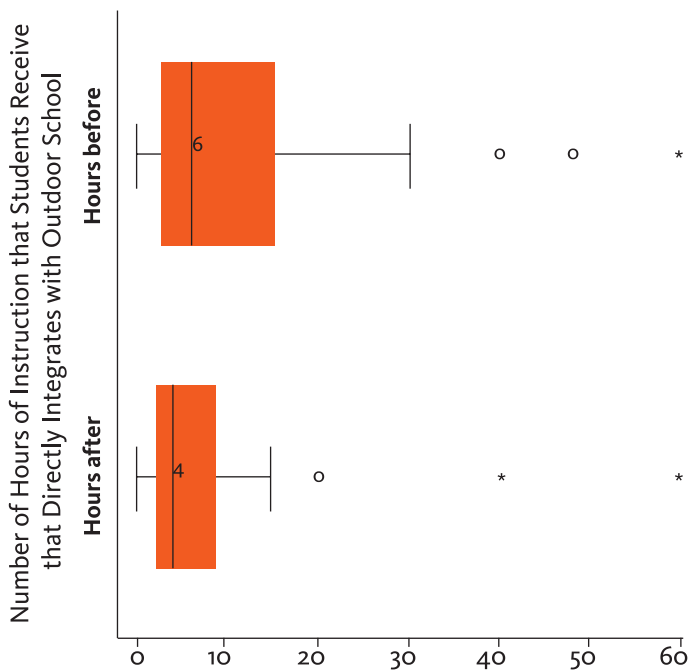
Overall, and in your opinion, how supportive is your community of outdoor school?



Results show that the outdoor school experience is often marginally integrated with regular activities and instruction:

- Half of the teachers indicated students received between 0 and 6 hours of classroom instruction that was directly integrated with the outdoor school experience before attending outdoor school.
- Half of the teachers indicated students received between 0 and 4 hours of classroom instruction that was directly integrated with the outdoor school experience after attending outdoor school.
- There was a small number of teachers (<10%) who indicated substantial classroom to outdoor school integration (i.e. 30+ hours classroom instruction before or after attending).

How integrated is outdoor school with instruction?



Implication: Results suggest that outdoor school is often an isolated learning experience and not well-integrated with the classroom — a missed opportunity for maximizing student learning and associated outcomes.

“Teachers play a very active role in the planning and implementation of the program”

– Survey respondent

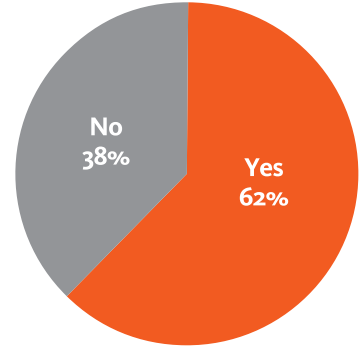
SECTION 6 – SUCCESS STORIES

Outdoor school is often observed as transformative. Many 5th/6th grade students go on to be high school counselors and later outdoor school instructors/natural resource professionals because their childhood experiences at outdoor school. Student responses (n ≥ 680) from 17 different public schools and six different outdoor school programs overwhelmingly indicate that the outdoor school experience is near excellent. Further, most students (62%) indicated that because of outdoor school they intended to do something different with their lives. Examples of what students intended to do because of outdoor school included:

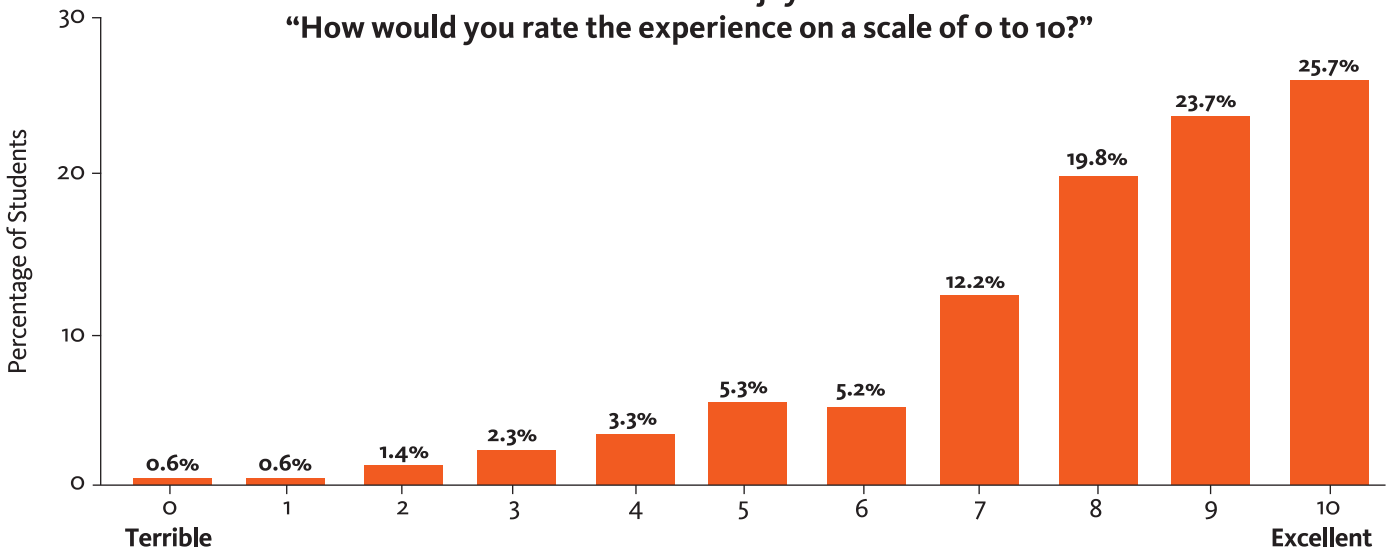
- *“I will be kinder and accept people faster”*
- *“I will keep my grades up so I can come back as a student leader”*
- *“I actually was so disrespectful before outdoor school and it’s changed my life.”*
- *“Take care of the earth. Pick up trash, conserve water.”*
- *“I am thinking of being a park ranger.”*

- *“Spend more time off my devices, believe in myself, go outside more often, respect the environment more.”*
- *“I will trust people more.”*
- *“I will try new things to experience the fun and excitement [which] I learned happens when you try new things.”*
- *“I realized I want to be a scientist and live in a cabin in nature”*
- *“I intend to be more aware of global problems and to go on more hikes! Be in the great outdoors!”*

“As a result of this experience, do you intend to do anything different in your life?”



**Overall Student Enjoyment:
“How would you rate the experience on a scale of 0 to 10?”**



Teacher responses also spoke to the transformative nature of outdoor school.

"I felt like my students really grew in ways I wasn't expecting. They are able to empathize more with others and seem more mature when returning to school. They definitely bonded as a group and are more supportive of each other. It was very structured and I felt supported as a teacher. We loved every minute of it. The kids are only sad in that they wish they were still there. Thank you!"

"[Camp] Angelos is a great place full of life and love. I know that the staff are gonna improve so many kids lives."

"I think every 6th grader should be able to come"

"This was my first year attending. My students loved it and were engaged. Their written reflections afterward indicated that their experience was profound and meaningful."

"It was incredible. My students still talk about it almost daily."

– Teachers



SECTION 7 - AREAS OF CONCERN AND OPPORTUNITIES FOR GROWTH

Outdoor school, as with all educational programs, can be improved. Results indicate that there are opportunities for growth. Both teachers and students discussed issues of concern or frustration. Student concerns were generally vague (e.g., *“this place is wack”*). However, there were some responses around concern or issue with food (e.g., *“Maybe have a bit more vegetarian and GF Dairy free options”* and *“I was hungry all the time”*). Teacher concerns were often more thorough and considered collectively, demonstrate some complex issues. Four primary issues emerged and included:

Concern/issue with instruction and safety related to gender identity.

- Students (and teachers) with a variety of experiences and beliefs about gender are immersed (generally) in an overnight experience. Both overnight and day accommodations include gender-specific sleeping settings and bathroom facilities. Students identifying as non-binary or transgender (non-dominant male/female) can be vulnerable in these settings. Not all students (or adults) are inclusive in these regards and raise issue of trans people in one setting or another. Providing guidance to this issue, Oregon Department of Education (ODE) asserts students have a legal right to use the bathroom and locker rooms (and extracurricular activities) of their gender identity and that preventing such use would be discrimination⁷. ODE also advises school districts to provide comprehensive sexuality education and recognize that these students are often targeted with physical violence.

Concern/issue with instructional rigor.

- Outdoor school involves a variety of activities that are not always deemed academic. Some of these activities are social, creative, interpersonal or entirely unstructured. Some students (and adults) may consider creative expression to be lacking when compared to inquiry — similar to open or experiential learning. However, and counter to this perception, others assert that open or experiential learning can be transformative for students (and adults).

Concern/issue with financial resource allocation.

- The education system is, by most accounts, underfunded. With this in mind, some teachers raised concern with extra costs associated with outdoor school. Buses, lodging, additional staff and extra planning time for teachers all cost money. Some schools hold fundraisers and charge additional funds for their students to attend outdoor school.

Concern/issue with staff expertise and capacity.

- Outdoor school staff (and high school counselors) have varying degrees of subject matter and pedagogical expertise. Outdoor school staff are often balancing a variety of roles from washing dishes, providing instruction and ensuring student safety. Partnering organizations are also providing support. For example, an outdoor schools may have a subject-matter expert (e.g., biologist) teach lessons that has limited pedagogical skills.



SECTION 8 – RECOMMENDATIONS

The following recommendations are partially based on results from all elements of this study including initial investigation, teacher and student surveys. Outdoor school is a personal, community and statewide endeavor. It is supported and implemented by many entities including schools, communities, providers and a broad network of partners. Recommendations are offered generally and to all of these audiences. Further, they are neither comprehensive nor exclusive of existing best practice recommendations in the broad field of education.



- Further integrate the outdoor school experience within the classroom. Provide relevant, rigorous and supportive instruction and materials to maximize the impact of outdoor school on students' learning.
- Provide responsive, inclusive, safe and sustaining instruction, training and supports relevant for students with nonbinary gender identities.
- Address community concerns around gender identity and continue to assert gender equity.
- Provide responsive, inclusive, safe and sustaining instruction, training and support for students from all racial and ethnic backgrounds; consider targeted supports to increase equity.
- Collaborate, develop and celebrate partnerships. Teachers, community groups, natural resource providers, businesses and non-profits provide substantial supports, fill many roles and enhance the outdoor school experience.
- Utilize existing evaluation tools (Common Measurement System described here and in OSU Extension's High Quality Instructional Resource Rubric) in conjunction with any program-specific evaluation for summative and formative purposes. Track annual progress on outcomes and instructional resources.
- Target instruction, materials and supports to promote thinking (problem-solving) and interpersonal skills (collaboration) which are universal and promote success across typical designations of subject areas (science or mathematics).
- Generate — based on diverse stakeholder input — a precise list of recommendations for each of the measured outcomes (3-5 total) that may help an outdoor school program improve through program-specific evaluation results.
- Consider and specifically address elements of the outdoor school experience (overnight accommodations or universal access in a remote setting) when developing or renewing policy and legal guidelines at the state and/or local level.

SECTION 9 – PROJECT NEXT STEPS

Outdoor School for All! Diverse Programming and Outcomes in Oregon (a.k.a. Common Measures Project) is an active project which is continuously revisiting and refining its methods. There is special attention to the word *All*. As previously indicated, results from this pilot study will, among other factors, help improve the common measurement system. We anticipate significantly higher participation (programs, teachers, students) in spring 2019 as we launch a full, statewide program evaluation. The project team is collaborating with OSU-Extension Outdoor School program and program providers to administer this evaluation system throughout the state, rather than the sample of programs used for this pilot study. In addition to this annual evaluation report, participating programs will individually receive a program-specific evaluation report. They will be shared directly with individual program providers and are designed to support their annual reporting needs and program improvement/development. It is expected that program-specific reports will be generated for participating programs moving forward. Reports will NOT be used as a punitive measure to funding.

Anticipated timeline:

- This pilot study evaluation report publicly released: winter 2019
- Program-specific pilot study evaluation reports shared with individual programs: winter 2019
- Initial communication to outdoor school programs supporting participation in full, statewide evaluation: spring 2019
- Full, statewide program evaluation: spring 2019
- Statewide program evaluation report publicly released: winter 2019/20
- Program-specific pilot study evaluation reports shared with individual program: winter 2020

“[Outdoor school promotes] community building as students are introduced to many different people with various backgrounds.”

– Survey respondent

References

- 1 Braun, S. (7/2017) Impacts of Outdoor Schools on Building Environmental Literacy: Preliminary Report. Portland, OR Gray Family Foundation <https://grayff.org/wp-content/uploads/2018/07/Impacts-of-Outdoor-School-on-Env-Literacy-Preliminary-Report-1.pdf>
- 2 Powell, R.B., Stern, M.J., & Frensley, B. (in press) Crosscutting outcomes for Environmental Education programming in national parks. In Thompson, J.L. & Houseal, A.K. (editors). America's largest classrooms: What we learn from our national parks. National Park Service, Washington DC. For more information on Environmental Education Outcomes for the 21st Century see: https://frec.vt.edu/people/Stern/stern_docs.html
Powell, R.B., Stern, M. J., Frensley, B.T., & Moore, D. (In review) Identifying and Developing Crosscutting Environmental Education Outcomes for Adolescents in the 21st Century (EE21). Environmental Education Research.
- 3 For more information see Collaborative for Academic, Social and Emotional Learning <https://casel.org/>
- 4 Oregon Environmental Literacy Task Force, Oregon Environmental Literacy Plan, 2013 <http://oelp.oregonstate.edu/sites/oelp/files/oelp-resources/environmental-literacy-plan-2013.pdf>
Hollweg, K. S., Taylor, J. R., Bybee, R. W., Marcinkowski, T. J., McBeth, W. C., & Zoido, P. (2011). Developing a framework for assessing environmental literacy. Washington, DC: North American Association for Environmental Education. Available at <http://www.naaee.net>.
- 5 Retrospective pre-post survey questions were answered at the end of outdoor school, but ask students to answer each question (e.g. "I believe in myself) twice. First they reflect on how they felt before the experience and then answer how they feel now, at the end of outdoor school.
- 6 For more information see National Equity Project. <http://nationalequityproject.org/>
- 7 Oregon Department of Education (May 5th, 2016). "Guidance to School Districts: Creating a Safe and Supportive School Environment for Transgender Students" <https://www.ode.state.or.us/groups/supportstaff/hklb/schoolnurses/transgenderstudentguidance.pdf>

For Additional Information:

- Oregon Senate Bill 439 <https://olis.leg.state.or.us/liz/2015R1/Downloads/MeasureDocument/SB439/Enrolled>
- 2017/18 Annual Report <https://oregonstate.app.box.com/s/c2k565f7uw2b2zjfkqsls6nmk6ttl7gj>
- Outdoor School in Oregon <https://grayff.org/wp-content/uploads/2018/07/ODS-final-report.pdf>
- Outdoor School Instructional Resource Rubric version 1.0 <https://oregonstate.app.box.com/s/55tf4pxdcjhmyxgnqopz3c9hjjgzolx5>
- Principles of Outdoor School version 1.0 <https://oregonstate.app.box.com/s/q3hyxli9ny6hbjqlllhvjm8uzxk3atp7o>
- Effects of a Residential Science Education Program on Student Success
Executive Summary <https://grayff.org/wp-content/uploads/2018/07/FinalODSResearchExecutiveSummary.pdf>
Full Report https://pdxscholar.library.pdx.edu/open_access_etds/2730/

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“Outdoor school benefits students both academically and socially. When they are engaged with peers in outdoor experiential learning, they feel, see and smell their lessons — some of which they’ll remember forever. I’ve seen students, even ones who struggle in the classroom decide on their life’s direction as biologists, teachers, social workers or foresters while at outdoor school. You can’t put a price tag on the value of getting kids out into the natural environment when it comes to the impact it could have on learning throughout their lives.”

– Randy Schild, Tillamook School District; Oregon Superintendent of the Year



For more information:

Oregon Outdoor School Program: <https://extension.oregonstate.edu/outdoor-school>

Oregon Environmental Literacy Program: <http://oelp.oregonstate.edu/>



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