

A CASE STUDY OF THE EFFECTS OF A SCHOOL OUTDOOR LEARNING INITIATIVE – Spring 2021

Authors:

Steve Kerlin, Ph.D. & Nanette Marcum-Dietrich, Ph.D.

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Executive Summary & Recommendations

This *Case Study of the Effects of School Outdoor Learning Initiative* was conducted during the spring of 2021. The study includes a survey of 133 middle school (grades 6-8) students, a survey of seventeen middle school teachers, and follow-up interviews of four of the teachers. This private pre-K through grade eight school is located in the Mid-Atlantic Region of the United States.

Increasing the use of the outdoors for instruction has been an initiative of the school and the administration for a few years prior to this study. The onset of the COVID-19 pandemic necessitated that the school and all teachers make more use of the outdoors during the 20-21 school year. The school remained open for in-person or at-home virtual learning with the choice given to parents and guardians. School administration provided resources during COVID-19 times including outdoor classrooms consisting of large tents, chairs, tables, whiteboards, and enhanced outdoor WiFi capacity during the fall of 2020. In the spring of 2021 the tents as outdoor classrooms were no longer in place but all students were provided with camp stools.

Students overwhelmingly reported that they are comfortable being outside and that being outside evoked positive feelings (e.g. happy, calm, focused, cooperative) and that being outside enhanced their ability to collaborate with peers. Time spent outdoors during the school day increased as a result of the COVID 19 pandemic as most students reported that they went outside more during the school day most often for lunch and breaks.

Students' reported enjoyment of the outdoors corresponded with their generally positive attitude towards both science and towards engineering as measured by the Friday Institute (2012) S-STEM survey which invites students to give information about their attitudes toward STEM subjects. This suggests that students feel able and willing to engage in STEM learning in the outdoors. An assessment of students' knowledge about their local watershed suggested that their learning in this STEM area is inconsistent. The survey data suggests that there is a disconnect between students' academic knowledge of watersheds and students' sense of place in their local watershed. For example, most students could correctly define the term, identify watershed boundaries and state common problems in a watershed; yet, when asked if they live in a watershed, few students responded, yes.

Teachers reported that they do use the outdoors for instruction on a regular basis and that their frequency of use increased or greatly increased (12 of 16) over the past three years. Further questioning had the teachers describe why and how they use the outdoors. Teachers explained that increased use of the outdoors was due to encouragement and support from school administration, outdoor classrooms (tents mentioned earlier), and COVID-19. Teachers were able to describe a large number of different subjects, topics, and activities that they taught outside. Some individual teachers self-identified as being more or less skilled in teaching

outdoors and the subject of science was identified by teachers as being easier to teach outside. Most teachers became more comfortable and confident the more they taught outside.

Established outdoor classrooms, in this case with tents and basic resources mentioned above, served as designated teaching spaces that helped some teachers as a bridge to moving some of their instruction from indoors to outdoors. Teachers also believed that these outdoor classrooms helped minimize distractions and improve student engagement when learning outdoors.

Teachers reported that students are excited to go outside for their classes, are more creative when outside, are able to collaborate more for group work, most have transitioned to recognizing the use of the outdoors for learning in addition to free time, that being outside led to improved behavior (even if they just went outside for a little bit students returned to the indoor classroom better behaved and engaged), and improved their social/emotional well-being and mood.

Findings from this study lead the researchers to make the following recommendations for this and other schools seeking to utilize the outdoors more for teaching and learning.

1. *Create permanently established outdoor classrooms.* While the use of natural outdoor spaces are regularly and successfully used by some teachers (e.g. science, drama/literature) most teachers need a more structured outdoor classroom to confidently move learning activities from inside the classroom to outdoors and manage student engagement and behavior. Established outdoor classrooms help teachers transition from the traditional and familiar indoor classroom to capitalize on the benefits of learning all subjects while in an outdoor setting. Based on this study and familiarity of construction and use of outdoor classrooms at other schools and non-formal environmental education centers we recommend that established outdoor classrooms have at minimum these features and resources: dry erase board, shade (large trees, in a forested area, pavilion, or tent), dependable WiFi (can be extended outdoors with the use of WiFi network relays), and seating and/or tables (simple log stools, benches, cedar lab/group activity tables.)
2. *Create a common set of expectations for student behavior and engagement when in learning activities that take place outside.* Teachers who had clear and high expectations which they communicated to the students before going outside also had successful outdoor learning activities and attentive behavior from their students. A common set of expectations could be created and used by all teachers across the school. Communicating the same expectations will also help the students in that expectations would be consistent and focused on engagement in the learning activities while outside.
3. *Provide ongoing professional development and mentoring for teachers.* Professional training in using the outdoors (natural spaces and established outdoor classrooms) should be offered to teachers as a continuing series. Some teachers are very comfortable and successful teaching in the outdoors, but other teachers need more training in this type of pedagogical setting, similar to other ongoing teacher training. Experts in teaching in the outdoors can be brought to the site to do site assessments to

help identify established outdoor classrooms of different designs, natural spaces for teaching and learning, and lead professional development sessions in theory and practice. Professional development workshops could include, but are not limited to:

- a. *Identification of curriculum connections.* Map the curriculum in each subject area to identify topics/activities that would be enhanced by outdoor learning.
- b. *Outdoor classroom management techniques.* Setting expectations, minimizing distractions, gathering/redirecting students' attention, projecting voice and addressing sound issues, efficiency in transition times, addressing student concerns such as insects, etc.

Teacher mentoring and co-teaching is another professional development strategy that can be used. Teachers who are successful and confident teaching outside can mentor other teachers in gaining confidence and skills through observations and discussions of each other's teaching. A similar professional development strategy may include taking teachers to other schools and non-formal education centers, specifically to see and learn about how others have created and use outdoor learning spaces.

Materials and Methods

This Case Study of the Effects of School Outdoor Learning Initiative was funded by the school administration. The school contracted with Stroud Water Research Center, Inc. to complete this research. The study was conducted under the oversight of the Institutional Review Board at Millersville University of Pennsylvania (Assurance # 752517383) and student assent and parent and teacher consent were obtained from all study participants. Results from this research will be used to inform teaching practices at this and other schools. Anonymous summary findings may be shared publicly with other schools and environmental education organizations in conference presentations and publications.

In this study of the school’s efforts to get students outside, middle school students were asked to complete a survey and middle school teachers were surveyed and interviewed about the effects of their outdoor learning experiences.

Survey and Interview questions focused on the following topics:

- Comfort with being outside
- Social-emotional well-being and stress levels
- Collaborative learning
- Learning about their local watershed
- Interest in Science, Technology, Engineering, and Mathematics (STEM)
- COVID-19 considerations

The researchers constructed the grades 6-8 student survey and the teacher survey and follow-up interview protocols using existing validated research instruments that were adapted to the context of this study. The school administration provided feedback on the drafts and the instruments were revised appropriately before administering to students and teachers.

Student surveys were administered electronically using Qualtrics Software and data analysis was completed using Qualtrics and Excel software. This report only includes data from students where both parent and student permissions were obtained. Permissions were sought from 148 students; data from 133 students are included in this report.

Student Demographics	
Grade 6 th – 49 students 7 th – 42 students 8 th – 42 students	Gender Male- 67 students Female – 62 students Non-binary – 2 students Prefer not to say – 2 students
Total number of students = 133	

Teacher surveys were also administered electronically using Qualtrics Software and data analysis was completed using Qualtrics and Excel software. 17 teachers completed the survey.

Teacher Survey Respondents
Grades Taught 6 th – 13 7 th – 11 8 th – 17
Total number of teachers = 17

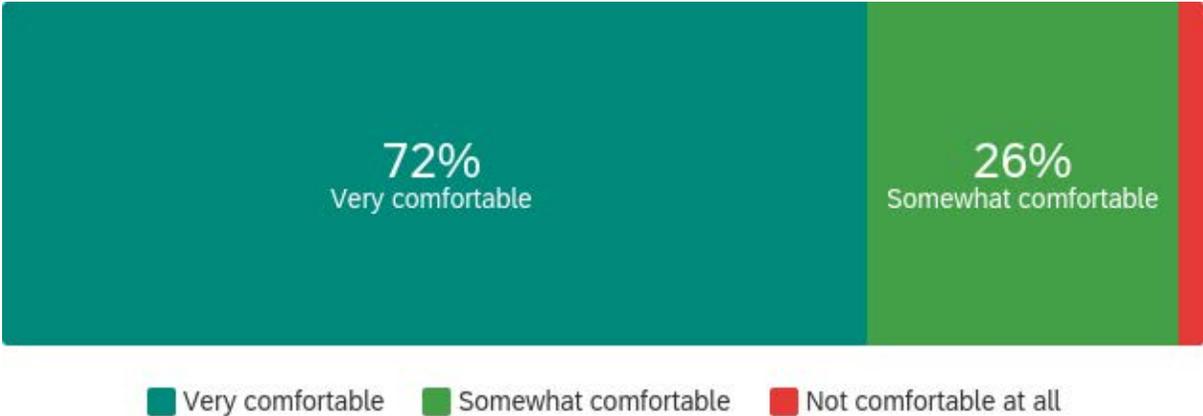
Four teachers participated in follow-up interviews. These teachers were recruited using a purposeful selection technique to provide a full spectrum of teachers' interest and use of the outdoors for instruction. Teacher survey responses provided the researchers with the ability to recruit teachers ranging from those that use the outdoors very little to those that use the outdoors regularly for lots of different lessons. Teacher follow-up interviews were conducted remotely via Zoom video software. Interviews were transcribed using Zoom's transcription feature and results were qualitatively analyzed to identify common themes and differences between a range of teachers.

Key Findings: Students

Comfort with being outside

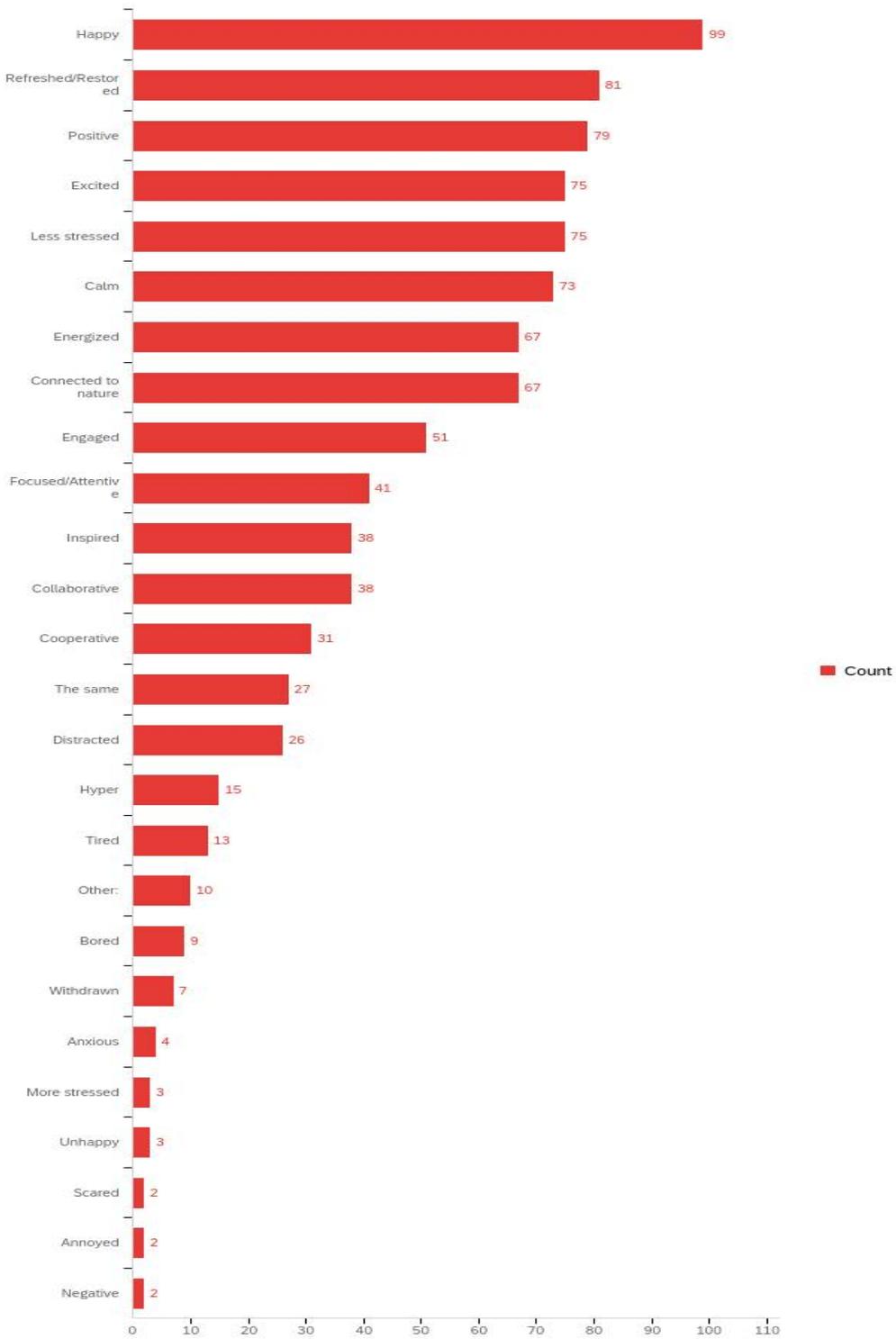
Students overwhelmingly reported that they were somewhat or very comfortable being outside. Only two students, both males in the 6th grade, stated that they were not comfortable being outside.

Student Survey Question: *How Comfortable are you being outside? (N=131)*



Students reported positive feelings about being outside for school activities. The data distribution was consistent. The top 13 responses all corresponded to positive feelings (e.g. happy, calm, focused, cooperative.) 75% of students reported that being outside for school activities made them happy. The lowest eight responses all corresponded to negative feelings (e.g. unhappy, annoyed, scared). 7% of students stated that being outside for school activities made them feel bored and 2% of students stated that it made them unhappy.

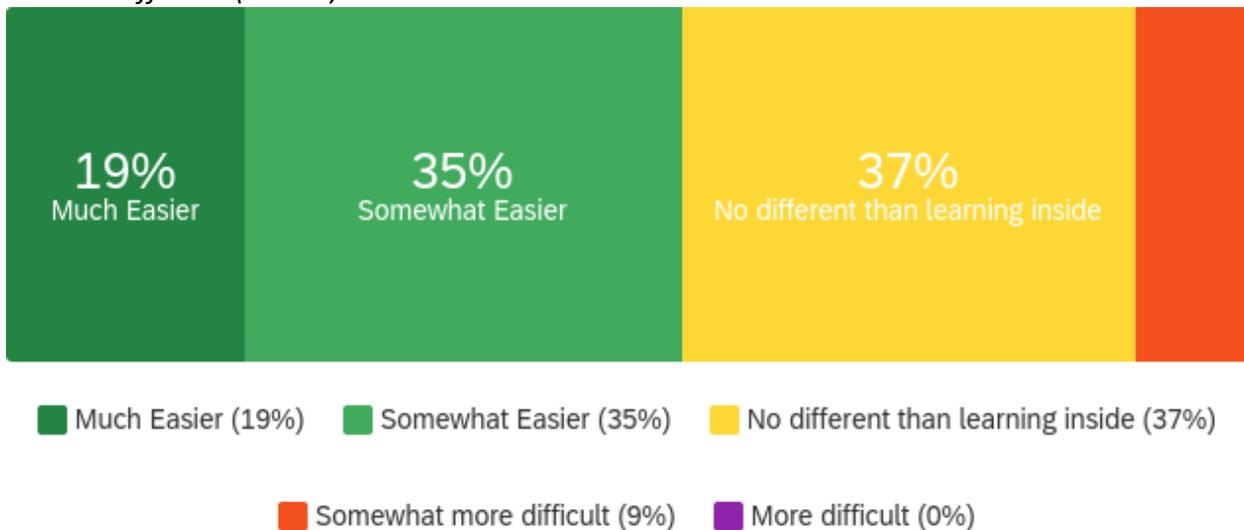
Student Survey Question: Being outside for school activities make me feel (select all the apply):
(N=132)



Collaborative learning

Learning outdoors supports collaboration amongst students. More than half (54%) of students stated that learning outside made it easier to collaborate with classmates and only 9% of students stated that it made it somewhat more difficult.

Student Survey Question: *Does learning outside make collaborating with your classmates easier or more difficult? (N=131)*



Learning about their local watershed

Students' knowledge about their local watershed was inconsistent. For example, when asked to select the correct definition for a watershed in a multiple-choice question, 80/130 (62%) students correctly identified that a watershed is an area of land, above, or below ground that drains into a specific body of water, 32% (41/130) selected "I don't know" and only 7% (9/130) chose an incorrect definition. 106/121 (87%) of students were also able to correctly identify watershed boundaries when presented with an image of a watershed. Most students were also able to identify problems in a watershed. For example, when presented with the below image (fig. #), 110/131 (84%) of students correctly stated that it was an example of erosion, and 69/124 (56%) of students were able to identify an example of point source pollution in a multiple-choice question.



The above responses suggest that students have a fundamental knowledge of watersheds, but when asked if they live in a watershed, only 36/131 (27%) of students knew that they lived in a watershed, 79/131 (60%) responded that they “did not know” and 16/131 (12%) responded that they did not live in a watershed. The summary of the survey data suggests that there is a disconnect between students’ academic knowledge of watersheds and students’ sense of place in their local watershed.

Student Survey Question: *Do you live in a watershed? (N=131)*



Interest in Science, Technology, Engineering, and Mathematics (STEM)

To understand students’ interest in STEM, the student survey included the Science and Engineering portions of the Upper Elementary S-STEM survey developed by the Friday Institute (2012). The S-STEM survey invites students to give information about their attitudes toward STEM subjects.

The S-STEM asks students nine questions for each of the two separate domains: Science & Engineering. For each item on the S-STEM survey, students select one of five choices ranging from strongly agree to strongly disagree. Students’ responses to each item are then assigned the value of “1” every time a student responds “strongly disagree;” “2” for “disagree;” “3” for “neither agree nor disagree;” “4” for “agree;” and “5” for “strongly agree.” The average of

those numbers together for all of the nine items on the Science Attitude section and all nine items on the Engineering Attitude section produces a “score” for students’ Science Attitude and a separate score for students’ Engineering Attitude. The higher the score, the more positive their attitude toward Science and Engineering.

Student Survey Question: Science

Science:

Science is a subject that uses observations and experiments to study how the physical and natural world works. For example, a scientist may work in a lab, studying how chemicals react, or out in nature, studying how birds build their nests. What makes a scientist a scientist is how they use a common method to investigate many different problems and puzzles.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I feel good about myself when I do science.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I might choose a career in science.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After I finish high school, I will use science often.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am older, knowing science will help me earn money.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am older, I will need to understand science for my job.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know I can do well in science.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Science will be important to me in my future career.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can understand most subjects easily, but science is hard for me to understand.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the future, I could do harder science work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Student Survey Question: Engineering

Engineering and Technology:

Engineers use math and science to invent things and solve problems. Engineers design and improve things like bridges, cars, machines, foods, and computer games. Technologists build, test, and maintain (or take care of) the designs that engineers create.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I like to imagine making new products.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I learn engineering, then I can improve things that people use every day.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am good at building or fixing things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am interested in what makes machines work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Designing products or structures will be important in my future jobs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am curious about how electronics work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I want to be creative in my future jobs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Knowing how to use math and science together will help me to invent useful things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe I can be successful in engineering.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Overall students in the study have a slightly positive attitude towards both science and towards engineering. Students’ average score for science was a 3.45 and for engineering it was a 3.59; both of these scores fall between the “somewhat agree” (4) and the “neither agree nor disagree” (3) range. No difference in score was identified for grade level or for gender.

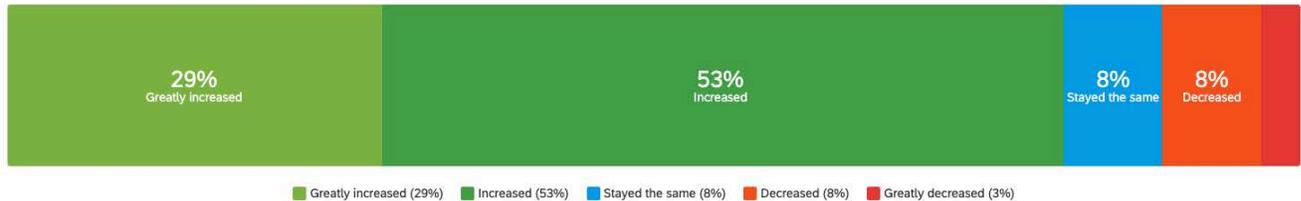
Student Attitudes towards Science and Engineering

Science (N=131)		Engineering (N=131)	
Overall – 3.45		Overall – 3.59	
Grade 6 th - 3.48 7 th – 3.44 8 th – 3.40	Gender Female - 3.46 Male – 3.43	Grade 6 th - 3.58 7 th – 3.52 8 th – 3.68	Gender Female - 3.63 Male – 3.56

COVID-19 considerations

Time spent outdoors during the school day increased as a result of the COVID 19 pandemic; 82% of students reported that they went outside more during the school day.

Student Survey Question: *How has the number of times you are outside during the school day changed during the COVID 19 pandemic?*



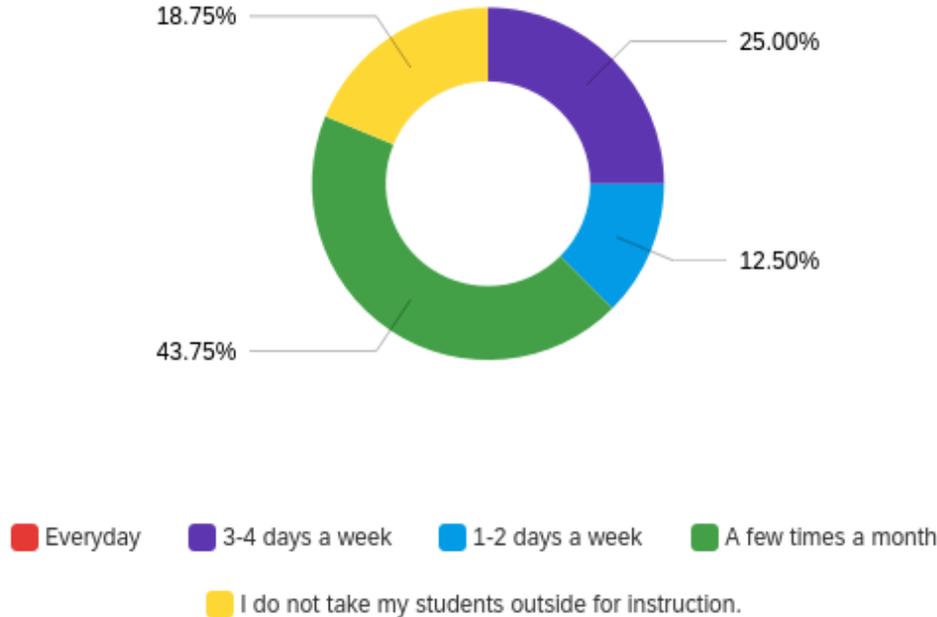
To better understand this increase in outdoor time, students were asked what school day activities were moved outside due to the COVID 19 pandemic. Students were given an open-ended question and instructed to provide a written example of an activity that previously occurred inside but now takes place outside due to the COVID 19 pandemic. An analysis of the data for this open-response question indicated that 84/126 (67%) of students listed lunch or eating outside as the one activity that traditionally occurred indoors but now happens outside as a result of the COVID 19 pandemic. The below word web uses an algorithm to identify frequently used words in students' written responses. Other common responses identified in the word web included snack breaks, mask breaks, and class.

Key Findings: Teacher Survey Responses

Frequency and use of the outdoors

A majority of teachers reported they do use the outdoors for learning activities on a regular basis (13 of 16 total) from a few times a month up to 3-4 days a week: a few times a month 7 (44%), 1-2 days a week 2 (13%), or 3-4 days a week 4 (25%).

Teacher Survey Question: How often do you use the outdoors for learning activities? (N=16)



Teachers also reported that their use of the outdoors for instruction increased (3 greatly increased, 9 increased) or remained the same (4) in the past 3 years. No teachers reported decreases in use of the outdoors.

Teacher Survey Question: How has your use of the outdoors for instruction changed in the past 3 years? (N=16)



Teachers were then asked to describe how their use of the outdoors changed in the past 3 years.

Teacher Survey Question: Describe how your use of the outdoors has changed in the past 3 years. (N=14, some responses included multiple items categorized below)

Common ways teachers changed their use include more opportunities, outdoor teaching capacities, comfortability, and COVID-19 impact:

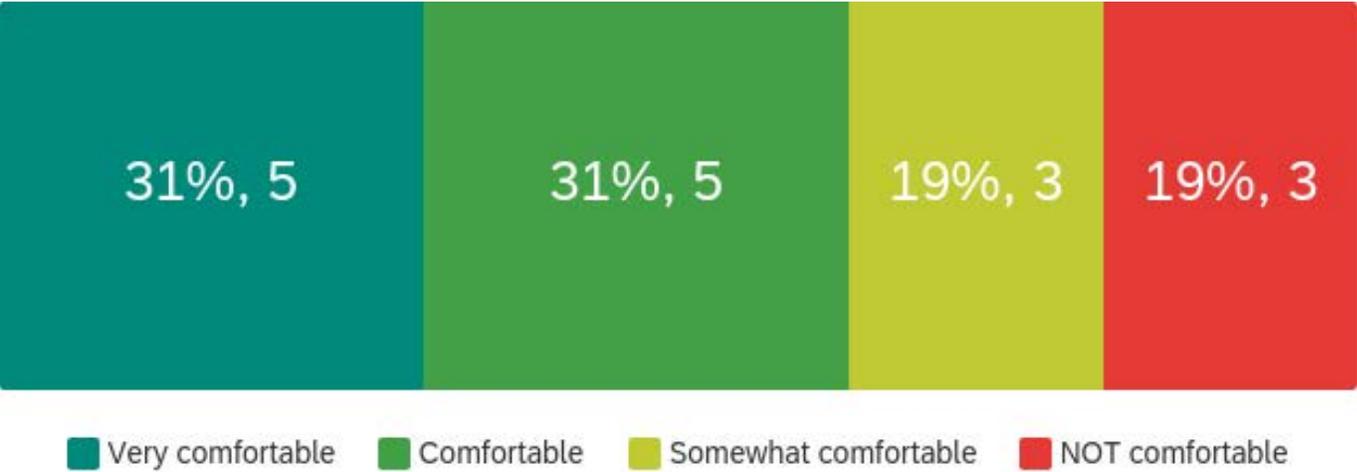
Category Responses (N)	Descriptors
More opportunities (5)	To do different assignments, including math, performing, humanities - literature, grammar, vocabulary, change from only hikes to explorations and direct instruction and independent computer work, outdoor laboratory experiments and observations, play games, work in groups, etc.
Outdoor teaching capacities (4)	WiFi enhancements make just about any lesson is possible outside, barn area for performance, different venue for learning, chance to get out of confines of four walls, other schools lack outdoor space comparatively
Comfortability with outside teaching (4)	Grown more comfortable, with proper instruction and activities outdoor time does not require any extra work, overcame fear of

	losing control of behavior, less inhibited, simple time outside with students with no particular goal, think about going out more often
COVID impact (2)	Significantly increased since COVID
No change or not applicable (2)	

Comfort level in outdoor instruction

Most teachers reported they were comfortable to very comfortable taking their classes outside for instruction (62% combined). While this percentage is a majority there is still room (38% reported not comfortable or only somewhat comfortable) for training and experiences to help more teachers gain comfort in using the outdoors for instruction.

Teacher Survey Question: How comfortable are you with taking your class outside for instruction? (N=16)



Teacher impressions of students’ interests and benefits to learning outdoors

Teachers feel that their students are interested in learning outdoors with an almost even split between somewhat interested, interested, and very interested. None of the teachers felt that their students were not interested in learning outdoors.

Teacher Survey Question: How would you rate your students' interest in learning outdoors?
(N=16)



Teachers were then asked to describe their students' reactions to going outside for learning.

Teacher Survey Question: How would you describe your students' reactions when informed they will be going outside for learning? (N=15)

The majority of teachers responded that their students were excited (e.g. excited, elated, love it, cheers) about going outside for learning (10 of 14). Three of these teachers reported student excitement except for when it is cold (2) or hot (1) outside. 1 teacher each reported that ½ of the students are excited and ½ are not, going outside for learning is a breath of fresh air, and that students are excited but not focused.

Benefits and limitations of teaching outdoors

The benefits of teaching outside reported by teachers can be organized into the three categories of 1) environmental/personal/emotional benefits, 2) increases in engagement, focus, and creativity, and 3) space availability for teaching and learning. A majority (11 of 15) teachers reported personal and emotional benefits because of being outside such as a change in scenery is positive and keeps things fresh, feeling relaxed, getting fresh air, and an improved overall mindset. This is in-line with research in this same area. Similarly, increases in engagement, focus, and creativity noted by the teachers are also in-line with the research field. A third of the teacher respondents also chose to mention the availability of space when outdoors. Outdoor space flexibility was important for teachers to mention and shows that they recognize the outdoors as new opportunities.

Teacher Survey Question: *In your opinion, what are the **instructional benefits** to your students when learning outside? (N=15)*

Category Responses (N)	Descriptors
Environmental/Personal/Emotional Benefits (11 of 15)	Change in scenery is positive and keeps things fresh, fresh air/open air, pleasant/peaceful environment, clean, comfort, enjoyable, more relaxed, sun and heat improve mindset
Increases in Engagement, Focus, and Creativity (6 of 15)	Some students collaborate more with peers when outside, increased creativity, seem to come up with more ideas, improved behavior when we come back inside, fresh air brings clarity, movement brings energy, fun and relatable, see processes in action, increases engagement and focus - particularly in small group activities
Space Availability for Teaching and Learning (5 of 15)	Space, space availability, open space, options and opportunities for more creative lessons, can be slightly closer outside because of COVID-19 in group work, various seating positions possible, space provides room for performance and expression

Teachers were then asked what they believed for instructional limitations to their students when learning outside. While distractions were mentioned the most, some comments about distractions also mentioned that as students got used to being outside they would learn better and that older students may focus more on the school work than younger students. Most weather complaints cannot be addressed but there are screens and shading that can be used to help students see digital devices better. Some teachers wanted projectors and/or Smartboards outside and that some lessons are suited better for inside or outside. A pair of teachers mentioned a loss to class time because of transition to get outside and back.

Teacher Survey Question: *In your opinion, what are the instructional **limitations/drawbacks** to your students when learning outside? (N=15)*

Category Responses (N)	Descriptors
Distractions (9)	More distractions at times, lack of focus, students can be easily distracted, once they got used to being outside for instruction they would learn better, can't hear well, string instruments may get damaged, older students better at completing work while younger students often feel like it should be play time
Weather and Outside	Complaints about the weather (too cold or too hot sometimes),

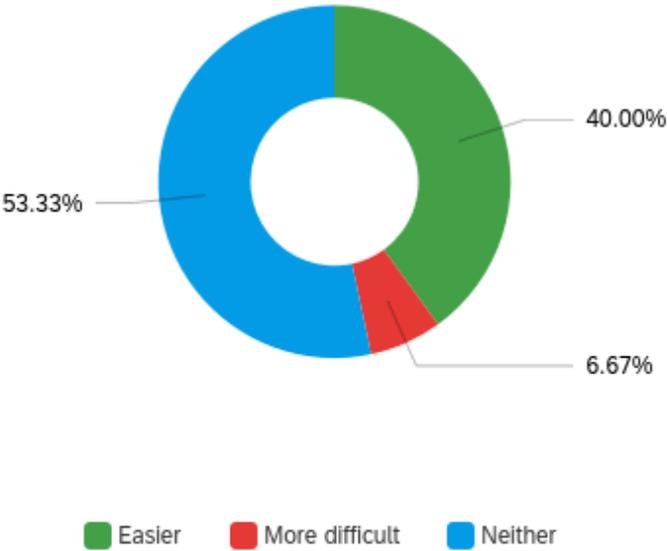
Conditions (7)	glare/sun on computer screens, bugs, wind, mud
Technology (5)	Not having smartboard or projector makes some lessons better suited for indoors, connection with students who are distance learning, glare on computer screen, limited technologies
Time (2)	Transition time to the outside uses class time

Note: Difficulty seeing computer screens from glare was included in both the Weather and Outside Conditions and Technology categories.

Collaborative Learning

A majority of teachers reported that collaborative learning when instructing outdoors is easier (40%) or the same (53%) as indoors. Only a small percentage (7%) reported that collaborative learning is more difficult outdoors.

Teacher Survey Question: *Does outdoor instruction make collaborative learning easier or more difficult? (N=15)*



When asked to explain their response to the prior question most teachers (7) further described how collaborative learning is easier and includes other positive outcomes when outside. 4 described that student collaboration depends on the learning activity. 3 teachers noted no difference in collaborative learning between inside and outside while only 1 teacher described a difficulty.

Teacher Survey Question: Explain your answer to the previous question? (N=14)

Category Responses (N)	Descriptors
Easier and More Positive Outcomes (7)	Able group students and see them all in one area when outside instead of sending some groups to other parts of the building, not limited by physical constraints of classroom, students have more room to find spaces for groups to sit and collaborate, necessary during COVID, opens up students minds more than just sitting at a desk in the classroom
Depends on the Activity (4)	Depends on the activity - students can collaborate in both settings, sometimes easier because of space to group students and move around, sometimes more difficult because of WiFi connection to work with students that are distance learning from home, depends on the activity not the location
No Difference (3)	No difference in collaboration inside or outside, both depend on planning and execution of lessons and needs of students
More Difficult (1)	Harder to play string instruments outside

Social/Emotional Benefits and Limitations from Learning Outside

10 teachers described in different ways that students appeared more relaxed when learning outside. 7 teachers noted that students recognize that learning does not just happen inside a classroom. Teachers also noted benefits to students that are social (4), spur more creativity (2), and freedom to be themselves (2).

Teacher Survey Question: In your opinion, what are the social/emotional benefits for your students from learning outside? (N=15)

Category Responses (N)	Descriptors
More Relaxed (10)	More relaxed, less stress, less anxiety, mental health benefits, uplifting effects of sunshine and fresh air, more comfortable in their surrounding when outside more often, out in fresh air

Change in Learning Experience (7)	Recognize that learning does not have to take place in the typical classroom setting, forgetting they are in school, movement, change of scenery, chance to unplug, outside is a grounding experience with life
Social (4)	Enjoy being with classmates, ability to be loud, can be closer together during COVID, cooperative
Creativity (2)	Brainstorm better, more imaginative
Freedom to be Themselves (2)	Less inhibited, be more of themselves with freedom to move and talk

When asked about any students’ social/emotional limitations when learning outside, teachers (6) responded that there are none, students are sometimes off task (6) because of noise or other distractions, or (3) that not all students are comfortable with being outside because of allergies or insects.

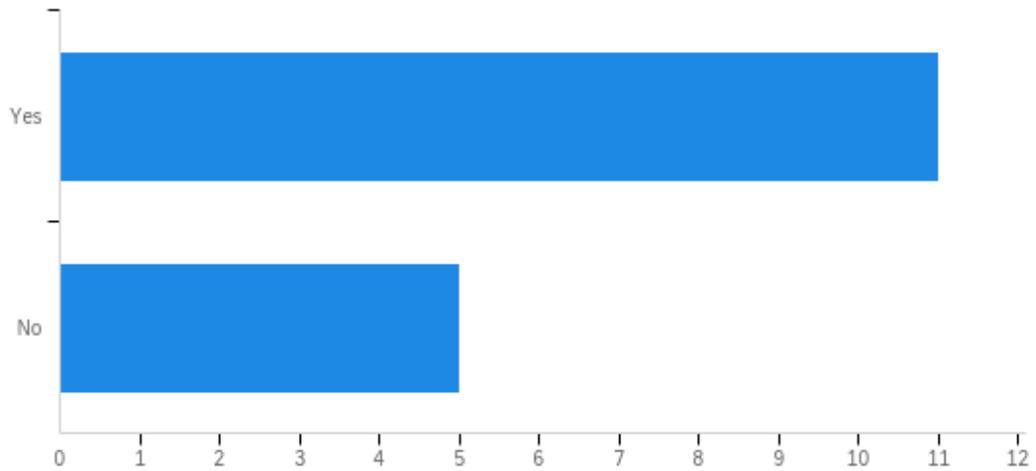
Teacher Survey Question: *In your opinion, what are the social/emotional limitations for your students from learning outside? (N=14)*

Category Responses (N)	Descriptors
No Social/Emotional Limitations (6)	None, n/a, don’t see any
Off Task and More Difficulty for Students to Participate (6)	Sometimes sound distractions make it difficult for students to actively participate, harder to connect with students who are distance learning, distraction when spotting something out of the ordinary, equating going outside with recess, more difficult to hear quiet students outside, some more inclined to be off task
Student Comfortability in the Outdoors (3)	Not all students are comfortable outside and some have allergies, some uncomfortable because of limited exposure to being outside, fear of wildlife for some (inc. stinging insects and ticks)

Teachers’ Comfort Level in Taking Students Outside for Instruction

11 teachers reported that their comfort level in taking students outside for instruction has changed in the past year.

Teacher Survey Question: Has your comfort level with taking students outside for instruction changed over the past year? (N=16)



When asked what prompted change in their comfort level in taking students outside, teachers equally (4 each) reported the COVID-19 pandemic and administrative encouragement caused the change in comfort level. 3 other reasons were also given by individuals for the change in their comfort level: taught remotely but excited to return and teach outdoors, change in grade band taught, and realization of importance of emotional well-being.

Teacher Survey Question: How often do you use the outdoors for learning activities? (N=12)

Category Responses (N)	Descriptors
COVID-19 (4)	COVID-19 pandemic led to an increase.
School Initiative (4)	Cultural shift in the school of highly encouraged to take students outside as much as possible, outdoor learning initiatives, encouragement from administration
Other (3)	Taught remotely but and very excited to teach outdoors when return to campus, moved from high school to middle school level teaching, realization of the importance of emotional well-being
No Change (2)	No Change

Impact of Outdoor Instruction on Student Watershed Learning and Interest in STEM Careers

Most of the responding teachers did not teach science or didn't consider learning about watersheds as their expertise and therefore mention that this question was not applicable or

there was no change unless watersheds are included in the lessons. The 5 teachers that did notice a change in students' learning of watershed concepts all responded that teaching and learning outside had positive impacts. They attributed these positive impacts to real-life interactions with the school watershed and streams.

Teacher Survey Question: In your opinion, what impact, if any, does outdoor instruction have on your students' learning about watershed concepts? (N=13)

Category Responses (N)	Descriptors
Increased Understanding (5)	Greater understanding because of interactions with the streams and doing stream testing, students see and experience the watershed, campus watershed education makes issues real for students, can see how the land changes in the school watershed along with how water flows and how watershed boundaries are designated, HUGE
None or N/A (8)	No impact unless watersheds are included in your lesson, not applicable for my subject or my expertise, don't teach science

When asked if outdoor instruction has an impact on students' interest in STEM careers, 8 teachers similar to the prior question indicated that STEM careers are not part of what they teach or it depends on the lesson. All 6 of the teachers that report an impact reported that outdoor instruction created a positive impact and increase in student interest in STEM careers is perceived. Teachers gave examples of STEM careers mostly related to environmental sciences and environmental engineering but one teacher also mentioned that students began to see connections to STEM careers in everything they do.

Teacher Survey Question: In your opinion, what impact, if any, does outdoor instruction have on your students' interest in STEM careers? (N=14)

Category Responses (N)	Descriptors
Increased interest (6)	Students are interested, believe outdoor instruction will create greater student interest - particularly in the environmental field, think it could stimulate interest, could cause more interest in ecology and environmental engineering, careers exist where they can work outside, increases as students better understand that everything can be related to STEM, positive effect
N/A or None (8)	STEM careers are not part of the subject I teach, depends on the lesson

Key Findings: Teacher Interviews

Note: Teachers were purposefully selected for follow-up interviews with the intent of capturing the spectrum of responses of teachers ranging from those who use the outdoors for instructional purposes regularly and are advocates for doing so to those who do not use the outdoors regularly and do not see it as something for them. Main ideas are in bold print of the summaries and paraphrasing of teachers' responses.

How Outdoor Learning Spaces are Used

The interviewees were first asked a series of five related questions about how they used the outdoor learning spaces, how their use has changed, and prompted for examples of activities that work well outside or better indoors.

Teacher Interview Question: On the survey, you indicated that you use the outdoor learning spaces _____ times per week. Describe how you use the outdoor learning spaces.

Teacher Interview Question: On the survey you described how your use of the outdoor learning spaces has changed in the past year. Elaborate and provide additional examples.

Teacher Interview Question: What type of activities do you typically use in the outdoor learning spaces? How do you choose activities to use in the outdoor learning spaces? What makes a good activity for outdoor learning spaces?

Teacher Interview Question: Can you provide an example of a specific lesson that you think was enhanced by the use of the outdoor learning spaces?

Teacher Interview Question: Can you provide an example of a specific lesson that you did in the outdoor learning spaces that you think would have been more impactful if you had done it inside the normal classroom?

Main ideas from teachers interviewed:

- Used outdoors in lots of ways
- Designated outdoor classrooms/academic spaces
- At-home learners was complicated when teaching outside, especially sound
- Group work outside
- Class schedule of 90 minute blocks provided more time to go outside
- Encouraged and supported by administration,
- More comfortable and less stressed outside

Teacher	Amount Outside	Response Summary
1	Increased, 1-2 times/week	<p>Designated outdoor academic spaces with tents, chairs, tables, and whiteboards the first half of the year were nice because they were similar to a classroom learning space. Had everything needed just like inside. WiFi extended to outside near the building was also helpful. Without the tents students were more stimulated and distracted. Not using outside nearly as much without the designated spaces and structured setting. Now introducing things inside (presentations and modeling) and can have students complete the work outside or for a mask break or recreation. Math was better outside when dedicated learning space was available as an academic setting compared to an open field (harder to keep attention because of more stimuli). Did not matter what level of math was being taught. Would use more if still had those designated spaces. Less reliance on technology and more simple lessons outside. Online at-home learners complicated things when teaching outside because they lose time while the in-person class is transitioning to outside and difficulty sharing screen for the at-home virtual learning students.</p>
2	When student work is complete	<p>Uses outside as a reward like recess not for teaching. Does not find teaching outside an efficient use of time. Handful of times it was tried but it did not work out. Has not worked for this teacher who is self-described as not a disciplinarian. Tried to do brainstorming outside but the small amount of chaos that comes with brainstorming combined with being outside was too much. Had to redirect attention repeatedly. This attempt scarred this teacher regarding teaching outside.</p>
3	Increased, Few times a month	<p>Can take off masks outside. Group work done outside because students can distance themselves. Everyone was more comfortable and less stressed outside compared to inside. Tried to find appropriate activities for outdoors. Rarely went outside in prior years. School class schedule of 90 minute blocks provided more time to go outside. Outside gives students a break and was better during COVID-19. Internet capability helps outside for the students that are in-person but the sound for at-home students was hard. Chose group work activities such as readings and scripts for outside. Historical work map activity of piecing it together worked well outside. Spreading students out as individuals and groups was easier outside. In the spring without the tents this teacher uses tables</p>

		in a courtyard and the students have camp stools enabling outdoor lessons to continue. Class was reading a play once when it was really windy, so it was hard to hear, especially for the few online learners.
4	Increased, 1-2 times/week	Used outdoors in lots of ways , at a minimum as a break out hike. Did lots of instruction outside with tools and different lessons, sometimes in the creek looking for macroinvertebrates. Sometimes nature walk, observational walk, bird box monitoring, and use of barn space. Experienced some difficulty in only seeing each class twice a week . Teachers were encouraged by administration - this is when real change occurs. Went outside before but now more with the camp stools and WiFi access around the building. Group work, more flexibility, a number of science activities can be done outdoors. Outdoors was better for some students, not more distracting. Doesn't fit everyone's needs. Inside more in winter but block of time still enabled walk breaks in winter with coats. Teacher mindset was changed to the positive about going outside in the winter. Used tents at the beginning of year for food chain and food web activities and lining students up by different animals. Will continue to do this activity in future even without the tents. Whiteboard made it easier to teach by putting directions on the board. It's also easier to move things around and set up activities. The dedicated spaces (tents) provided teachers with structure as a step to using outdoor spaces more. It also helped in case of rain. Teachers became more comfortable by spring and didn't have as much need for the tents. Sometimes when there were too many distractions or background noise the class was taken back inside. Can't remember a specific lesson that would have been better inside.

Perception and Impacts of Using Outdoor Learning Spaces

Teachers were next asked about their perception of using outdoor learning spaces and how it may have impacted their students' learning, behavior, social/emotional health.

Teacher Interview Question: How has using the outdoor learning spaces changed your outlook/perception?

Teacher Interview Question: Has using the outdoor learning spaces impacted your students? What are students' responses to using the outdoor learning spaces?

Teacher Interview Question: What impact has using the outdoor learning spaces had on student behavior? How does this behavior compare to instruction that occurs indoors?

Teacher Interview Question: Do you believe the use of the outdoor learning spaces has had an impact on students’ emotional/mental health? Please elaborate on how you formed this belief.

Main ideas from teachers interviewed:

- An individual teacher difference - some are more successful and comfortable teaching outside than others
- Students want to go outside even if it is for a short break, students are recognizing that the outdoors is used for learning in addition to recess
- Different stimuli outside for distractions
- Improves mood, emotional/mental health - nature therapy
- Administration provided good support
- Group work or an active activity, change the way certain lessons are designed so they work better outside

Teacher	Response Summary
1	The school campus is beautiful so it’s nice to be outside. The amount of stimuli outside makes it difficult for students. They are less attentive outside. Feels that science lends itself best compared to math and other subjects. Students like going outside but their perception is that they will not be doing a lesson and will have more freedom, free time, mask break, and less structure. Mentioned a student with ADHD who had more attention difficulties outside. Going outside is better for well-being and emotional happiness.
2	After a few attempts outside this teacher realized lessons for that class are more effective inside, even though this teacher loves the outdoors. Feels that the outdoors can be used for exploring, being creative, a reward, and a release of energy. Students like being outside but were chaotic outside and better behaved indoors. However, if students are outside for recess or breaks their behavior is better when they come back to the classroom. This teacher feels that teaching outside is difficult compared to other teachers who are more successful - an individual teacher difference.
3	Previously did not go outside so the experiences over this past year definitely changed this teacher’s perception in a positive way. Sees now that students are engaged outside and a break is good for them. Simply walking (physical movement, fresh air, change in environment) to the outdoor space helps students engage better when they are there. Students look forward to going outside as something different and exciting. Students ask frequently to go outside. Students like being about to be closer to each other compared to COVID-19 protocols inside. This teacher reports no real behavior issues acknowledging that you do have to

	redirect a bit more. But there are different distractions inside as well. Believes being outside helps students' emotional/mental health because of the sunshine, fresh air, and ability to interact with each other more, all improve their mood.
4	This teacher changed the way certain lessons are designed so they work better outside. Makes sure there are clear guidelines for every student at home and in-person outside. This teacher wants to be outside for teaching as much as possible and has a background in this area. The administration provided good support to go outside like the camp stools in case the ground was wet. Believes the students' perceptions of going outside has changed so that it is not just for recess anymore. Most of the students enjoy and request to learn outside, but it depends on the student, because they know it will be group work or an active activity instead of sitting and listening to the teacher or use of the smartboard. A couple students that are more studious and used to traditional education mentioned it as a waste of time, and didn't think they were learning as much. It's harder for those students to think out of the box of traditional education. Students are more comfortable because of the experiences of the last few years going outside more often. Student behavior depends on the day. Most of the students are very well behaved at this school. This teacher sets expectations high and students meet them. Still goes outside even with light rain for a break. Believes that time outside does improve students' emotional/mental health - nature therapy.

COVID-19 and Use of Outdoor Learning Spaces

Last, teachers were asked about the effect of COVID-19 and if they would continue to go outside more after the pandemic.

Teacher Interview Question: How have you used the outdoor learning spaces since the start of the pandemic? Has your use of the outdoor learning spaces changed as a result of the COVID-19 outbreak?

Teacher Interview Question: How do you think your experiences in the past year will impact how you use the outdoor learning spaces in the future, after COVID-19 is contained?

Main ideas from teachers interviewed:

- Some did not go outside prior to COVID-19 and all will continue to take students outside at varying degrees, from a break/reward to intentionally designed outdoor lessons. All recognize there are many benefits to learning in the outdoors
- Dedicated outdoor learning spaces (tent, whiteboard, tables, etc.) takes it to another level and would teach outdoors more
- Individual teacher differences in skills and comfort
- Worry that some teachers may think going back to 40-50 minute classes may not provide enough time to get outside and organized

Teacher	Response Summary
1	<p>Did not go outside prior to COVID-19 except for free time when work was done. Will continue to get students outside at the end of class. If there are dedicated outdoor learning spaces (tent, whiteboard, tables, etc.) takes it to another level and would teach outdoors more. Believes the dedicated spaces are more conducive to learning.</p>
2	<p>Believes not personally skilled enough to teach effectively outside and that some subjects are easier or more difficult to teach outdoors. Will continue to use the outdoors as a reward.</p>
3	<p>Experiences over the last year have convinced this teacher that it is worth going outside even with the transition time loss to the space and that there are many benefits to learning in the outdoors, not just break time.</p>
4	<p>Definitely will continue to take students outside as much as possible and hears from a number of other teachers that plan to do the same. The longer class times (blocks) were better for outside than inside and good for labs and projects. Thinks that some teachers may think that going back to 40-50 minute classes may not provide enough time to get outside and organized.</p>

References

Friday Institute for Educational Innovation (2012). Middle and High School STEM-Student Survey. Raleigh, NC: Author.

Default Question Block

Stroud Water Research Center and Millersville University of Pennsylvania

STUDENT ASSENT TO PARTICIPATE IN RESEARCH

[REDACTED] School Outdoor Learning Study

Why is this study being done?

In the last few years, [REDACTED] School has made an effort to get students outside. Environmental education research encourages students to get outside everyday. Providing students opportunities to learn and play outside has been shown to improve students' health and wellness, academic achievement, psychological, and social functioning. Results from this research will be used to inform teaching and learning at [REDACTED]

[REDACTED] School.

What data will be collected as part of this research study?

The research study is asking to use the following data from an online survey you will be taking in class that has science questions and some questions about your school day and learning inside and outside.

The survey will be completed during your science class. We will not use your name in any reports of the data.

How long will I be in the research study?

Survey completion will take one class period.

Are there any potential risks or discomforts that I can expect from this study?

No. There are no risks from this study.

Are there any potential benefits if I allow my data to be used in this study?

You will not directly benefit from the use of your data, but the results of the research may help the school and your teachers improve teaching and learning.

What other choices do I have if I choose not to have my data used?

If you do not want to share your data, you will still take the survey, but your data will not

be used.

Will information about me and my participation be kept confidential?

Yes. All data will be kept secure. When we report on the results of this study, you will not be identified.

What are my rights if I allow my data to be used in this study?

- You can choose whether or not you want your data to be used this study, and you may withdraw your consent and have your data deleted at anytime.
- Whatever decision you make, there will be no penalty to you, and no loss of benefits to which you were otherwise entitled.
- You may refuse to answer any questions on the survey that you do not want to answer.

Who can I contact if I have questions about this study?

If you have any questions, comments or concerns about the research, you can talk to your teacher or ask to speak to one of the researchers.

The Research Team:

Dr. Steve Kerlin

Stroud Water Research Center

970 Spencer Road

Avondale, PA 19311

skerlin@stroudcenter.org

Dr. Nanette Marcum-Dietrich

Millersville University-Educational Foundations Department

PO Box 1002

Millersville, PA 17551-0302

Email: ndietrich@millersville.edu

•Millersville University Institutional Review Board(IRB):

If you have questions about your rights as a research subject, or you have concerns or suggestions and you want to talk to someone other than the researchers, you may contact the MU IRB by phone: (717) 871-4457 or by email: mu-irb@millersville.edu.

Your FIRST name:

Your LAST name:

Your grade:

Your gender:

- Male
- Female
- Non-binary
- Prefer not to say

Do you give your assent to allow the study to use your data?

- I give my assent to allow study to use my data
- I do NOT give my assent to allow study to use my data

Your signature:

×

SIGN HERE

[clear](#)

Date (mm/dd/yyyy):

Student online survey questions

Student online survey questions

When answering the survey questions please think about your entire time at [REDACTED] School and all of the different outdoor experiences you've had at the school.

How comfortable are you in being outside?

- Not comfortable at all
- Somewhat comfortable
- Very comfortable

Being outside for school activities make me **feel** (select all that apply):

- | | |
|---|--|
| <input type="checkbox"/> Scared | <input type="checkbox"/> Focused/Attentive |
| <input type="checkbox"/> Happy | <input type="checkbox"/> Distracted |
| <input type="checkbox"/> Unhappy | <input type="checkbox"/> Engaged |
| <input type="checkbox"/> Excited | <input type="checkbox"/> Annoyed |
| <input type="checkbox"/> More stressed | <input type="checkbox"/> The same |
| <input type="checkbox"/> Less stressed | <input type="checkbox"/> Inspired |
| <input type="checkbox"/> Calm | <input type="checkbox"/> Cooperative |
| <input type="checkbox"/> Hyper | <input type="checkbox"/> Connected to nature |
| <input type="checkbox"/> Anxious | <input type="checkbox"/> Collaborative |
| <input type="checkbox"/> Energized | <input type="checkbox"/> Withdrawn |
| <input type="checkbox"/> Tired | <input type="checkbox"/> Positive |
| <input type="checkbox"/> Bored | <input type="checkbox"/> Negative |
| <input type="checkbox"/> Refreshed/Restored | <input type="checkbox"/> Other: |
| | <input type="text"/> |

Block 2

Does learning outside make collaborating with your classmates **easier** or more **difficult**?

- Much Easier

- Somewhat Easier
- No different than learning inside
- Somewhat more difficult
- More difficult

How has the number of times you are outside during the school day changed during the COVID-19 pandemic?

- Greatly decreased
- Decreased
- Stayed the same
- Increased
- Greatly increased

Please list at least one activity during the school day that used to take place inside but is now taking place outside because of the COVID-19 pandemic.

Learning about your local watershed

Do you live in a watershed?

- No
- Yes
- Don't know

Which of these is the best definition of a watershed?

- A building located at a drinking water treatment plant
- A significant pollution event caused by porous surfaces
- An area of land, above or below ground, that drains into a specific body of water
- Another name for a river or stream
- Don't know



Look at the picture. Which of the following is **NOT** located in this river's watershed?
Select all that apply (or none):

- 
- 
- 
- 
- 

Which of the following will occur when the land cover of an area is changed by cutting down trees and replacing them with pavement and buildings? Select all that apply (or none):

- More water will infiltrate into the groundwater
- More water will runoff into local rivers and lakes
- There will be a greater chance of flooding and erosion

- Water will drain into local rivers and lakes faster



The above photo is an example of...

- erosion
- evapotranspiration
- infiltration
- rain garden
- don't know

Which of these is a type of **point source** pollution?

- Oil in the water running off of streets and parking lots
- Soil in the water running off of farm fields
- Fertilizer in the water running off of lawns
- Chemicals in the water coming out of a factory pipe

Which of the following benefit your local watershed? Select all that apply (or none):

- Conserving water at home or school
- Helping clean up or take care of a local stream, river, or beach
- Participating in a restoration activity such as planting trees or removing invasive plants
- Checking the weather forecast for your area

Is your local watershed healthy? Give 3 pieces of evidence to SUPPORT your answer.

Yes or No

Evidence #1

Evidence #2

Evidence #3

Describe 2 activities that BEST helped you learn about your watershed.

Activity #1

Activity #2

Science:

Science is a subject that uses observations and experiments to study how the physical and natural world works. For example, a scientist may work in a lab, studying how chemicals react, or out in nature, studying how birds build their nests. What makes a scientist a scientist is how they use a common method to investigate many different problems and puzzles.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I feel good about myself when I do science.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I might choose a career in science.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
After I finish high school, I will use science often.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am older, knowing science will help me earn money.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I am older, I will need to understand science for my job.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I know I can do well in science.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Science will be important to me in my future career.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I can understand most subjects easily, but science is hard for me to understand.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the future, I could do harder science work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Engineering and Technology:

Engineers use math and science to invent things and solve problems. Engineers design and improve things like bridges, cars, machines, foods, and computer games.

Technologists build, test, and maintain (or take care of) the designs that engineers create.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I like to imagine making new products.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I learn engineering, then I can improve things that people use every day.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am good at building or fixing things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am interested in what makes machines work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Designing products or structures will be important in my future jobs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am curious about how electronics work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I want to be creative in my future jobs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Knowing how to use math and science together will help me to invent useful things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe I can be successful in engineering.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Block 5

List three outdoor activities during the school day that helped you learn or improved how you felt.

- Activity 1:
- Activity 2:
- Activity 3:

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Default Question Block

Stroud Water Research Center and Millersville University of Pennsylvania

TEACHER CONSENT TO PARTICIPATE IN RESEARCH

██████████ School Outdoor Learning Study

Why is this study being done?

In the last few years, ██████████ School has made an effort to get students outside. Environmental education research encourages students to get outside everyday. Providing students opportunities to learn and play outside has been shown to improve students' health and wellness, academic achievement, psychological, and social functioning. Results from this research will be used to inform teaching and learning at ██████████ School.

What will happen if I take part in this research study?

If you volunteer to participate in this study, the researcher will ask you to do the following:

- Take an online survey
- Potentially participate in a follow-up interview

The survey and interviews may be completed during the school day. We will compile all data and results will be reported in aggregate and will not identify you. We will not report your name.

How long will I be in the research study?

The survey will take approximately 30-45 minutes to complete. If selected for a follow-up interview, the interview will take approximately 30 minutes and will take place via Zoom Video conferencing.

Are there any potential risks or discomforts that I can expect from this study?

No. There are no risks from this study.

Are there any potential benefits if I participate?

The results of the research may help the school, and you, improve teaching and learning.

What if I choose not to participate?

You will still have the opportunity to talk with the researcher. You will also be given access to the report of final results that will be shared with all teachers.

Will information about me and my participation be kept confidential?

Yes. All data will be kept secure. When we report on the results of this study, you will not be identified.

What are my rights if I take part in this study?

- You can choose whether or not you want to be in this study, and you may withdraw your consent and stop participating anytime.
- Whatever decision you make, there will be no penalty to you, and no loss of benefits to which you were otherwise entitled.
- You may refuse to answer any questions on the survey or choose not to be interviewed and still remain in the study.

Who can I contact if I have questions about this study?

If you have any questions, comments or concerns about the research, you can talk to your administrator or ask to speak to one of the researchers.

The research team:**Dr. Steve Kerlin**

Stroud Water Research Center
970 Spencer Road
Avondale, PA 19311
skerlin@stroudcenter.org

Dr. Nanette Marcum-Dietrich

Millersville University-Educational Foundations Department
PO Box 1002
Millersville, PA 17551-0302
Email: ndietrich@millersville.edu

Millersville University Institutional Review Board(IRB):

If you have questions about your rights as a research subject, or you have concerns or suggestions and you want to talk to someone other than the researchers, you may contact the MU IRB by phone: (717) 871-4457 or by email: mu-irb@millersville.edu.

Your FIRST name:

Your LAST name:

Grade(s) that you teach:

- 6
- 7
- 8

Do you give your consent to allow your data to be used in the study?

- I give my consent to allow study to use my data.
- I do NOT give my assent to allow study to use my data.

Your signature:

×

SIGN HERE

[clear](#)

Date (mm/dd/yyyy):

Survey

How often do you use the outdoors for learning activities?

- Everyday
- 3-4 days a week
- 1-2 days a week
- A few times a month
- I do not take my students outside for instruction.

How has your use of the outdoors for instruction changed in the past 3 years?

- Greatly decreased
- Decreased
- Remained the same
- Increased
- Greatly increased

Describe how your use of the outdoors has changed in the past 3 years.

How comfortable are you with taking your class outside for instruction?

- NOT comfortable
- Somewhat comfortable
- Comfortable
- Very comfortable

How would you rate your students' interest in learning outdoors?

- NOT interested
- Somewhat interested
- Interested
- Very interested

How would you describe your students' reactions when informed they will be going outside for learning?

In your opinion, what are the instructional *benefits* to your students when learning outside?

In your opinion, what are the instructional *limitations/drawbacks* to your students when learning outside?

Does outdoor instruction make collaborative learning easier or more difficult?

- Easier
- More difficult
- Neither

Explain your answer to the previous question.

In your opinion, what are the **social/emotional** *benefits* for your students from learning outside?

In your opinion, what are the **social/emotional** *limitations* for your students from learning outside?

Block 4

Has your comfort level with taking your students outside for instruction changed over the past year?

- Yes
- No

if yes

What prompted this change?

Block 5

In your opinion, what impact, if any, does outdoor instruction have on your students' learning about *watershed* concepts?

In your opinion, what impact, if any, does outdoor instruction have on your students' interest in *STEM careers*?

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Teacher Semi-structured Follow-up Interview Questions

Name

Date

On the survey, you indicated that you use the outdoor learning spaces _____ times per week. Describe how you use the outdoor learning spaces?

On the survey you described how your use of the outdoor learning spaces has changed in the past year. Elaborate and provide additional examples.

What type of activities do you typically use in the outdoor learning spaces? How do you choose activities to use in the outdoor learning spaces? What makes a good activity for outdoor learning spaces?

Can you provide an example of a specific lesson that you think was enhanced by the use of the outdoor learning spaces?

Can you provide an example of a specific lesson that you did in the outdoor learning spaces that you think would have been more impactful if you had done it inside in the normal classroom?

How has using the outdoor learning spaces changed your outlook/perception?

Has using the outdoor learning spaces impacted your students? What are students' responses to using the outdoor learning spaces?

What impact has using the outdoor learning spaces had on student behavior? How does this behavior compare to instruction that occurs indoors?

Do you believe the use of the outdoor learning spaces has had an impact on students' emotional/mental health? Please elaborate on how you formed this belief.

How have you used the outdoor learning spaces since the start of the pandemic?

Has your use of the outdoor learning spaces changed as a result of the COVID 19 outbreak?

How do you think your experiences in the past year will impact how you use the outdoor learning spaces in the future, after COVID 19 is contained?

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Default Question Block

PARENT/GUARDIAN CONSENT TO PARTICIPATE IN RESEARCH

[REDACTED] School Outdoor Learning Study

Why is this study being done?

In the last few years, [REDACTED] School has made an effort to get students outside. Environmental education research encourages students to get outside everyday. Providing students opportunities to learn and play outside has been shown to improve students' health and wellness, academic achievement, psychological, and social functioning. Results from this research will be used to inform teaching and learning at [REDACTED] School.

What data will be collected as part of this research study?

The research study is asking to use the following data from an online survey your child is taking in class that has questions about science, their school day, and learning inside/outside.

The survey will be completed during your child's class. We will not use your child's name in any reports of the data.

How long will your child be in the research study?

Survey completion will take one class period.

Are there any potential risks or discomforts that my child can expect from this study?

No. There are no risks from this study.

Are there any potential benefits if I allow my child's data to be used for this study?

You and your child will not directly benefit from the use of your child's data, but the results of the research may help the school and their teachers improve teaching and learning.

What other choices does your child have if I choose not to have their data used?

If you do not want your child's data to be used in the study, your child will take the survey but their data will not be used.

Will information about my child and their participation be kept confidential?

Yes. All data will be kept secure. When we report on the results of this study, your child will not be identified.

What are my rights and my child's rights if my child's data is used in the study?

- You can choose whether or not you want your child's data to be used in this study, and you may withdraw your consent and have your child's data deleted at anytime.
- Whatever decision you make, there will be no penalty to you or your child, and no loss of benefits to which you or your child were otherwise entitled.
- Your child may refuse to answer any questions on the survey that they do not want to answer.

Who can I contact if I have questions about this study?

If you have any questions, comments or concerns about the research, you can talk to your child's school administrator or ask to speak to one of the researchers.

The research team:**Dr. Steve Kerlin**

Stroud Water Research Center
970 Spencer Road
Avondale, PA 19311
skerlin@stroudcenter.org

Dr. Nanette Marcum-Dietrich

Millersville University-Educational Foundations Department
PO Box 1002
Millersville, PA 17551-0302
Email: ndietrich@millersville.edu

Your CHILD'S first name:

Your CHILD'S last name:

Your child's grade:

Do you give your consent to allow the study to use your child's data?

- I give my consent to allow the study to use my child's data
- I do NOT give my consent to allow study to use my child's data

Your name:

Your signature:

✕ **SIGN HERE**

[clear](#)

Date (mm/dd/yyyy):

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Appendix: Example Outdoor Classroom Design Ideas from Stroud Water Research Center





