

Individual Adopter School Case Study: Katahdin

Regional School Unit #89, Region 1 – Aroostook

Background

Katahdin Schools, regional school unit #89 (RSU #89), is a rural school administrative unit (SAU) in Northern Penobscot County, about 80 miles north of Bangor. Katahdin Schools (“Katahdin”) serves approximately 275 students between the Katahdin Elementary School and the Katahdin Middle/High School. Administrative leadership described the location of the schools as “beyond rural.” Data from the National Center for Education Statistics (NCES) identifies over half of students (61 percent) as economically disadvantaged, which is higher than the state’s percentage. However, NCES reports a slightly lower percentage of students with disabilities at Katahdin (Table 1).¹

TABLE 1: SOCIOECONOMIC AND DEMOGRAPHIC CONTEXT

	SAU	Maine
Number of Students	271	178,860
Locale Classification	Rural	N/A
Students Identified as White	95%	88%
Students Identified as Economically Disadvantaged	61%	41%
Students Eligible For Free/Reduced Price Lunch (Katahdin Elementary)	64%	44%
Students Identified with Disabilities	16%	18%
Student/Teacher Ratio	11.19	N/A
Median Household Income	\$36,607	\$57,918
Adults with a Bachelor’s Degree or Higher	15.1%	32%
Adults in Labor Force	47%	63%

Sources: Maine Department of Education, National Center for Education Statistics, U.S. Census Bureau & WalletHub

Development of pilot project²

Since 2018, Katahdin has partnered with a local nonprofit organization to develop responsive professional development, place-based, and outdoor learning strategies. From 2018 to 2020, Katahdin leadership began allocating resources for outdoor learning efforts as a way to support

¹ School data was collected from the Every Student Succeeds Act ([ESSA Dashboard](#)) reported by the Maine Department of Education and the National Center for Education Statistics ([NCES Search For Schools](#)) database. SAU information was collected from the Maine [ESSA Dashboard](#), the [NCES Search For Schools](#) database, and the NCES Education Demographic and Geographic Estimates ([EDGE](#)) database. Information about the State of Maine was collected from the [ESSA Dashboard](#) and the [U.S. Census Bureau Maine Quick Facts](#) report. Note, the Students Eligible For Free/Reduced Price Lunch on a state level contains data from the 2018-2019 school year (the most recent publicly available data for the state), while both school and SAU contain data from the 2019-2020 school year. Median Household Income for the SAU was taken from a WalletHub article: “[Most & Least Equitable School Districts in Maine.](#)”

² Information related to the development of the pilot project came from Katahdin’s RREV application and interviews with school leadership.

the health, wellbeing, and performance of students and staff. Katahdin’s interest in outdoor learning laid the groundwork for the school’s innovative activities.

Katahdin leadership and staff learned about the Rethinking Responsive Education Ventures (RREV) award and the Innovative Mindset Pilot Development (IMPD) course through the Maine Department of Education newsletter. They were prompted to participate in the IMPD course to not only sustain their interest in outdoor education efforts, but to also develop an outdoor learning pathway for students in pre-kindergarten (PreK) through 12th grade that incorporates social-emotional, physical, and cognitive development. Four individuals from Katahdin participated in the IMPD course, including the superintendent, a grant coordinator, an instructional coach, and an outdoor education teacher. School leadership said the course helped them clarify their thinking about connections between outdoor learning and students’ social-emotional, physical, and cognitive development needs. Additionally, the course helped Katahdin leaders and staff identify the need for professional and curriculum development in outdoor learning. In one interview, a Katahdin leader noted the award has “given us the confidence and motivation to keep going and provid[ed] us with opportunities that we would not have had before RREV.”

Program description

In August 2021, Katahdin received a RREV award (\$250,000) to develop their *Connect, Reach & Teach Each Child with Outdoor Learning* model for PreK-12 students. The goals of the model are to improve students' overall wellbeing and happiness at school, while also meeting the professional learning needs of their educators.

At the elementary level, the model is focused on the development of curricular units that integrate outdoor learning into education and the professional development of teachers to support the creation of these integrated units. Katahdin is using RREV funding to engage consultants who are experts in outdoor learning and incorporating evidence-based, high-impact teaching strategies. These consultants work with teachers to develop and integrate outdoor, physical, and social-emotional learning into their curricula. Teachers are provided with additional materials, such as teaching strategy books. Providing this type of professional development would have been difficult without the RREV funding.

Katahdin leadership shared that they will focus on developing outdoor-themed courses, programs, internships, and apprenticeships that students may take as electives at the middle and high school. To-date, RREV funding has not been used to implement programming at the middle and high school. According to Katahdin leadership, program components at the high school will begin implementation during the 2022-23 school year.

Katahdin’s pilot also includes the development of outdoor learning spaces at the elementary school, including the construction of trails and learning spaces, and the procurement of outdoor equipment and gear, such as tents for outdoor education.

Resources	Strategies and Activities	Outputs	Short-Term Outcomes	Long-Term Outcomes	Impact
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<p>RREV financial support and coaching</p> <p>Natural resources including forests and streams near the school.</p> <p>A growing literature on outdoor learning</p>	<p>Engage consultants with expertise in outdoor learning to provide professional development to teachers focused on outdoor learning.</p> <p>Develop outdoor-themes courses, programs, internships, and apprenticeships.</p> <p>Teachers implement outdoor learning activities across grade levels and subjects.</p> <p>Develop and maintain infrastructure, including nature trails, outdoor learning spaces, and gear storage facility.</p>	<p>Number of teachers who participate in professional development activities on outdoor learning.</p> <p>Number of outdoor learning professional development activities.</p> <p>Amount of time students learn outdoors.</p> <p>Outdoor lesson plans and activities developed.</p> <p>Outdoor infrastructure completed</p>	<p>Improved teacher knowledge of outdoor learning principles.</p> <p>Improved teacher attitudes toward outdoor learning.</p> <p>Students demonstrate academic growth</p> <p>Students demonstrate socio-emotional growth</p> <p>Students demonstrate greater awareness of and interest in careers involving the outdoors</p>	<p>Teachers incorporate outdoor learning in their teaching practices.</p> <p>Improved graduation rates</p> <p>Increased number of students who pursue careers involving the outdoors.</p> <p>Outdoor infrastructure is integrated in Katahdin's learning space.</p>	<p>Greater appreciation for the outdoors among students and teachers in Katahdin.</p> <p>Teachers and families at Katahdin Schools embrace innovative thinking that underlies outdoor education.</p>
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Innovativeness and responsiveness of learning model

Katahdin’s pilot at the elementary school is innovative for two main reasons:

- 1. Its whole-child approach supports students’ emotional, cognitive, and physical development.** Katahdin administrators describe their learning model as following a whole-child approach. In one interview, an administrator explained this approach provides “support to the whole child, meaning that we are expanding from the traditional cognitive focus to also incorporate social-emotional and physical development.” Katahdin educators expect that integrating all these components will improve students’ mental and physical health, and ultimately their overall wellbeing.
- 2. It integrates outdoor learning across all grades (pre-k – 5), with an emphasis on science.** Another innovative aspect is the emphasis on integrating outdoor learning strategies throughout students’ educational journeys. One of Katahdin’s consultants explained that “every classroom has an outdoor space that’s being designed to really work for the curriculum, that age group, and the kids seem to be really invested.” This commitment is also evidenced by the integration of outdoor learning strategies across multiple areas, such as science, art, music, and physical education.

INNOVATIONS

Katahdin Connect, Reach & Teach Each Child with Outdoor Learning

- Whole-child approach expands beyond cognitive to social-emotional and physical
- Outdoor learning is woven into all K-5 grades and multiple subjects

Implementation of learning model³

In the first year since receiving the RREV award, programming has focused mainly on Katahdin Elementary School. The sections below describe current progress and perceptions of different program elements at the elementary schools, as well as the Middle/High School.

Outdoor Learning at the Elementary School

According to leadership, the emphasis during the 2021-22 school year has been on increasing the overall number of opportunities students have for outdoor learning. For example, students are provided opportunities to participate in outdoor learning for music, library, physical education, and/or guidance, in addition to the classroom teachers integrating it into the core curriculum.

Curriculum and professional development

Professional development for elementary school staff started with a 2-day “summer institute” in August 2021. Following this event, teachers have attended professional development activities

³ Updates about the implementation of the model were captured through interviews (phone and in-person) with the school administrator, RREV Grant Coordinator, Katahdin elementary and middle/high school educators and teachers, and parents.

about once per month throughout the fall and winter of the 2021–22 school year. During the spring, the outdoor learning and curriculum consultants who have been providing professional development engaged in observations of teachers who have incorporated outdoor learning into their classroom. During a focus group, elementary school teachers shared that these observation and feedback sessions with the consultants encouraged and motivated them to continue implementing outdoor learning activities:

“that’s the moment [after the consultant’s feedback] where I felt like okay, I feel like I really have this and I can do this because she validated what we were doing was amazing and awesome. But also pushed us to now take that same atmosphere and that same content and do it with a different skill.”

The restorative practice coordinator and instructional coach also reported shadowing these observations led by the consultants.

Implementation of the Model by Classroom Teachers

During the 2021-22 school year, Katahdin leadership shared that many of the teachers at Katahdin Elementary integrated outdoor learning activities; however, they also reported that their teachers are still in the “experimental phase” and do not require teachers to teach a specific number of hours outdoors. One leadership member explained, “It’s not so much that every teacher needs to spend X number of minutes outside. It’s more like what does the student day look like and how much time is being spent outside?” Overall, teachers who participated in the focus groups reported engaging their students in outdoor learning, including lessons on local trees, vernal pools, and animals/insects, as well as utilizing materials out in nature, such as sticks and rocks, to learn multiplication.

Engagement of School Educators in Outdoor Learning

In addition to the curriculum and professional development activities, other school educators (who are not classroom teachers) at the elementary school have begun implementing these outdoor learning strategies into their educational practices:

- The instructional coach assists teachers in facilitating their outdoor learning activities. During the fall she co-facilitated group lessons with teachers and provided a range of planning and implementation support. In January 2022, due to a teacher shortage, she had to shift into a teaching position limiting her ability to support all elementary teachers with outdoor learning implementation. The instructional coach reported that during the 2022-23 school year, she intends to continue encouraging teachers with their lesson planning and outdoor learning activities by modeling lessons and offering to go outside with them and their students.
- The guidance counselor incorporates outdoor learning into her weekly meetings with elementary school students. During these sessions, students learn about social-emotional development through activities that make connections between nature and individuals’ feelings and senses. Students also participate in collaborative activities (e.g., making small animal shelters) that encourage teamwork and foster connections between students and their peers. The guidance counselor also supports teachers by integrating aspects of their curriculum into her own outdoor learning activities with students. In the spring, the guidance counselor reported that she has updated her guidance scope and

sequence based on her interactions with the professional development consultants. The guidance counselor also anticipates furthering her outdoor learning implementation during the 2022-23 school year and shared that she even changed the name of her class from “Guidance” to “Nature Connection.”

- The school’s restorative practices coordinator, who meets with students daily, has been working to incorporate outdoor learning into her restorative practices and social-emotional learning content. A challenge encountered by the coordinator this year was her comfort level with bringing students outside by herself and/or requesting the support of classroom teachers. In the spring, the coordinator reported that she intends to increase her incorporation of outdoor learning and her encouragement of classroom teacher participation in her activities next school year.

Site development and maintenance⁴

To build capacity to support students’ physical development with outdoor learning, Katahdin has used RREV funding to facilitate the construction of outdoor paths around the perimeter of the elementary school grounds and to develop designated classrooms spaces along these paths. Katahdin leadership hopes these outdoor spaces will help encourage students and teachers to participate in physical outdoor learning activities.

Outdoor gear

Leadership at Katahdin Elementary have used RREV funding to overcome climate-related challenges and provide necessary gear to elementary students so they can fully participate in outdoor learning activities. For example, Katahdin has created a “gear library” full of rain boots, pants, cold weather gear, and bug nets that elementary students and teachers can borrow.

Teachers at Katahdin middle/high school reported limited outdoor equipment for students. Existing equipment at this level has been procured through grants and fundraising efforts outside of the RREV award. The Middle/High School teachers report a need for outdoor learning equipment, such as atlases, contour maps, fishing poles, and other gear for students and expressed the desire to use RREV funding for this purpose.

Outdoor Learning at the Middle/High School

Uncertainty Regarding Allocation of RREV funding for implementation

Currently, RREV funding has not been used to implement programming at the middle and high school. Middle/high school teachers interviewed reported frustrations relating to the lack of RREV funding information available, with one teacher stating that: “We’re disconnected in the fact that we know we have a part of this [RREV award], we just don’t know really what part of it that we actually have. Is it a percentage, is it a dollar amount? Are we really part of the whole?” The middle/high school teachers interviewed expressed wanting more details from Katahdin administration regarding how much funding will be allocated to their outdoor program. Katahdin leadership and administration shared that about 30 percent of RREV funding has been allocated for curriculum development and the procurement of gear at the Middle/High School and will work with the Middle/High school during the 2022-2023 school year.

⁴ Updates to site development and maintenance are also based on in-person site visits of the school grounds in April 2022.

Curriculum/Course Development

Prior to the RREV award, Katahdin middle/high school had already begun implementing outdoor learning activities, including an outdoor education elective, which students can opt into⁵. Additionally, teachers at the middle/high school reported utilizing outdoor learning within their science curriculums. For instance, teachers noted that lessons outdoors have included collecting insects and learning about the impacts of weather/climate, erosions, atmospheric pressure, climate change, and local geology. As noted in the section above, Katahdin leadership has allocated funding for course development.

Outdoor gear

Teachers at Katahdin middle/high school reported limited outdoor equipment for students. Existing equipment at this level has been procured through grants and fundraising efforts outside of the RREV award. The Middle/High School teachers report a need for outdoor learning equipment, such as atlases, contour maps, fishing poles, and other gear for students and expressed the desire to use RREV funding for this purpose. As noted above, Katahdin administration mentioned during their interview that there will be some RREV funding available for the Middle/High school to purchase gear.

Outcomes

Outcomes of the first year of the RREV implementation are based on survey results from sixteen parents/caregivers of elementary school students and thirty-seven 4th and 5th grade students, as well as interviews and focus groups with teachers, school administration, and parents/caregivers. Katahdin Middle/High School parents/caregivers and students were not surveyed.

Surveyed parents/caregivers in Katahdin report having access to the responsive educational activities they want. In a parent/caregiver survey (Exhibit 3), 100 percent of respondents felt it was very important or moderately important that schools offer responsive education activities, and 75 percent reported they were very satisfied or somewhat satisfied with such activities offered by Katahdin. Additionally, just over half (51%) of respondents agreed that Katahdin offered more responsive educational activities in 2021-22 than in the previous school year. All parents survey stated that they would recommend the outdoor learning program to other parents. When asked to explain why they would recommend this program, one parent shared that they feel like their kids learn better outdoors.

EXHIBIT 3. SUMMARY OF PARENT/CAREGIVER ELEMENTARY STUDENT SURVEY RESULTS (N=16)

Question	Results
How important is it to you that schools offer responsive educational activities?	Very important – 81% Moderately important – 19%
How satisfied are you with the availability of responsive education activities offered through your child’s school?	Very satisfied – 56% Somewhat satisfied – 19% Neither Satisfied nor Dissatisfied – 6% Somewhat dissatisfied – 13% Very Dissatisfied – 6%

⁵ This outdoor education elective has been available since 2017.

Compared with last school year (2020-21), how much opportunity has your child had to participate in responsive educational activities this year?	A lot more opportunity – 31% Slightly more opportunity – 25% About the same as last year – 44%
Would you recommend this program to other parents?	Yes – 100%

Parents/caregivers of elementary students participating in the focus group reported positive impacts of the outdoor learning program with their children. In spring 2022, we conducted a focus group of six Katahdin elementary school parents and caregivers. When asked about the impacts the program has had on their children, several parents reported that children have a new or increased interest in the outdoors. For example, parents reported that their children are more apt to direct outdoor activities on their own, often asking them questions about things in nature. A few parents also reported that they have noticeable improvements in attention, mood, and behavior.

Parents/caregivers of elementary students participating in the focus group reported a desire for greater awareness of the outdoor learning program. During the focus group, parents reported a range of awareness about outdoor learning at the elementary school, with some sharing that they have seen posts about the activities on the school website and social media pages, while others reported little knowledge of or communication about the program or RREV award. Only half of the parents in the focus group reported seeing the outdoor learning paths and classroom spaces in-person. Most parents in the focus group expressed an overall desire for greater communication about the program and outdoor learning activities that their children are involved in. Moreover, several parents in the focus group suggested the program could be improved through greater parental engagement, such as an increase in ways for parents to get involved (e.g., have a tour of the school grounds and gear library).

Surveyed students reported positive views about opportunities and experiences with outdoor learning. In Spring 2022, a survey was administered to 4th and 5th grade students at Katahdin elementary school. Of the students who responded, nearly three-quarters (73%) reported that they were glad they went outside to learn this year, and about half (51%) reported that going outside helped them learn (Exhibit 4). Additionally, 73 percent of students who responded indicated that they liked their overall experience with the outdoor learning program this year. When asked about their favorite part of their outdoor learning experience, several students shared specific experiences, such as learning about trees and salmon, playing games, writing, and creating art. Other students shared that they simply enjoyed learning in a new space and being outside in nature. While most students surveyed said they would not change anything about the program, several students reported that they would like to go outside more often. A few students shared that they would like less time outside.

EXHIBIT 4. SUMMARY OF 4TH AND 5TH GRADE STUDENT SURVEY RESULTS (N=37)

To what extent do you agree or disagree with the following statements	Strongly or somewhat agree	Neither agree nor disagree	Somewhat or strongly disagree
I am glad I went outside to learn this year.	73%	19%	8%
Going outside helped me learn this year.	51%	22%	27%

Overall, I liked my experience going outside to learn this year.	73%	14%	14%
This year, I had more opportunities to learn outside a traditional classroom than in the past.	54%	14%	33%

Katahdin Elementary students demonstrated academic growth during the 2021-22 school year. Among the 113 elementary students assessed during the 2021-22 school year, 85 percent showed growth in literacy⁶. Additionally, over three-quarters (78%) of students assessed demonstrated academic growth in math⁷. During focus groups with elementary teachers, several teachers reported seeing academic growth among their students over the year. One teacher credited this growth to being able to better meet the needs of their students through outdoor learning, sharing that “[the academic growth] never would’ve happened had we not been innovative and been supportive of those needs.”

Elementary educators reported that a few students have played a role in suggesting and inspiring outdoor learning activities. During interviews in spring 2022, educators at the elementary school (who are not classroom teachers) reported that a few students have influenced some of the outdoor learning activities that have been implemented this school year. For instance, one educator reported that she had initially planned her lesson inside due to a writing activity. One of her students suggested that the writing activity could be completed outside with chalk, and the educator was able to shift to outdoor implementation. Another educator shared that while learning about beavers outside, students observed a nearby anthill. Inspired by their students’ curiosity, this teacher created a new mini unit for the students to learn about ants. This ant hill later became a “sacred” and respected place among students and staff at the elementary school.

Elementary teachers participating in the focus group reported satisfaction working at the school.⁹ During focus groups, most teachers shared positive impacts of the outdoor learning program, and satisfaction working as a teacher at the school. For example, teachers shared that the program allows them to get exercise during the day, build better relationships with their students, and mitigate stress. A few teachers echoed the positive impacts of the program on the mental and emotional well-being of themselves and their students, with one of them whose children also attend the school sharing that, *“Being here with this team gives me a peace of mind because I know that they’re getting fed [not just] academically but emotionally as well.”*

⁶ Growth in literacy is defined as achieving a higher NWEA Reading RIT score (for 2nd-5th grade students) or higher DIBELS literacy raw score (for K-1 students) in spring 2022 compared to fall 2021.

⁷ Growth in math is defined as achieving a higher NWEA Math RIT score (for 2nd-5th grade students) or higher DIBELS Math raw score (for K-1 students) in spring 2022 compared to fall 2021.

⁸ Percentage of students demonstrating growth in math is out of a total of 90 students.

⁹ During interviews with Katahdin school leadership, it was reported that there is buy-in of the model among most teachers. However, they also indicated that a few teachers (who tend to teach older students) do not completely buy-in to the model.

Future Plans

Elementary School

Teachers and educators interviewed at the elementary school plan to continue incorporating outdoor learning activities into their classroom. According to Katahdin leadership, teachers at the elementary school will continue focusing on incorporating outdoor learning into their science curriculums. Additionally, and as noted previously, other educators at the elementary school, such as the guidance counselor, instructional coach, and restorative practices coordinator expressed excitement continuing to utilize the outdoor spaces and classrooms available at the school.

Middle/High School

Teachers at the Middle/High school are currently working with a consultant to develop the curriculum mapping and sequencing for two outdoor learning electives available to 9th and 10th grade students that are set to being during the 2022-23 school year:

- Outdoor Ed 1: Students will have the opportunity to engage in outdoor learning and be certified in CPR, wilderness first aid, and hunter and trapping safety. Students will also be engaged in kayaking, canoeing, snowshoeing, skiing, and fishing.
- Outdoor Ed 2: Teachers reported that this class will include a focus on jobs in outdoor education and incorporate guest speakers, such as local guide service workers, game wardens, frost rangers, and park rangers. Students will also be engaged in hiking and trip planning and participating in an outdoor overnight stay.

According to Katahdin leadership, the RREV award will be used to pay for the consultant to provide feedback and accountability of the outdoor education curriculum during implementation.

Lessons learned

Consultants providing on-going professional development to teachers is beneficial for boosting teacher confidence and maintaining motivation for the program. As elementary teachers engage in innovative instructional methods outdoors, a number of teachers expressed that the ongoing professional development provides them with the individualized support to needed to break new ground. During the focus group, one teacher shared their initial experience participating in this professional development:

“We all took what she [the consultant] was trying to say and she supported us in such a way that was like it’s fine if you want to go out once a week. It’s fine if you want to go out for a half hour, try it, one thing, wherever you feel comfortable with...That’s what I started with and I am like they [the students] love being out here. Just the way that she supported us with small milestones. It’s really great to hear that what we’re doing is great. We’re going in small little chunks that worked for us.”

Other elementary teachers reported that the consultants engaged them one-on-one and providing individual support to teachers as they developed their curricular units. As noted previously, leadership at Katahdin have reported that this type of professional development would not have been possible without RREV. This targeted professional development was

implemented throughout the course of the 2021-22 school year, and Katahdin leadership have reported that observations from the consultants will continue during the 2022-23 school year.

Providing a strong foundation in outdoor education may provide students with local career opportunities. During interviews and focus groups with elementary school leadership, middle/high school teachers, elementary school parents/caregivers, members of the school community expressed the importance of outdoor education and its ability to open up opportunities for youth in the area. For example, one of the focus group parents shared his experience and perspective as a local Forester, expressing that:

“I am a forester and you can’t find foresters around here right now... And there’s a lot of opportunity here... there’s just so many things going on that I think that our children can stay right here and have really good paying jobs. This learning program that they’re doing it really opens a lot of doors.”

Katahdin leadership reported that by incorporating outdoor learning through PreK-5 provides students with a solid foundation for future outdoor education pathways, such as the outdoor ed electives in development at the middle/high school and their inclusion of outdoor ed related career exploration. This inclusion of outdoor learning throughout students’ academic journey may help bring awareness to career opportunities in the community that students may not have previously thought were feasible.

Outdoor education programs Developmental differences influence how outdoor Katahdin elementary leadership shared that some teachers, particularly those who teach students in grades 3-5, can be hesitant to bring their students outside. Additionally, during a teacher focus group, teachers explained that the concepts taught in the lower grades, such as letter and number identification, counting, and cardinality are easier for teachers to incorporate with outdoor learning compared to concepts taught in the upper grades such as long division and multiplication. These findings suggest that

Teacher input on infrastructure plans, especially the location of outdoor learning facilities, can help maximize their use.. Leadership and administration noted that some teachers felt that the designated outdoor classroom spaces are too far away from the school building. Consequently, teachers may be less likely to use these spaces as frequently. In response, Katahdin leadership is exploring strategies to get teacher input on the location of outdoor learning spaces so they are more accessible.