Be honest: How much time do you spend staring at a screen each day? For most Americans, that number clocks in at more than 10 hours, according to a 2016 Nielsen Total Audience Report. Our increasing reliance on technology, combined with a global trend toward urban living, means many of us are spending ever less time outdoors—even as scientists compile evidence of the value of getting out into the natural world.

From a stroll through a city park to a day spent hiking in the wilderness, exposure to nature has been linked to a host of benefits, including improved attention, lower stress, better mood, reduced risk of psychiatric disorders and even upticks in empathy and cooperation. Most research so far has focused on green spaces such as parks and forests, and researchers are now also beginning to study the benefits of blue spaces, places with river and ocean views. But nature comes in all shapes and sizes, and psychological research is still fine-tuning our understanding of its potential benefits. In the process, scientists are charting a course for policymakers and the public to better tap into the healing powers of Mother Nature.

“There is mounting evidence, from dozens and dozens of researchers, that nature has benefits for both physical and psychological human wellbeing,” says Lisa Nisbet, PhD, a psychologist at Trent University in Ontario, Canada, who studies connectedness to nature. “You can boost your mood just by walking in nature, even in urban nature. And the sense of connection you have with the natural world seems to contribute to happiness even when you’re not physically immersed in nature.”

**Cognitive benefits**

Spending time in nature can act as a balm for our busy brains. Both correlational and experimental research have shown that interacting with nature has cognitive benefits—a topic University of Chicago psychologist Marc Berman, PhD, and his student Kathryn Schertz explored in a 2019 review. They reported, for instance, that green spaces near schools promote cognitive development in children and green views near children’s homes promote self-control behaviors. Adults assigned to public housing units in neighborhoods with more green space showed better attentional functioning than those assigned to units with less access to natural environments. And experiments have found that being exposed to natural environments improves working memory, cognitive flexibility and attentional control, while exposure to urban environments is linked to attention deficits (Current Directions in Psychological Science, Vol. 28, No. 5, 2019).

Researchers have proposed a number of ideas to explain such findings, as Nisbet and colleagues described in a review of the benefits of connection with nature (Capaldi, C.A., et al., International Journal of Wellbeing, Vol. 5, No. 4, 2015). The biophilia hypothesis argues that since our ancestors evolved in wild settings and relied on the environment for survival, we have an innate drive to connect with nature. The stress reduction hypothesis posits that spending time in nature triggers a physiological response that lowers stress levels.
A third idea, attention restoration theory, holds that nature replenishes one’s cognitive resources, restoring the ability to concentrate and pay attention.

The truth may be a combination of factors. “Stress reduction and attention restoration are related,” Nisbet points out. “And because of the societal problems we’re dealing with in terms of stress, both of these theories have gotten a lot of attention from researchers.”

Experimental findings show how impressive nature’s healing powers can be—just a few moments of green can perk up a tired brain. In one example, Australian researchers asked students to engage in a dull, attention-draining task in which they pressed a computer key when certain numbers flashed on a screen. Students who looked out at a flowering green roof for 40 seconds midway through the task made significantly fewer mistakes than students who paused for 40 seconds to gaze at a concrete rooftop (Lee, K.E., et al., Journal of Environmental Psychology, Vol. 42, No. 1, 2015).

Even the sounds of nature may be recuperative. Berman and colleagues found that study participants who listened to nature sounds like crickets chirping and waves crashing performed better on demanding cognitive tests than those who listened to urban sounds like traffic and the clatter of a busy café (Van Hedger, S.C., et al., Psychonomic Bulletin & Review, Vol. 26, No. 2, 2019).

Nature and happiness

While such laboratory experiments are intriguing, they don’t fully capture the diverse benefits that go hand in hand with time spent in the outdoor world, says Cynthia Frantz, PhD, a professor of psychology and environmental studies at Oberlin College in Ohio. “Spending time in nature has cognitive benefits, but it also has emotional and existential benefits that go beyond just being able to solve arithmetic problems more quickly,” she notes.

In a review of the research, Gregory Bratman, PhD, an assistant professor at the University of Washington, and colleagues shared evidence that contact with nature is associated with increases in happiness, subjective well-being, positive affect, positive social interactions and a sense of meaning and purpose in life, as well as decreases in mental distress (Science Advances, Vol. 5, No. 7, 2019).

Other work suggests that when children get outside, it leaves a lasting impression. In a study of residents of Denmark, researchers used satellite data to assess people’s exposure to green space from birth to age 10, which they compared with longitudinal data on individual mental health outcomes. The researchers examined data from more than 900,000 residents born between 1985 and 2003. They found that children who lived in neighborhoods with more green space had a reduced risk of many psychiatric disorders later in life, including depression, mood disorders, schizophrenia, eating disorders and substance use disorder. For those with the lowest levels of green space exposure during childhood, the risk of developing mental illness was 55% higher than for those who grew up with abundant green space (Engemann, K., et al., PNAS, Vol. 116, No. 11, 2019).

There is even evidence that images of nature can be beneficial. Frantz and colleagues compared outcomes of people who walked outside in either natural or urban settings with those of people who watched videos of those settings. They found that any exposure to nature—in person or via video—led to improvements in attention, positive emotions and the ability to reflect on a life problem. But the effects were stronger among those who actually spent time outside (Mayer, F.S., et al., Environment and Behavior, Vol. 41, No. 5, 2009).

More recently, scientists have begun exploring whether virtual reality nature experiences are beneficial. In a review of this work, Mathew White, PhD, an environmental psychologist at the University of Exeter in England, and colleagues concluded that while the real deal is best, virtual reality can be a worthwhile substitute for people who are unable to get outdoors, such as those with mobility problems or illness (Neuropsychiatric Disease and Treatment, Vol. 14, 2018).

Nature might also make us nicer—to other people as well as to the planet. John Zelenski, PhD, a professor of psychology at Carleton University in Ontario, Canada, and colleagues showed undergraduates either nature documentaries or videos about architectural landmarks. Then the participants played a fishing game in which they made decisions about how many fish to harvest across multiple seasons. Those who had watched the nature video were more likely to cooperate with other players, and also more likely to make choices that would sustain the fish population (Journal of Environmental Psychology, Vol. 42, No. 1, 2015). In another experiment, Zelenski and his colleagues found that elementary school children acted more prosocially to classmates and strangers after a field trip to a nature school than they did after a visit to an aviation museum (Dopko, R.L., et al., Journal of Environmental Psychology, Vol. 63, No. 1, 2019).

Those generous behaviors weren’t attributed to students’ moods. Zelenski and his colleagues found, so it wasn’t simply that spending time in nature made them happier and therefore more giving. Another plausible (though unproven) explanation is the emotion of awe. “There are some hints that awe is associated with generosity, and nature can be a way to induce awe,” he says. “One of the things that may come from awe is the feeling that the individual is part of a much bigger whole.”

Experience vs. connection

With so many benefits linked to nature, people naturally wonder: How much time outside is enough? White and colleagues took a stab at answering that question by studying a representative sample of nearly 20,000 adults across the United Kingdom. They found people who had spent at least two recreational hours in nature during the previous week reported significantly greater health and well-being. That pattern held true across subgroups including older adults and people with chronic health problems, and the effects were the same whether they got their dose of nature in a single 120-minute session...

Continued on page 3
Continued from page 2

or spread out over the course of the week (Scientific Reports, Vol. 9, No. 1, 2019). “We’re not saying we’ve cracked this nut yet, but this is a first step toward making specific recommendations about how much time in nature is enough,” White says.

The amount of time one spends in nature isn’t the only element to consider—it’s also beneficial to feel connected to the natural world even when you’re stuck at a desk. Researchers call this feeling by a variety of names, including nature relatedness, connectedness to nature and inclusion of nature in self, and they’ve developed a number of scales to measure the trait.

Whatever you call it, connectedness to nature seems to benefit mood and mental health. In a meta-analysis, Alison Pritchard, PhD, ABPP, at the University of Derby in England, and colleagues found that people who feel more connected to nature have greater eudaimonic well-being—a type of contentment that goes beyond just feeling good and includes having meaningful purpose in life (Journal of Happiness Studies, online first publication, 2019).

Zelenski and Nisbet studied whether connection itself is the magic ingredient. They assessed the overlap between connectedness with nature and a general sense of connectedness, such as feeling in tune with one’s friends or community. They found that feeling connected to nature was a significant predictor of happiness even after controlling for the effects of general connectedness (Environment and Behavior, Vol. 46, No. 1, 2014). “People who feel that their self-concept is intertwined with nature report being a bit happier,” says Zelenski. “Nature connectedness isn’t the biggest predictor of happiness, but the association between the two is quite consistent.”

In fact, nature might help to buffer the effects of loneliness or social isolation. White and his colleagues surveyed 359 U.K. residents about their social connectedness and proximity to nature over the previous week. Social isolation is typically associated with worse subjective well-being. But the researchers found that when people with low social connectedness had high levels of nearby nature, they reported high levels of wellbeing (Cartwright, B.D.S., et al., International Journal of Environmental Research and Public Health, Vol. 15, No. 6, 2018). “There are people who don’t necessarily want to spend their time with others, but they feel connected to the natural environment, and that can enhance their well-being,” White says.

Green and blue spaces

It’s clear that getting outside is good for us. Now, scientists are working to determine what types of environments are best. Much attention has gone to green spaces, but White has studied a variety of marine and freshwater environments and found these blue spaces are also good for well-being (Gascon, M., et al., International Journal of Hygiene and Environmental Health, Vol. 220, No. 8, 2017). In fact, he says, they may even be slightly more restorative than green spaces.

There may also be value in trekking to remote locations. In a survey of 4,515 U.K. residents, White found that people reported more connection to nature and felt more restored after visiting rural and coastal locations than they did after spending time in urban green spaces. Areas deemed to be “high environmental quality”—such as nature reserves and protected habitats—were also more beneficial than areas with low biodiversity (Wyles, K.J., et al., Environment and Behavior, Vol. 51, No. 2, 2019). In other work, White and his colleagues found that people who watched nature videos with a diverse mix of flora and fauna reported lower anxiety, more vitality and better mood than those who watched videos featuring less biodiverse landscapes (Wolf, L.J., et al., PLOS ONE, Vol. 12, No. 1, 2017).

But there’s an important caveat, White adds: “If you have a break from work and you’ve only got half an hour, then a wild remote place is no use to you at all.” Urban parks and trees also produce positive outcomes. Just like a little exercise is better than none, we should take advantage of green and blue spaces wherever and whenever we can. That’s easier said than done, though, especially for people at a socioeconomic disadvantage. Poorer neighborhoods, White notes, are seldom the ones with leafy groves and ocean views.

Yet policymakers, city planners, environmental organizations and government agencies are coming around to the importance of natural spaces, and psychologists are offering them their expertise, says White, who has presented his research to groups such as the U.K.’s Department for Environment, Food and Rural Affairs. Organizations and cities are expressing interest in this research, Zelenski says, though many policymakers are waiting to see the results of intervention studies before investing in green infrastructure. One of the United Nations’ sustainable development goals includes the target of providing universal access to safe, inclusive and accessible green and public spaces by 2030.

There is urgency in fostering these connections, says Nisbet. Because while people benefit from their connection with the natural world, the environment also benefits when people feel connected and committed to caring for the Earth—and between climate change and habitat loss, the planet is in serious need of some care. “When people are disconnected from nature, they aren’t motivated to work on wicked problems like climate change. We’re losing the environments that contribute to our flourishing,” she says. “The key question is, How do we help people feel connected to nature so we’re motivated to protect the places that will help us thrive?”

Key points

Spending time in nature is linked to both cognitive benefits and improvements in mood, mental health and emotional well-being. Feeling connected to nature can produce similar benefits to well-being, regardless of how much time one spends outdoors.

Both green spaces and blue spaces (aquatic environments) produce well-being benefits. More remote and biodiverse spaces may be particularly helpful, though even urban parks and trees can lead to positive outcomes.

By Kirsten Weir Date created: April 1, 2020
Vol. 51, No. 3
Live Online Services

- Therapy Platform
- Mental Health Services
- Speech-Language Therapy
- Psychoeducational Assessments
- Occupational Therapy

Our Services

- School Facility Program Eligibility & Funding
- Construction & Modernization Facilitation
- Expenditure & Accounting Reports
- Audit & Close-Out Assistance
- Developer Fee Justification Studies & Implementation
- Facility Needs Analysis (Level 2 & 3 Fees)

- Preschool, TK, and K Funding
- Student Yield Studies
- Unused Site Fee Waivers
- Local Funding Options
- Charter School Facility Funding
- Career Technical Education
- CalShape Funding
- Federal Stimulus Assistance

“As founding members of SSDA, we have specialized in serving small school districts for the past 40 years”

Let us continue to work for you

Contact Us Today!

(916) 441-0986 | jschreder@jschreder.com | www.jschreder.com
SSDA has another wonderful conference in the books. The first since 2020, the 2022 Annual State Conference, took place in Sacramento from March 6-8, 2022. Nearly four hundred attendees visited the conference over the three-day event, including educators, vendors, students, and speakers. With topics ranging from the COVID-19 pandemic to establishing e-sports programs in rural school districts throughout California, the 2022 conference had something for everyone, with a key emphasis on the next generation of trailblazers: The Mighty Future Leaders.

The Mighty Future Leaders program is organized by SSDA Communications & Operations Director Taylor Smith. Five student leaders were selected to speak at the conference: Emilia Daniels, a tenth grader at Lucerne Valley High School, along with Jordan Anicete, Iris Ramons, Berenice Yanez, and Henry Toledo, all eighth-grade students at Vallecitos Elementary School.

These five students created an art exhibit with depictions of mental health, with pieces submitted from various small school district students throughout the state, including from the students themselves. When asked about the exhibit, Superintendent Peter Livingston of Lucerne Valley Unified High School District commented: “Having Emilia Daniels part of the Mighty Future Leaders is an excellent opportunity to build skills that will help her be successful in life. We are proud to have Emilia representing Lucerne Valley at the event. Mental health is an issue that is at the forefront of the ongoing COVID-19 pandemic. Having students actively discuss this and create an art gallery is truly noteworthy.”

Vallecitos eighth-grade teacher Shraddha Knight described her four students as: “Bright stars whose brilliance was not dampened the past two years by COVID, distance, and hybrid learning. Rather, their intrinsic motivation for doing their best, often going up and beyond, and putting knowledge into action shone brightly through. I know the future generation is in good hands with these young teens.”

During their Q&A session at the conference, The Mighty Future Leaders repeatedly spoke about the importance of creating a safe mental health environment for students. Mental health safety was a key point during the entire conference, where it was emphasized that schools can act as safe spaces for young adults. The five students explained that mental health can be as important as physical safety, particularly as small schools throughout California return to in-person learning. The COVID-19 pandemic affected students in many ways and a change in routine can be stressful, necessitating schools to place a greater focus on mental health and wellness for returning students.

The Mighty Future Leaders also shared their plans, including their possible careers. All the students expressed their desires to attend college after high school, with their chosen fields ranging from medicine to science and everything in between. They also thanked SSDA and stated that they were excited for their futures. The SSDA was proud to honor the next generation of trailblazers with The Mighty Future Leaders.

The Mighty Future Leaders program will be accepting new students this coming fall. For more information, please contact SSDA Communications & Operations Director Taylor Smith via email at: taylor@ssda.org.

By Brett Bunge
Individual attention you deserve.

Knowledge & experience you need.

Representing over 200 California School Districts as Bond and Disclosure Counsel.

475 Sansome Street, Suite 1700, San Francisco, CA 94111
415.391.5780 tel    |    415.276.2088 fax    |    info@joneshall.com

www.joneshall.com
One highlight of the SSDA Annual State Conference 2022 was the keynote speech by Mr. Hamish Brewer, author of Relentless, his autobiography. Hailing from New Zealand, Mr. Brewer is now a principal in Pennsylvania, where he strives to challenge the status quo in education. During his presentation, Mr. Brewer placed particular emphasis on the idea that students should be directly asked their needs face to face, which he does himself at his own school.

Mr. Brewer began his presentation by discussing the concept of “lost learning:” the concept that students lose knowledge and skills when not in school. While the past two years have been a challenging time for educators, Hamish countered this by stating that attendees should also acknowledge what has been achieved, including the greater emphasis on mental health in schools and the use of remote learning techniques.

“Education is slow to change,” Mr. Brewer said. “Students are still sitting in rows, just like a century ago in 1922.” However, technology has brought the education field into a new era. “Technology is vital to change the education field,” he stated. “Kids today are a brand, using social media like TikTok, Twitter, and Instagram.”

Additionally, he also touted the use of e-sports programs in schools. A billion-dollar industry, e-sports can combine education and entertainment, as well as bringing more funding to small schools. Mr. Brewer cited the classic game Oregon Trail as one of the first games to combine education and fun.

However, while technology can be useful, Mr. Brewer also cautioned against using too much. “You can’t replace people with technology,” he said. Personalized education for each student requires the human element. He urged teachers and staff to elevate their schools and communities by considering their legacies and pushing the envelope. He also pressed that those in education should work to change their viewpoints, as well as the view of the educational field as a whole: “Success isn’t just test scores, and poverty isn’t a learning disability.”

As part of this perspective, Mr. Brewer referred to the current students as the activist generation. This generation has different routes to education than what came before due to new technology and a new perspective on what is needed in schools. Hamish himself listed five aspects of educational success: acquisition of basic skills, high expectations, strong leadership, accountability and monitoring, and a safe and orderly environment. He also recommended teamwork, accountability, leadership, and pride as useful things to consider for educators as they look toward the future.

In many ways, Hamish Brewer’s presentation encompassed the conference, from the emphasis on mental health in schools to the innovative ways in which technology can help students.

By Brett Bunge
After a series of delays, the second draft of the proposed updated Mathematics Framework for California Public Schools: Kindergarten Through Grade Twelve (Framework) has gone out for public review. The 60-day comment period began on March 14th and will stay open until May 16th. This second comment period had been scheduled for sometime between January 2022 and April 2022, however delays in posting the revised draft meant having to push out the comment period into May.

Unlike state content standards, curriculum frameworks are not binding on local educational agencies (LEAs) but are, rather, meant as guidance documents for schools on implementing the relevant curriculum standards. California’s current mathematics framework was adopted back in 2013. Frameworks are normally updated every 8 years and, while the Framework was originally scheduled for adoption by the State Board of Education (SBE) in May 2021, the COVID-19 pandemic and the need to provide the writers of the Framework additional time to draft has pushed out the Framework adoption until 2022.

Compared to the 2013 framework, which was developed to help schools transition to the then-recently adopted Common Core math standards, the proposed 2022 revision is more student-focused and includes new emphases and chapters. These additions include chapters on fostering more equitable outcomes in math (Chapter 2: Teaching for Equity and Engagement), new content areas (Chapter 3: Number sense; Chapter 5: Data Science, TK-12), and the use of technology in the teaching of math (Chapter 11: Technology and Distance Learning in the Teaching of Mathematics).

At over 1,000 pages, this most recent draft of the Framework took 10 months and reflects changes made by the Framework writers in response to comments received during the Framework’s first public comment period, which was held in February – April 2021. During that comment period, a number of interest holders raised concerns about the treatment of gifted students in the revised Framework’s and the number of recommendations perceived to discourage acceleration, including recommending students wait until 9th grade to take Algebra 1 and removing the emphasis on calculus.

To address the concerns about acceleration, this revised draft includes a new chapter entitled, “Chapter 9: Structuring School Experiences for Equity and Engagement,” which explores ways school districts can meet the needs of “advanced” students without stunting the potential of others. The chapter notes that schools often establish tracks based on a student’s math performance in early grades that then exclude them from accessing higher level math courses by the end of high school. In response to this, the draft encourages schools to implement systems that accommodate all types of math learners, stating, “this framework proposes grouping systems and other supports that keep higher level pathways open to more students for a longer time—while enabling exceptional students to move at a fast pace through courses as needed.” This new chapter is designed to help schools in this endeavor and includes “methods of teaching that enable all students to be appropriately challenged, without labels, without requiring that all students work on the same mathematics, and without blunt methods of tracking that filter many students out of STEM pathways.” This draft also includes also includes two new appendices, one on high school pathways and one on works cited in the Framework.

According to the Framework’s Schedule of Significant Events (Schedule), this second public comment period is the final step in the adoption process before the Framework will go before the SBE for formal adoption. To this end, any comments received during this comment period will be shared with SBE members and commenters are encouraged to include in their comments specific references to the portions of the Framework they would like the Board to consider in their review.

For those interested in providing public comment on this draft, the full set of chapters is available for review on the California Department of Education’s (CDE)’s website at https://www.cde.ca.gov/ci/ma/cf/. Comments may be submitted via email to mathframework@cde.ca.gov or physically mailed to the following address:

Instructional Quality Commission
1430 N Street, Room 3207
Sacramento, CA 95814

The SBE is expected to take formal action on the Framework at its July 2022 meeting. This adoption deadline could be pushed out if additional revisions are required but any changes to the Schedule that impact SBE action dates would require SBE approval.
The recent COVID-19 pandemic caused many school districts throughout the state to pause certain programs as they faced school closures and other issues. One such district was San Lucas Union School District (USD) in Monterey County, who never had the chance to celebrate the grand opening of their brand new makerspace in 2019.

Now with students back in the classroom, the district had the chance to mark the occasion with a ribbon cutting this past November and finally get students and teachers learning and exploring in this new hands-on environment.

**Something New & Exciting**

A makerspace is a room that holds lots of different tools and materials for student hands-on exploration and learning. Many makerspaces offer facets of science, wood shop, technology, and art all in one space.

Jessica Riley, superintendent/principal of San Lucas USD started setting up the the makerspace in summer 2019 inside a double portable classroom that was no longer being used. By March 2020, the makerspace included a variety of tools, including a 3D printer donated by local oil producer Aera Energy.

And then the pandemic struck, causing the district to close its doors, including those on the makerspace. During the school closure, Riley says the makerspace became a de facto storage room. Although students were back in the classroom by late fall 2020, students were unable to use it because it was a shared space. "Then by the end of the (2020-2021 school) year, we were getting the hang of things and started clearing out the storage and using the makerspace again for projects," Riley says.

At the start of the 2021-2022 school year, Riley decided it was time to officially open the makerspace with a ribbon cutting event. "All of the kids needed to be reminded that we made this room special for them, where their imagination and curiosity can take the helm of the lesson," she explains. "They had all forgotten this because it was something that had opened prior to COVID that they never fully indulged in. They needed to be reminded this is actually something new and exciting for them."

**Prompting New Ways of Thinking**

San Lucas USD’s makerspace is chock full of hands-on opportunities for its kindergarten through eighth grade students.

*Continued on page 10*
M is for Makerspace
San Lucas USD celebrates the opening of a new school center for learning, exploring, and creating.

Continued from page 9

For example, one area of the room holds a table of manipulatives including Lincoln logs, Legos, tinker toys, tangrams, and plastic straws with connectors. "Basically if you can hold it in your hand and use it to imagine something, that's what that table area is for," Riley says. "You can make a 13-foot tall skyscraper with (the plastic) straws and connectors, and it's pretty cool."

Another area of the room houses a variety of hands-on science exhibits donated by a local science organization. One exhibit has different-sized PVC pipes that students can play like a xylophone. "You hear differences in sound based on the length of the PVC pipe, so you can engage a discussion on how sound travels," Riley says. "And then there's a wind tunnel (that) gives children a chance to talk about weight distribution, air, and flying."

"(All the projects) are designed to be things you can touch to stimulate conversation about why do things work that way," Riley continues. "And if that's how things in fact work, what else could you do with that knowledge? The idea is you have these hands-on science exhibits to cause these questions to prompt the students to think of new ways."

To provide more science tools for students, Riley spent the time disassembling and organizing science kit supplies from old science curriculum kits. "It wasn't necessary for us to have these kits all contained within their own curriculums anymore, but the materials were still valuable and usable, like little terrariums, soil, beakers, Bunsen burners, and measuring cups," she details.

One section of the makerspace houses a cabinet of recyclable goods. Our planet's waste problem is a cause close to Riley's heart and she always encourages students to come up with creative ways to solve the issue. Having these items there allows students to try out any ideas they may come up with for repurposing waste.

The back of the makerspace is the woodworking area, including a drill press, table saw, and glue gun station. Another corner is a kite-building area. The Exploration Table holds all items collected from nature, including leaves and pre-made microscope slides of different organisms.

And the makerspace also holds the district's donated 3D printer. When school was closed during the pandemic, Riley and her staff used the 3D printer to print filters for face masks.

"The school committed to 20 a week," she recalls. "I set up the 3D printer in the front office. We did a lunch distribution daily and every day the students would come to pick up their lunches, they could also take a look at the 3D printer in action. That way they could one, see that we had this new equipment because they never really got to see it yet. Two, see it in action. And three, hear the story about what it was being used for and know that their school was doing something to help contribute to people's safety."

Generating Ideas

At this time, the makerspace is only open to students during class time with their teachers. This is mainly because Riley does not have enough staff to allow the makerspace to be open for drop-in hours after school. However, that is a goal she is working towards.

"My big dream is I'd love to see the students using the makerspace on their own time because it's a fun place to stimulate curiosity, versus in there because it's class time," Riley explains. "Even if it's their favorite class time of the day, I'd love to see if they were independently using it to generate their own ideas."

For other small school districts considering starting their own makerspace, Riley advises them to first visit other school makerspaces to get an idea of what they look like and how they work. "Once you get your foot in the door of other people's makerspaces and you tell them I'm thinking of starting a makerspace, they start sharing their process with you," she adds.

And make sure to keep in mind not only the needs of students for the makerspace, but also those of your teachers. Riley says when she first told teachers she had set up the makerspace, they were not as excited about the opportunity as she had hoped they would be. "I just assumed the teachers would totally love it," Riley explains. "And it's not that they don't, but they were intimidated because there was no lesson plan, there were no student booklets, no curriculum. So my advice is make sure you get a group of teachers involved with that process earlier on so that you're all learning together on best practices."

~ Corrie Pelc
Social clubs are an integral part of the school experience. From book clubs to debate clubs to agriculture clubs, there's almost always a club for every student interest. This past fall, C. Roy Carmichael Elementary in Plumas Unified School District started a unique club that takes fifth and sixth grade students and their families on hikes through the various forests in their area.

**Connecting With Nature**

The hiking club is the brainchild of Jennifer Edwards — a first-year fifth grade teacher at C. Roy Carmichael Elementary, which teaches kindergarten through sixth grade.

Edwards is an avid hiker and for years worked for the Gateway Mountain Center in Truckee, where she was a mountain guide for their outdoor educational program. Through the program, Edwards helped run summer camps and outdoor programs for schools and other groups. She is also CPR certified and has her wilderness first aid certification.

"I started the club because I really wanted to educate our students and families about our local environment, all while having fun in the natural world," she explains. "We live in such a beautiful area and we're surrounded by national forests and we have many lakes and rivers, and an endless amount of trail heads. I was surprised to learn that we didn't have a hiking club and that a lot of my students hadn't been to these places that I would show them pictures of. And I'm like okay, we've got to get these kids out there and show them this is your backyard and install that connection with nature."

**Stop and Look**

When Edwards started the hiking club in fall 2021, she decided to start small and open it to fifth and sixth graders only. She also invites the students' parents to come, as well as younger brothers and sisters. "If a younger sibling wants to come, they need to be accompanied by an adult or at least have their parent speak to me about their skill level," Edwards says.

She currently has 15 students signed up as club members. It is not mandatory for club members to make every hike, however, Edwards says so far there has been a lot of interest in participating in the hikes, especially from parents. "I was really amazed the first day we went (on a hike), all of the families joined," she recalls. "I was surprised — I didn't expect a lot of parents as usually they drop their kids off. But they joined and they even brought their kids from other schools. It was pretty awesome."

Edwards holds the hikes on weekends with a goal of hold-

*Continued on page 12*
A fifth grade teacher at Plumas Unified SD helps foster a lot of the outdoors by starting a school hiking club.

Edwards says her students learn new communication skills through the team-building activities she incorporates into the hikes. And she said the students sometimes bring their science journals with them. "Using our science journals also helps us think creatively like we're sketching and taking notes while observing," she adds.

In the future, Edwards plans to incorporate some special presentations into their hikes. "One thing I would like to do is get someone from the forest service to come talk to us before a hike to tell us about something new they've noticed out there or give us some advice," she says.

And students have an opportunity to learn leadership skills through the hiking club. For each hike, she assigns a club member to be the "trail leader." "They can't (go) running up the mountain — they have to choose a pace that everyone can go at," Edwards explains. "And (they need to know) when to stop and take a break, or stop, look, and listen."

~ Corrie Pelc