

Back to School: Back Outside!



Create High Performing Students

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by Kevin J. Coyle
National Wildlife Federation

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Back to School: Back Outside!

How Outdoor Education and Outdoor School Time Create High Performance Students

EXECUTIVE SUMMARY:

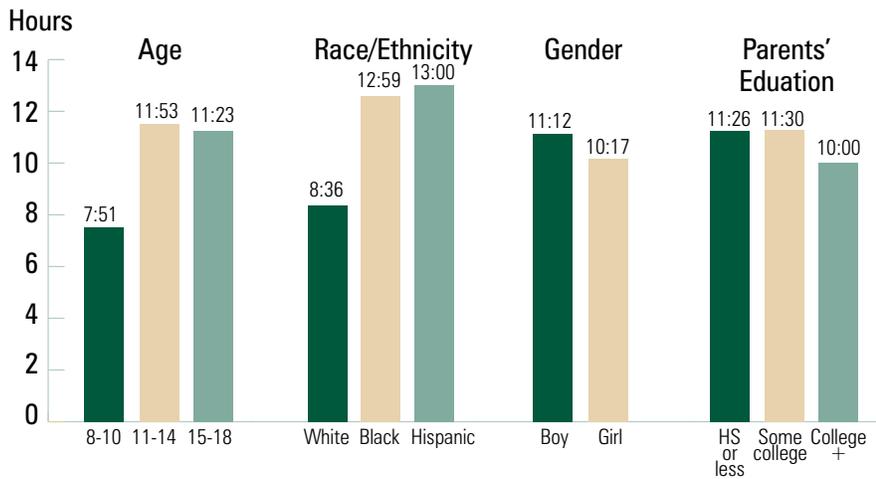
by Kevin J. Coyle, National Wildlife Federation

In this report, we summarize the available studies on the role of outdoor learning programs and outdoor play time in furthering children's overall education: improving their lifelong learning skills, prospects for career success and school test scores. American parents, educators and school administrators are faced with an unprecedented new educational challenge that is so broad, subtle and pervasive, that it is nearly invisible. They must wake up to the cold reality that American children are now spending an average of seven hours and 38 minutes per day (53 hours per week) indoors, using electronic media such as television and video games. Regular outdoor time, especially time in natural surroundings, has become just minutes per day and is verging on becoming a thing of the past. This "indoor childhood" trend is an immense and unnecessary drain on our children's long term physical, emotional and educational development.



TOTAL MEDIA EXPOSURE, BY DEMOGRAPHICS

Average amount of total media exposure by:



Kaiser Family Foundation, Generation M2: Media in the Lives of 8- to 18-Year-olds, January 2010



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Every child should have at least a daily “Green Hour” of outdoor time

Today’s indoor children are less physically fit, less able to concentrate and are less able to relate to peers and adults than any previous generation of children. And, they are less able to be effective in the classroom. One partial solution is to give them more time outdoors: playing and learning. The goal for the NWF *Be Out There* campaign is for every child to have at least a daily “Green Hour” of outdoor time. We see this as necessary for a child to be healthy, to care about nature and, increasingly, to obtain a good education. In the past, we might have thought of the Green Hour goal

as being solely up to parents in a home setting. But we need to look at it more broadly today. Parents can and should facilitate their kids spending regular time outdoors, but schools will need to step up too. By doing so, schools will produce better educated students with stronger life skills.

The research in this report describes two key benefits if schools play a more active role in outdoor education and time for children. First, outdoor education and play time helps students become high-performance learners with skill sets that will be with them throughout their lives. And, second, outdoor education and play time help students perform measurably better on standardized tests.

To be more specific, the research reveals that outdoor education, greener school grounds and more outdoor play time in natural settings:

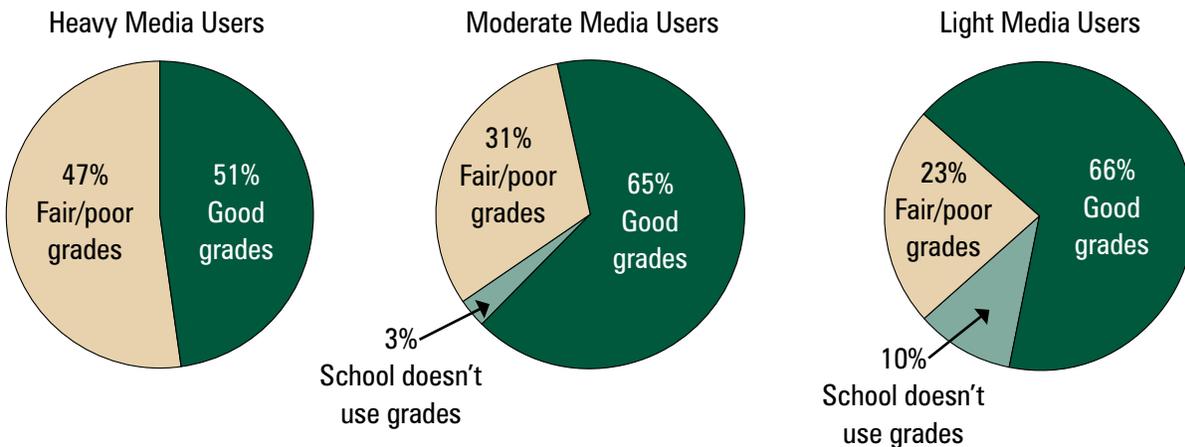
- Usefully employ all of a child’s native intelligences, ranging from math and science smarts to interpersonal communications
- Are particularly effective at helping under-resourced, low-income students perform measurably better in school
- Quantitatively increase student motivation and enthusiasm to learn
- Markedly improve classroom behavior with fewer discipline referrals and related problems
- Help students concentrate for longer periods and help mitigate attention deficit problems



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MEDIA USE AND GRADES

Percent of heavy, moderate, and light media users who get mostly good vs. mostly fair/poor grades.



Kaiser Family Foundation, Generation M2: Media in the Lives of 8- to 18-Year-olds, January 2010



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Parents play an important role in helping children to have more productive school time by allocating home time for outdoor activities

- Help students to learn across disciplines and make them better real-world problem solvers
- Help keep students engaged in their school work and make them less inclined to drop out of school,
- Measurably improve classroom performance in math, science, reading and social studies.
- Increase scores on statewide standardized tests in basic skills, reading, science and math.
- Improve performance on college entrance exams.

Parents can play a particularly important role in helping their children to have more productive school time by allocating home time for outdoor activities in natural settings and by being strong advocates for schools to offer more outdoor time and experiences to their children.

This report lays out a series of steps that schools can take to increase outdoor education and experiences for their students no matter what age, including: school ground greening programs, recommendations on when to have recess, outdoor education programs on site and at nearby areas, walking to school programs and more. It likewise provides advice to parents on specific actions they can take at home and with their child's school to increase outdoor education and play time spent outdoors.



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Helping Schools Offer an Improved Learning Environment

INTRODUCTION



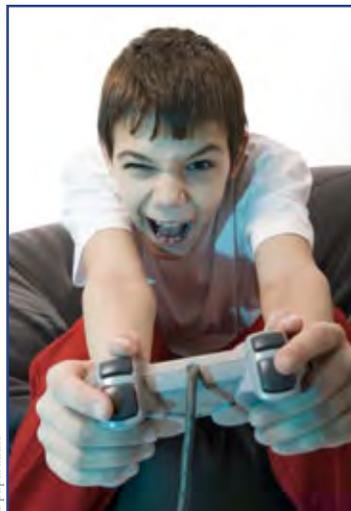
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Studies now show that the average American child, age 8 to 18, spends nearly eight hours per day, year round, indoors looking at electronic screens.

Kaiser Family Foundation, 2010

Many adults recall a time when summer vacation meant being outdoors for endless hours of play and adventures with friends. By contrast, the arrival of September meant returning to school and the confinement of the classroom. But, in recent years, that has all changed. Most American children today spend their summers staying indoors, glued to television screens and video games, and rarely ever venture outside. Studies now show that the average American child, age 8 to 18, spends nearly eight hours per day, year round, indoors looking at electronic screens. (Kaiser Family Foundation, 2010)

The causes for this profound societal change are still being assessed, but two that stand out thus far include the overall attractiveness and user-friendliness of electronic media and increased parental concerns about children playing unattended outdoors and possible accidental injuries or coming to harm from strangers.



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The costs of America's "indoor childhood" run deep. They include increased child obesity, diabetes, and asthma, reduced ability to relate to other children and adults, less realistic life expectations, inability to concentrate, more aggressive behavior and a higher likelihood of personal isolation. Even a child's eyesight and vitamin D levels are affected by too much electronic screen time and too little time spent outdoors. Public health professionals are now saying that today's children may have life spans that are three-to-five year shorter than their parents' due to their inactive, indoor lifestyles. (Ludwig, 2007)



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The costs of America's "indoor childhood" run deep. They include increased child obesity, diabetes, and asthma, reduced ability to relate to other children and adults, less realistic life expectations, inability to concentrate, more aggressive behavior and a higher likelihood of personal isolation

Must we accept the indoor childhood trend? It would be a huge mistake to do so. The solutions are well within reach and are fairly simple. They include more regular, active, unstructured play time outdoors, more exposure to green, vegetated settings wherever possible and, for schools, more outdoor education and activities. Most health and child development specialists, including those at the Centers for Disease Control and the American Academy of Pediatrics, are clear that children who can fit active play, including outdoor time, into their daily routine for an hour per day can counteract many of the adverse effects of the obesity epidemic and the indoor childhood phenomenon. The Academy of American Pediatrics report, *The Importance of Play in Promoting Healthy Child Development and Maintaining Strong Parent-Child Bonds*, points out that play protects children's emotional development and notes that the hurried lifestyle some children have can be a source of considerable stress, anxiety and even depression for children. (Ginsburg, 2007)

The NWF *Be Out There* Campaign's "Green Hour" Goal

The National Wildlife Federation, with its 50-year history of encouraging children to play and learn outdoors, has established a public education campaign called *Be Out There*. It aims to make sure that within the next five-to-ten years, every child gets a daily "Green Hour" – 60 minutes (no matter how it is configured) of exposure to active outdoor play and nature. A Green Hour is time for unstructured play and interaction with the natural world. In 2007, the National Wildlife Federation developed GreenHour.org, an online resource providing parents the inspiration and tools to make the outdoors a part of daily life.

Green Hours can take place in a garden, a backyard, the park down the street, or any place that provides safe and accessible green spaces where children can learn and play. Scientific research shows that kids are happier and healthier when outdoor time is more in balance with indoor time.



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We should not expect our schools to do the whole job of providing for a child's outdoor time needs, but they can surely contribute to the daily Green Hour goal. In so doing they will reap some educational benefits that extend beyond the improved health and well being of the students into the academic realm. This report demonstrates that using the outdoors and outdoor educational programs effectively will help shape high-performance learners out of otherwise average or even apathetic pupils. And, as a major side benefit, standardized test scores in science math, reading and social studies will improve.



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What Parents Can Do During the School Year

Moms and dads can have a tremendous effect on their own child's ability to learn by making sure he or she is getting an hour per day of outdoor play whether it comes at home or is integrated into the school day or both. A daily dose of outdoor play supports the child's

overall health, ability to concentrate, and can help him or her to be more open to learning science and other subjects. In addition to making sure their own kids are getting enough outdoor play time to be healthy and alert, moms and dads can also be advocates for schools to offer more outdoor time and outdoor education programs to their students.

The tools that schools have at their disposal include: schoolyard greening programs and tree planting; schoolyard gardens and wildlife habitats; outdoor recess; safe walking routes to school; outdoor field trips and after school programs; camp programs, and more. Without overburdening schools or educators, America needs to rethink and reshape the role of American schools in addressing the indoor child phenomenon. Schools can help children engage in more outdoor time and, in return, the outdoors can be a solid platform for effective learning and future academic and career success.

Benefits for Home-Schooled Students

Parents who have chosen to educate their children at home will also find that adding some outdoor time and outdoor education lessons to their efforts will benefit their children physically, emotionally and academically. While much of the research that readers will observe in this report was developed in formal school settings, the effects apply equally well to home-schooled students.

Shaping Well-Rounded Students

This commonly used term now poses a double challenge. In its traditional sense it means students who are getting a full educational experience that includes and extends beyond “book” learning into social relationships, physical education, civic participation, the arts, language skills and an appreciation of natural science. It also, in its very phraseology, reminds us of the risks of students who are obese and therefore too *physically* rounded. We want the former but not the latter. In April 2010, U.S. Secretary of Education Arne Duncan addressed a national conference of art educators on this point. In his speech he said, “A well-educated student is exposed to a well-rounded curriculum. It is the making of connections, conveyed by a rich core curriculum, which ultimately empowers students to develop convictions and reach their full academic and social potential.” (Duncan, 2010)

The stakes for pursuing educationally well rounded students are very high. *New York Times* journalist Thomas Friedman, author of *The World is Flat*,



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has written that “the school, the state, the country that empowers, nurtures, [and] enables imagination among its students is going to be the winner in the rapidly-evolving global economy of the twenty-first century.” Nature and outdoor education programs provide a solid and durable platform for stirring the imagination and developing real-world skills in our young people.

We need to begin by getting kids outdoors more at home and at school. Increased amounts of indoor activities, like watching TV and playing video games, will continue to have significant negative effects on children and their ability to be successful but we should not expect these trends to disappear. Electronic media are now an indelible part of our and our children’s lives. We simply need to recognize the need to balance this activity with fun and educational



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A well-educated student is exposed to a well-rounded curriculum. It is the making of connections, conveyed by a rich core curriculum, which ultimately empowers students to develop convictions and reach their full academic and social potential



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time outdoors. In this report, we will examine what is at stake by failing to get kids outdoors more, and simple ways to rebalance their lives. Without a more effective effort at finding a balance, this American indoor childhood trend will work against high performance in the classroom and take an intellectual as well as a physical toll.

This report is organized into three major chapters:

- ◆ In chapter I we look at how, through outdoor education and time in nature, students can become better and more active learners. We examine the research findings on the various ways that outdoor education, outdoor time and nature study contribute to more motivated and effective learners with skills they will carry forward throughout their lives, including their ability to concentrate.
- ◆ Chapter II documents how outdoor education and environmental education programs contribute to higher standardized test scores. It reviews the research that demonstrates how children in environmental education programs routinely outperform other students in statewide tests for reading, math and science and how they even do better on college entrance exams.
- ◆ Chapter III spells out what schools and parents can do to implement some simple approaches to getting more outdoor time including home time, recess, school gardens, schoolyard greening, field trips, outdoor education programs, safer routes to school programs and more.



Find a balance of activities.

Using the Outdoors to Create High-Performance Learners

CHAPTER 1:



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‘Their large motor skills developed, they worked out their social issues in a better way, they had more imaginative play,’ Ms. D’Aelo said. “Children’s senses are so overtaxed in these modern times, so here, it is very healthy for them.”

Teacher in Sarasota Springs, NY using Forest Kindergartens in US

*I*magine a kindergarten where the children come to school and keep their coats, mittens and hats on! They will spend the entire morning playing and learning in the woods regardless of the weather. Sound extreme? They are called “Forest Kindergartens” and the children learn outside all year long. Such schools are more common in Scandinavia, Austria, Germany and Scotland, but the Waldorf School in Saratoga Springs, New York is one of a handful of U.S. schools that have adopted this bold new outdoor approach. Why so extreme? Playing outside for prolonged periods has positive effects on children’s development, including: balance, agility, dexterity, and depth perception. Studies have found that children who attend forest kindergartens experience fewer injuries from accidents and are better at assessing risks. Other research shows that time in nature and playing outdoors strengthen a child’s immune system. Importantly, German researcher Roland Gorges found that children who had been through a forest kindergarten were above average, compared by teachers to those who had not participated in the program, in all areas tested including: knowledge and skills in specific subjects, reading and math achievement, skill in forming questions, and motivation.

We are not suggesting that every school keep their young students outside all morning. However, the lessons learned here are promising. The outdoors, whether embodied in a simple schoolyard garden or a wilderness park, offer students and educators opportunities far beyond developing an appreciation for nature. Outdoor education programs can help students of all abilities



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Last year I had about 72 behavior referrals to the office because I just didn't like my classes or my teachers, and I was bored stupid. This year I had just one referral to the office, and it really wasn't my fault. I don't want to get into trouble now; EIC (Environment as an Integrated Context) is a neat way to learn and lots of fun. We are helping our community. I don't want to let the teachers down. They are really neat. My grades are holding steady too, and for me, that is a good thing.

Seventh-grade female student,
South Carolina



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and backgrounds to become highly effective, high-performance learners.

What is a high-performance learner? Think of a student who is motivated, curious and even hungry for knowledge. A good learner is creative, a problem solver and has broad perspective, and every problem looks like an intriguing new puzzle to be solved. A proven way to shape high-performance learners is to put them on a learning stage that will invite inquiry and give them interesting, real-world experiences. Instead of a student being solely confined to the classroom, books and lectures, the outdoor world can become a prominent part of his or her schooling. Educational research supports the simple idea that the larger the number of environmental variables we expose children to, the more inventiveness and creativity we will observe (Ramey, 1973). The outdoors offer significant learning variables and educational benefits that will help our children have happier lives and help society to have an effective and intelligent future workforce.

How Educators Perceive Environmental and Outdoor Education Programs

In the spring of 2010, as part of its National Wildlife Week education outreach efforts, the National Wildlife Federation surveyed 1,878 educators online and asked them what they thought about children and the outdoors. They strongly agreed with the following statements:

- ◆ 78% -- Children who spend regular time in unstructured outdoor play are better able to concentrate and perform better in the classroom
- ◆ 82% -- Students need daily unstructured outdoor time as a counterbalance to the significant time spent indoors in front of electronic media
- ◆ 75% -- Students who spend regular time outdoors tend to be more creative and better able to problem solve in the classroom

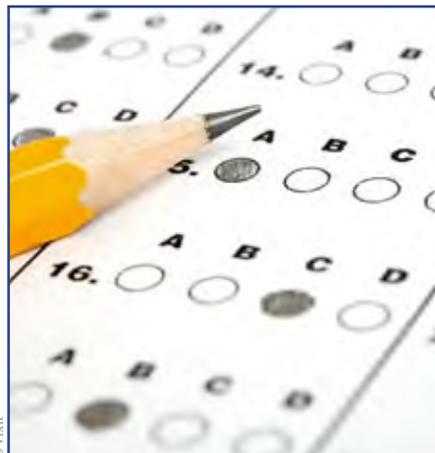
You would expect, from seeing these perceptions that educators and schools



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“The advantage for green outdoor activities was observed among children living in different regions of the United States and among children living in a range of settings, from rural to large city environments,” wrote co-authors Frances E. Kuo and Andrea Faber Taylor. “Overall, our findings indicate that exposure to ordinary natural settings in the course of common after-school and weekend activities may be widely effective in reducing attention deficit symptoms in children.”

would be going to great lengths to provide more outdoor learning and play time experiences for children. In recent years, however, the trend has been away from outdoor time and outdoor learning for children in schools. The U.S. Congress and many states decided in 2001 to shift the tone and practice of American education toward more visible accountability. This was done by emphasizing student performance on statewide standardized tests. This “high stakes” testing approach has some advantages but it also has serious drawbacks. It shifted schools and educators toward an intense focus on test results. Because so much is riding on student test performance, teachers have tended to be sharply focused on drilling the students for higher test performance while passing up other opportunities, including outdoor time through recess and physical education. Research indicates that additional time spent in physical activity may bring about increases in students’ grade point averages and help them to have better ability to concentrate, sharper memories and greater school satisfaction. (Trudeau 2008). The 2010 educational picture is shifting, however, toward a renewed emphasis on educating the whole child and not relying entirely on testing. (Education Week 2010)



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Working With all of a Child’s Intelligences

When thinking about the whole child, outdoor education lends itself well to developing multiple aspects of a child’s intellect and ability. In 1983, Dr. Howard Gardner of Harvard University developed an educational theory that all children have at least seven “multiple intelligences.” The exact definitions of the seven are sometimes debated but the fundamental idea is sound. Gardner described children as having: linguistic intelligence, logical-mathematical intelligence, spatial intelligence, bodily-kinesthetic intelligence, musical intelligence, interpersonal intelligence, and naturalist intelligence. Gardner asserted that educators should pay more evenly distributed attention to students who show signs of being gifted in the arts, music, nature, design, dance, empathy, or other aspects of human achievement. The multiple elements of nature education, including sight, touch and sound, lend themselves to all of a child’s natural intelligences.

Though the field of environmental and nature education may have started out teaching children about

problems with ecosystems and environmental pollution, educators soon learned that it offered students a richer and much broader educational backdrop. And children love the outdoors. Today, outdoor education is usually based on a “constructivist” approach to learning. This means it focuses on the learner and his or her ability to piece together complex conceptual puzzles. A good outdoor education program will not permit students to sit back and be passive in their learning. Environmental and nature education dynamically combine learning of the underlying science and principles of a subject with significant student-directed assessments and real-world applications (Hungerford, 2003).

Environment-Based Education is a Powerful Subject “Integrator”

In 1998, a breakthrough study was published by the State Education and Environment Roundtable (SEER) with the support of the Pew Charitable Trusts and twelve state Departments of Education. The Roundtable examined high quality environmental education programs across America. This study assessed student performance in 40 schools that were already implementing a program to integrate environmental education. The study was completed by Roundtable founders Lieberman and Hoody in partnership with the 12 States. It found that these schools consistently used the theme of the natural environment as a lens through which to look at all of the subjects being taught. Using the environment as a way to integrate, otherwise unconnected subjects made a real difference to the students and permitted educators to engage in more team-based teaching. The Roundtable coined this approach as the **Environment as an Integrating Context for learning (EIC)**.

The study data came from site visits to the 40 schools and included four different teacher surveys and interviews with more than 400 students and 250 teachers and school administrators. Moreover, in 14 of the subject schools, the students in the environment-based education programs were compared with students from the same schools who were in traditional classrooms, looking at standardized test scores, grade point averages, attendance, student attitude measures, and records of disciplinary actions. The results were compelling. Those participating

in the environment-based education programs had higher scores on standardized measures of academic achievement in reading, writing, math, science, and social studies; reduced discipline and classroom management problems; increased engagement and enthusiasm for learning; and greater pride and ownership in their accomplishments. Importantly, the research found that most of the schools used outdoor spaces as complementary learning labs for the programs, and that these outdoor areas factored highly in program success and in raising student enthusiasm. Follow-up studies by SEER in California, Florida and other locations have verified and elaborated on these findings. (Lieberman, 1998)

Improving Classroom Behavior

SEER’s California study was a controlled examination that compared eight paired sets of student classes. One part of each set was exposed to the environment as an integrating context for learning (EIC) program and the other part did not have such a program. In two cases, the paired classes came from the same school. In the other six cases, they came from different, neighboring schools with closely matched demographics and socioeconomic characteristics. Data were collected from standardized test scores, site visits, teacher surveys, and interviews. The authors compared standardized measures of academic achievement in reading, writing, math, science and social studies. They found that the EIC students did better 72 percent of the time. And, the EIC student class attendance was better 77 percent of the time. The EIC students also showed fewer discipline

SEER STUDY
Effects of Enviromental Education on Student Achivement
Control Group study determined that students participating in Enviromental Education curriculum increased academic performance.
<ul style="list-style-type: none"> • 76% language arts
<ul style="list-style-type: none"> • 63% Math
<ul style="list-style-type: none"> • 64% Science
<ul style="list-style-type: none"> • 73% in Social Studies
<ul style="list-style-type: none"> • 77% in attendance for taking assessments
Effects of Enviromental Education on Student Achivement G.H.Hoody, Lieberman, 2000

HOW DOES ENVIRONMENTAL EDUCATION HELP STUDENTS IMPROVE SKILLS

- Utilizes group work, a skill critical in higher grades and in the workforce. In 1999 the National Business Education Association noted that it seeks “employees who can work in teams, create analytical reports, interpret data and make decisions,” all skills developed through environmental service learning.
- Cultivates critical-thinking and problem-solving skills, as students measure what they learn in the classroom against real-world situations, a continuous feedback loop that promotes flexibility, teamwork and leadership.
- Nurtures community involvement and active citizenship—the backbone of our democratic government.
- Students involved in environmental education efforts improve math and reading scores, perform better in science and social studies, are more fully able to transfer their familiar learning into unfamiliar contexts, and learn to “do science,” rather than just “learn about science.”

enabled students to present their work to community audiences beyond their teacher.” Once again, the use of local environments and outdoor spaces were combined with real-world problem solving to produce a more motivated learner.

In a 2005 study of ten South Carolina middle schools that use the environment as an integrating context (EIC), more academic progress was observed. For example, one school that offered academic incentive cards (cards that can be exchanged for free periods and other small benefits) noted that 64 percent of its seventh-grade EIC students achieved a 3.0 GPA. The previous year, only 28 percent of the same students as sixth graders—who were not EIC participants then—reached the same level. On the subject of adolescent behavior the study found:

“The following are the first-year results for seven of South Carolina’s EIC programs:

- ◆ At school A, EIC students decreased their absenteeism by 22 percent and their suspensions by 36 percent from the previous year. All these students were academically low performing, and many of them had serious past behavioral issues.
- ◆ At school B, EIC students had half the amount of discipline referrals that the non-EIC students had. Interviews showed that EIC students had an increased interest in learning and an increased respect for their teachers.
- ◆ At school C, the entire student population of one grade participated in EIC. These students’ records were compared with their records from the year

problems, increased enthusiasm for learning, and greater pride in their accomplishments. (SEER, 2000)

In a more formal study of achievement motivation, researchers Athman and Monroe conducted an assessment in 2004 of 11 Florida high schools and 400 9th and 12th grade students. The authors compared achievement motivation in classrooms with environment-based educational programs that use the environment as an integrated context (EIC) to more traditional classes. Students filled out an Achievement Motivation Inventory and a number of the teachers and students were interviewed. They found that, “controlling for grade point average, gender and ethnicity, environment-based education significantly raised 9th and 12th graders’ achievement motivation in comparison to the control groups. Students and teachers attributed increased motivation to the use of the local environment, teachers’ ability to tailor learning experiences to students’ interests and strengths, and the application of learning to real-life issues and problems.” This “often



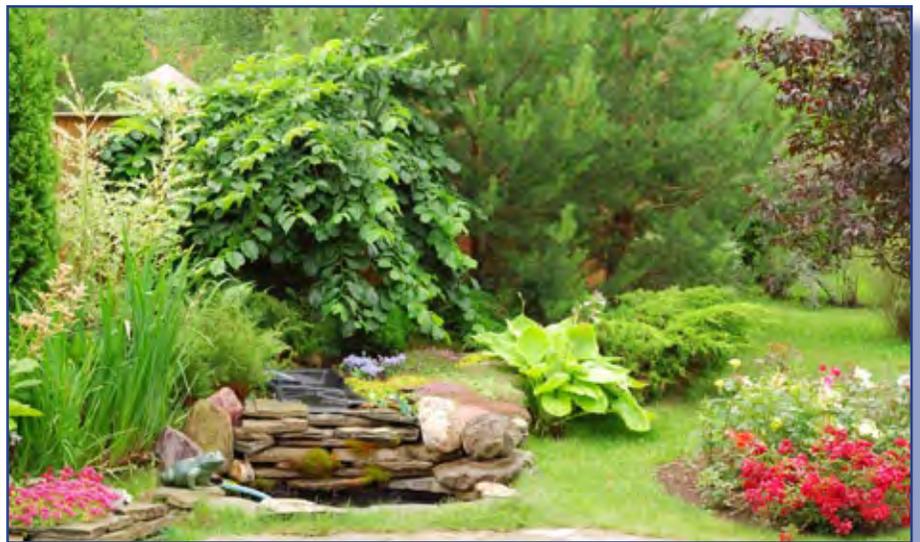
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Science achievement of students who participated in a hands-on (i.e., experiential) gardening program was higher than that of students who only engaged in classroom curriculum.

Klemmer et al. 2005

prior to the implementation of the EIC program. Their total number of behavior referrals had decreased by 56 percent, their total number of in- and out-of-school suspension hours had decreased 75 percent, and their absences had decreased by 16 percent.

- ◆ At school D, EIC students—who comprised 31 percent of the students in their grade—accounted for only 3 percent of all the behavioral referrals and only 22 percent of the absences. Sixty-four percent of the EIC students received academic incentive cards (which require a 3.0 GPA), compared to 28 percent of these same students the previous year.
- ◆ At school E, EIC students—who comprised 35 percent of the students in their grade—accounted for 25 percent of the students disciplined, 18 percent of the in-school suspensions, and 14 percent of the out-of-school suspensions.
- ◆ At school F, EIC students—who comprised 37 percent of the students in their grade—had



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only 20 percent of the in-school grade-level suspensions and only 8 percent of out-of-school suspensions.

- ◆ At school G, EIC students—who comprised 19 percent of the students in their grade—had only 4 percent of the behavioral referrals, 4 percent of the in- and out-of-school suspensions, and 12 percent of the absences.”

attend college. There were also fewer reports of discipline problems and criminal behavior. Importantly, he documented that schools that allowed students to eat outside or off campus had higher test scores and a greater percentage of students planning to attend college. Matsuoka noted that trees and other onsite vegetation needed to be fairly close to the students in order for academic and behavioral benefits to be evident. (Matsuoka, 2008)

Greener School Grounds Boost Performance

Can planting trees and gardens at school grounds make an academic difference? Michigan researcher R.H. Matsuoka examined 101 high schools to see if having natural views from windows, eating outside and having trees and vegetation in close proximity to the students made a measurable difference in academic achievement, long-term learning motivation and behavior. Matsuoka found that the schools that had larger windows and more views of trees and other natural features also had students with higher standardized test scores, higher graduation rates, and a greater percentage of students planning to

In 2003, researcher Janet E. Dymnt of Toronto, also looked at the educational outcome effects of green school grounds, such as schools with gardens, trees, trails and other outdoor amenities. She studied 45 elementary, middle, and high schools in the Toronto school district. She surveyed parents, teachers, and administrators and documented significant positive benefits for both learning and teaching that came from the use of greener school grounds. Fully 90 percent of those surveyed said that student enthusiasm and engagement in learning was higher at the schools that used natural features on the school grounds for classes as compared to wholly indoor programs, and that 70 percent of the educators said that their



©Christina Richards

own motivation for teaching increased while using such school grounds as compared to just using the indoors. (Dyment 2005) In 2006, Anne Bell and Dyment looked at the effects of school greening efforts on weight loss and also found that, quite beyond their obesity concerns, “children who experience school grounds with diverse natural settings are more physically active, more aware of nutrition, more civil to one another and more creative.” (Bell, 2006)

In a broader survey of literature that examined the role of school gardens on children, researcher Dr. Dorothy Blair found that, of the seven subjective or qualitative studies examined, there were a number of common findings including that students “enjoyed and were highly motivated by gardening; students demonstrated improved school



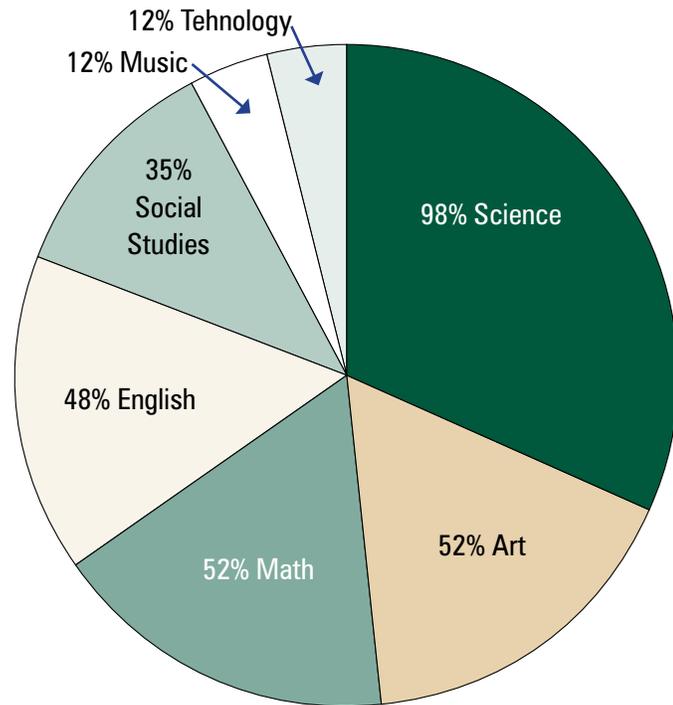
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“Children who experience school grounds with diverse natural settings are more physically active, more aware of nutrition, more civil to one another and more creative.”

Anne Bell, 2006

attitude and pride in the garden; and gardening enhanced student bonding, teamwork, and learning opportunities.” She also covered quantitative studies which are

TEACHERS UTILIZE NWF SCHOOLYARD HABITATS TO TEACH A DIVERSITY OF SUBJECT MATTERS



January 2010 Survey of NWF Certified Schoolyard Habitats

addressed in the next chapter of this report. (Blair, 2009)

Field trips are another way for schools to support children learning outdoors. Though limited in time and duration, field trips can have a significant effect on student learning and motivation to learn. Though many schools see them as costly and difficult to orchestrate, they can also produce significant benefits. To assess their value in the face of increasing electronic media and the Internet, researcher Maria Harrington compared real field trips to online virtual trips using a select sample of 12 students in a Pittsburgh, Pennsylvania elementary school. She found that, while more students evidenced a preference for the virtual field trip, the students felt that they learned more from the real trip. Even though this was a small sample, she concluded that while

a virtual field trip can be a useful part of an education program, a real trip provides a superior learning environment. (Harrington, 2009)

Evolving electronic handheld technology including global positioning systems (GPS), smart phones, smart cameras, and more will undoubtedly change the face of field trips and field work at schools. USDA Social Scientist Deborah Chavez investigated the role of technology in supporting or enhancing children’s outdoor experiences. Two activities were technology-based (a camera safari and geo-caching for hidden treasure) and two activities were not technology-based (nature rubbings and a nature scavenger hunt). The participating children ranked the four activities on how much they liked each one. The survey found that the children enjoyed all of the



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At Kruse Elementary of Pasadena, Texas, where poverty is ubiquitous and 87% of students are eligible for free or reduced-price lunches, a teacher named Libby Rhoden began providing environmental education to her first-graders. The result has been that Rhoden’s students consistently outperform their peers from other classes in both reading and math.

Environmental Education Increases Academic Achievement, January 2010

REVERSING GROWING DROP OUT RATE
Among the findings in the report, <i>“Left Behind in America: The Nation’s Dropout Crisis.”</i>
<ul style="list-style-type: none"> Nearly one in five U.S. men between the ages of 16 and 24 (18.9 percent) were dropouts in 2007.
<ul style="list-style-type: none"> Nearly three of 10 Latinos, including recent immigrants, were dropouts (27.5 percent).
<ul style="list-style-type: none"> More than one in five blacks dropped out of school (21 percent). The dropout rate for whites was 12.2 percent.
The dropout situation at the state level was similarly widespread:
<ul style="list-style-type: none"> More than one in 10 people ages 16 to 24 years old had dropped out of high school in each of the 12 states surveyed.
<ul style="list-style-type: none"> More than one in five 16- to 24-year-olds were dropouts in Florida and Georgia.
<ul style="list-style-type: none"> California had the most dropouts of any state (710,000), with a 14.4 percent dropout rate among 16- to 24-year-olds.
<ul style="list-style-type: none"> Georgia had the highest dropout rate for this population at 22.1 percent.

activities but gave the highest scores to the technology-enhanced activities. (Chavez, 2009)

Recess also makes a difference. In examining school behavior, researcher Dr. Robina M. Barros and her colleagues found that teachers’ rating of overall classroom behavior was improved for children who had some recess as compared to those with none or just a minimal break during the day. (Barros, 2009)

Help for Concentration and Attention Difficulties

Researchers at the University of Illinois have found strong indications that exposure to natural settings in the course of common after-school and weekend activities may be “widely effective” in reducing attention deficit symptoms in children. The authors surveyed the parents of 322 boys and 84 girls who had been diagnosed with Attention Deficit-Hyperactivity Disorder

(ADHD). These parents reported on how their children performed after participating in a wide range of activities. Some of the activities were conducted indoors while others were conducted in outdoor spaces without much greenery, such as parking lots and downtown areas. Some activities took place in relatively natural outdoor settings such as a tree-lined street, backyard, or park. In a more controlled follow-up to this initial study, the study’s authors, Andrea Faber Taylor and Frances Kuo, investigated the impacts of three different outdoor environments on the attention of seventeen 7- to 12-year-old children diagnosed with ADHD. After a pretest that involved completing a series of puzzles that required focused attention, each child participated in a 20-minute guided walk in three different outdoor settings (an urban park, a downtown area, and a residential area). After each walk, the children completed a test of their concentration and responded to questions about their walking experience. The researchers



Environmental education programs can be used to promote a renewal of teacher and student interest in learning and, with appropriate adaptation, can reinforce the skills that are measured in the state achievement tests. (Improving Student Achievement with Environmental Education

Martha C. Monroe,
Jeanette Randall, and Vicki Crisp



found that children concentrated better after walking in a park setting as compared to either a downtown or residential setting. (Taylor and Kuo, 2008).

This body of research makes a compelling case for how natural outdoor spaces--groves of trees, natural play areas, school gardens, schoolyard wildlife habitats, local parks and wetlands--add to a student's desire to learn and facilitates the overall learning process including tapping into many aspects of a student's deep-seeded native intelligences. In the next chapter we will review the promising and positive effects that environmental and outdoor education programs have on raising standardized test scores.

Reversing a Growing U.S. Drop-Out Rate

Each year, approximately one-third of all public high school students fail to graduate from public high school. Nearly half of all blacks, Hispanics, and Native Americans fail to graduate from high school with their class. Most of these students quit school

with less than two years to complete their high school education. The U.S. once led the world in its high school graduation rate but now ranks 20th. In a speech on August 11, 2010 at a national forum to address America's rising drop-out rate, the President noted that the nation that "competes well in the economy tomorrow will be the nation that competes well in education today."

STATE DROPOUTS	AGED 16-24	DROPOUT RATE
California	710,383	14.4%
Florida	423,529	20.1%
Georgia	270,114	22.1%
Illinois	218,949	13.2%
Michigan	162,512	12.8%
New Jersey	111,236	10.8%
New York	368,854	14.6%
North Carolina	202,280	17.6%
Ohio	188,335	13.3%
Pennsylvania	196,360	12.5%
Texas	582,109	18.5%
Virginia	139,783	13.9%

According to a report by the Center for Labor Market Studies at Northeastern University in Boston,



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The costs of dropping out of high school today are substantial and have risen over time, especially for young men, who find it almost impossible to earn an adequate income to take care of themselves and their families.

Massachusetts and the Alternative Schools Network in Chicago, Illinois, nearly 6.2 million students in the United States between the ages of 16 and 24 in 2007 dropped out of high school, fueling “a persistent high school dropout crisis.” (Center, 2009) The total represented 16 percent of all people in the United States in that age range in 2007. Most of the dropouts were Latino or black.

The report emphasized the importance of having at least a high school education.”In the current global economy, having at least a high school diploma is a critical step for avoiding poverty, and a college degree is a prerequisite for a well-paying job,” the study says. “The costs of dropping out of high school today are substantial and have risen over time, especially for young men, who find it almost impossible to earn an adequate income to take care of themselves and their families.”

According to a 2006 study by Civic Enterprises, *The Silent Epidemic: Perspectives of High School Dropouts*, (Bridgeland, 2006), the decision to drop out is dangerous for the students. They are more likely than their peers who graduate to be unemployed, living in poverty, receiving public assistance, in prison, on death row, unhealthy, divorced, and single parents with children who – in turn – drop out from high school. What’s of significant interest is that while students drop out because of significant academic challenges, most dropouts are those who could have - and believe they could have - succeeded in school.

Many high school dropouts expressed great regret for having left high school and also strong interest in re-entering school with students their own age. Most (81 percent) said that graduating from high school was important to success in life, and 74 percent said that if they could do it over, they would have stayed in school. About half said that not having a diploma makes it difficult for them to find a good job.

The study also shows that dropping out of high school is not a sudden act, but rather a gradual process of disengagement, with attendance patterns clearly a sign of a progressing problem.

In Helping Students Graduate: A Strategic Approach to Dropout Prevention, (Smink, 2004), authors Smink and Schargel describe 15 strategies for keeping kids in school that were identified through nationwide research reviewed by the National Dropout Prevention Center/ Network (NDPC/N) at Clemson University. Students in this study reported a variety of reasons for dropping out of school and therefore



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there must be multi-dimensional solutions to address this problem.

THE FIFTEEN STRATEGIES ARE:	
1.	Mentoring/Tutoring
2.	Service Learning
3.	Alternative Schooling
4.	After School Opportunities
5.	Early Childhood Intervention
6.	Family Engagement
7.	Early Literacy Development
8.	Professional Development
9.	Active Learning
10.	Educational Technology
11.	Individualized Instruction
12.	Systemic Renewal
13.	School-Community Collaboration
14.	Career and Technical Education
15.	Safe Schools

In The Silent Epidemic study, 81 percent of students who dropped out said that there should be more opportunities for real-world learning

and some in the focus groups called for more experiential learning. They said that students need to see the connection between school and getting a job. In addition, building a school climate that fosters academics and makes it interesting was of high interest to 71 percent of the dropouts in the study.

Environmental and outdoor education programs address the real-world aspects of these needs and are continuously identified by students and teachers as making the school educational setting more interesting and engaging. The body of evidence, noted above in this report supports the simple concept that robust environmental and outdoor education programs can be a useful tool in the fight against a high drop-out rate. Such programs can help students stay engaged in their education and complete their high school education and even pursue higher education.



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Raising Standardized Test Scores with Nature and Outdoor Education

CHAPTER 2:

In the late 1990s and early 2000s, the nation's attention to public education focused in on student and teacher accountability. Policy makers at all levels decided schools were not getting a passing grade. The National No Child Left Behind Act of 2001 instituted a set of new requirements that linked federal funding to student performance on standardized tests. It was a public declaration that for school districts and schools to receive federal dollars, every student would need to be tested and those test results would factor into a wide range of decisions about future funding, teacher pay and more. When the Congress threw down this gauntlet and put future federal funding at stake, the schools took it very seriously and, despite a sense that this new accountability approach might be too educationally limiting, adopted the new rules and began to "teach to the test."

Concentrating on high stakes testing to the exclusion of other aspects of education meant cutbacks in many discretionary activities and even some (such as physical education) that were seen as necessary but expendable when hard choices had to be made. Since 2001, the sense among many educators became that if it isn't going to



MEDIA, GRADES AND PERSONAL CONTENTMENT			
Among all 8- to 18-year-olds, percent of heavy, moderate, and light media users who say they get mostly:†			
	Heavy Users	Moderate Users	Light Users
Good grades (A's and B's)	51%a	65%b	66%b
Fair/poor grades (C's or below)	47%a	31%b	23%c
Among all 8- to 18-year-olds, percent of heavy, moderate, and light media users who say they:††			
	Heavy Users	Moderate Users	Light Users
Have a lot of friends	93%	91%	91%
Get along well with their parents	84%a	90%b	90%ab
Have been happy at school this year 7	2%a	81%b	82%b
Are often bored	60%a	53%b	48%b
Get into trouble a lot	33%a	21%b	16%b
Are often sad or unhappy	32%a	23%b	22%b
Heavy users are those who consume more than 16 hours of media content in a typical day (21% of all 8- to 18_year_olds); moderate users are those who consume from 3–16 hours of content (63%); light users are those who consume less than three hours of media in a typical day (17%).			
Note: Statistical significance should be read across rows. † Students whose schools don't use grades are not shown. †† Percent who say each statement is "a lot" or "somewhat" like them.			
Kaiser Family Foundation, Generation M2: Media in the Lives of 8- to 18-Year-olds, January 2010			

exposure to environmental and outdoor education programs, but it was tougher to say that they would also perform better on statewide tests. The question was framed: Do environmental education programs support higher performance on standardized tests?

Measurably Higher Performance on Standard Statewide Tests

The first major study to address this question head-on was conducted by educator and researcher Oksana Bartosh in 2003. In a study entitled “*Environmental Education: Improving Student Achievement*,” Bartosh compared 77 pairs of demographically equivalent schools in the State of Washington. Half of the schools (one of each of the 77 pairs) had implemented environmental education (EE) programs for three years or more and the other half did not have any EE programs. She examined standardized test performance in those schools for the Washington Assessment of Student Learning and the Iowa Basic Skill test. She controlled for variations among the schools and her premise was to match schools that were otherwise nearly identical.

For the **Washington** Assessment of Student Learning she found that: 50 of the EE schools did better in math, 51 did better in reading, 56 had higher scores in writing and 46 showed superior performance in listening.

For the **Iowa** Test of Basic Skills she found that: 45 of the EE schools did better in math and 44 had higher scores in reading.

be on the test, it is much less likely to be included in the curriculum or in the school's activities.

Environmental education (EE), which had been generally increasing in schools since the 1970s, began to see cutbacks. Many EE programs were considered to be discretionary and even thought of as possibly interfering with higher scores on the statewide tests. These tests have very little actual environment or nature-based content. Intuitively, environmental and outdoor educators knew that students performed at higher levels through



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"We need to understand that kids need a break," Dr. Barros said. "Our brains can concentrate and pay attention for 45 to 60 minutes, and in kids it's even less. For them to be able to acquire all the academic skills we want them to learn, they need a break to go out and release the energy and play and be social."

Dr. Romina M. Barros, a pediatrician and assistant professor at Albert Einstein

Taken as a whole, the EE schools did better in 73 of the 77 pairs of schools studied and by significant margins. She also confirmed that the pattern of improved test scores for students who had been through environmental education programs persisted for the five years of data investigated (1997-2002). (Bartosh, 2003)

The Bartosh findings on improved reading scores were valuable in making the case for environmental education also being an effective way to boost literacy. This connection is not very intuitive to most educators. Many people will naturally associate environmental education with improved understanding of science, but it also contributes to the development of basic skills, including reading. There is a broad evidence base to support this. An elementary school, which was part of a 1998 study by the State Education and Environment Roundtable, employed environment-based education for this purpose. Bagley Elementary School in the State of Washington employed the Environment as an Integrating Context (EIC) and then measured their performance on reading scores on the Iowa Test of Basic Skills. Bagley found that the EIC students' Iowa Test scores rose from an average of 44 to 53

BENEFITS TO ENGLISH AS A SECOND LANGUAGE STUDENTS

- Increase cooperation
- Increase in leadership
- Improve relationships with peers
- Motivation to learn increased
- Increase in confidence
- Provide an opportunity "to shine"

(Effects of Outdoor Education on Children in California, SEER California, 2005)

among students in the environment-based program. This supports what Bartosh found several years later on a wider scale.

Environmental education gives science scores a boost as well. Numerous studies show this. For example, a recent study by Project Learning Tree (PLT), a program of the American Forest Foundation, reaffirmed the effectiveness of nature and environmental education in science learning. In September 2009, PLT reported that Bicentennial Elementary in New Hampshire showed significant fourth grade science score improvement as a result of the PLT green schools program they instituted there. PLT began working with Bicentennial in 2008.

In a broader example, the Louisiana school district of East Feliciana conducted an assessment of how environmental and outdoor education programs affected student test performance. The District was having difficulty in maintaining academic standards for 4th and 8th grade students. Over one-third of its students were getting consistently unsatisfactory scores in the statewide LEAP exam (Louisiana Educational Assessment Program). So the District adopted a new, outdoor, placed-based approach to learning in a bold attempt to try something different. The new



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Many people will naturally associate environmental education with improved understanding of science, but it also contributes to the development of basic skills, including reading.

program had many environmental and outdoor features that, over three years, measurably improved student test performance. The Rural School and Community Trust reported that: “Using the environment as the theme of their new place-based learning program, students studied local soil, rocks and minerals, ecology, topography, weather, biodiversity, and water quality. Nature trails and butterfly gardens were built. Over time, the focus of place-based work has expanded to include local geography and history as a meaningful context to teach science, mathematics, social studies and language arts.” (Emekauwa, 2004).

From 1998 to 2002 the number of East Feliciana students rated unsatisfactory in LEAP 21 scores decreased as follows:

SUBJECT	REDUCTION IN UNSATISFACTORY LEAP
English, Language and Arts	Reduced from 32.6% to 18.4%
Mathematics	Reduced from 44.0% to 24.9%
Science	Reduced from 27.5% to 19.4%
Social Studies	Reduced from 39.4% to 28.1%

A school in Kentucky saw similar results. When Tompkinsville Elementary School got its new outdoor classroom, some wondered about its academic value. Would it be a distraction from preparing for the statewide Kentucky Instructional Results Information System (KIRIS) exam? A group of teachers and community members built trails, observation decks, and an outdoor amphitheatre; created garden beds;



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and planted flowers on the 27-acre rural campus. They soon started to see positive results.

Tompkinsville’s 630 students live in a rural area. Many of their families qualify for the free lunch program. The school serves grades pre-K through fifth grade. Prior to 1995, test scores in science, reading, and social studies were low. Tompkinsville’s test scores have steadily improved since 1995 and Kentucky is proud of the academic progress this school and others have achieved. Over four years, science scores increased by 25 percentage points, reading by over 21 percentage points, and social studies by nearly 40. Changes in the 1995 to 1999 performance on the Kentucky Instructional Results Information System (KIRIS statewide test) scores illustrate this improvement.



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"...nine (studies) noted significant positive impacts of school garden programs on producing higher test scores, including higher science scores."

Blair, 2009

KIRIS SCORES BY YEAR:	SUBJECT		
	SCIENCE	READING	SOCIAL STUDIES
1995-96	24.15	49.54	30.37
1996-97	35.82	61.87	60.19
1997-98	41.14	58.85	64.20
1998-99	50.00	72.00	70.00
*Total possible score: 100			

In looking at the above Louisiana and Kentucky examples, it would be easy to say that they are not representative of other schools. But the State Education and Environment Roundtable report in 1998 made similar findings among the 40 schools (including Thompkinsville, KY) that it surveyed in its examination of 40 schools in twelve different states. The Roundtable study found that integrated environmental education programs throughout the curricula (science, language arts, arts, and social studies) combined with hands-on learning elements like nature study areas, team teaching, and broad school administration support, created top-performing students. A comprehensive follow-up study conducted in 2000 found that EIC classes performed better in 154 of 201 measures as follows:

Environment based programs performed better in measures as follows:

MERGE	
Language Arts:	86 of 108
Math:	22 of 34
Science	10 of 15
Social Studies:	10 of 13
Discipline	4 of 4
Attendance	22 of 27

The Roundtable has continued to study the use of the environment as an approach to learning, showing that integrating environmental studies into other disciplines and teaching strategies can help solve many of our current problems in education.

The Roundtable report also found that schools using outdoor classrooms were the most effective at raising academic achievement. This took many forms at the schools including the creation of gardens on the school grounds for study of food and natural science. The National Wildlife Federation, for example, has certified Schoolyard Wildlife Habitats at some 3,600 U.S. schools. These habitats or "wildlife gardens" are used in concert with high quality curricula to support improved learning in science, mathematics and other subjects. In 2009, researcher D. Blair found in a review of studies on how school gardens affected student learning and test scores that, of the 12 quantitative studies reviewed, nine noted significant positive impacts of school garden programs on producing higher test scores, including higher science scores. (Blair, 2009)

Outdoor Education: Especially Helpful In Raising Scores of Low-Income Students

The Roundtable study also alerted educators to the usefulness of environment-based educational programs in helping students from low-income families and diverse racial and cultural backgrounds. Hawley Environmental Elementary School in Milwaukee, Wisconsin assessed student development over several years and saw steady progress once it instituted an environment-based



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education program. Hawley has a student body that represents varied ethnicities: African American, Asian American, Hispanic, Caucasian, and “other.” Some 71% of its students come from lower-income families who qualify for free or reduced price school lunches. Hawley’s students are drawn from throughout the city, under Milwaukee’s School Choice Program. Their names are entered into a lottery to determine which school they will attend. A study by Hope for Urban Education in 1998 found that student achievement at Hawley exceeded the state average in two state tests and on nationally averaged assessments.

WISCONSIN READING COMPREHENSION TEST IN 1998:	
Hawley Students Who Passed	100%
Milwaukee Public School Population	25%
WISCONSIN ASSESSMENT OF PROFICIENCY LEVEL IN READING AND MATH 1998:	
READING:	
Hawley	83%
Low Income Wisconsin Schools	38%
All Wisconsin Schools	69%
MATH:	
Hawley	48%
Low Income Wisconsin Schools	15%
All Wisconsin Schools	52%

In Florida, several schools participate in environment-based education programs at the Pine Jog Environmental Education Center. These schools were tracked from 1995 to 1999 to see how the students reacted to environmental education programming as measured against standardized statewide

achievement tests, notably the Florida Comprehensive Assessment Test (FCAT).

There were four schools participating at the Center. One of the schools (Del Prado) had mostly Caucasian students; the three others had mostly minority students. The FCAT tells an important part of the story. For language skills and critical expository writing skills, the Del Prado School had FCAT scores of 2.4 (students are rated at levels 1 through 5 with f being the highest). At three other schools, including Westward which is 80% African American and 7% Hispanic, the same FCAT measurement was 1.7, and at the two other schools, both 50% minority, the FCAT score was 1.5. From 1995 to 1999, Del Prado students in the environmental program advanced from 2.4 to an outstanding level of 3.1, moving up .7 point on the FCAT scale. But the schools with a higher percentage of minority students improved even more. At Westward School, for example, the increase was from 1.7 to 2.8 or 1.1 points on the scale. At Melaleuca School, the increase also totaled 1.1, and Green Acres School experienced a 1.2 point increase (NEETF, 2000)

A study in Texas focused in on the effectiveness of the National Wildlife Federation’s Schoolyard Wildlife Habitat program as a tool for improving mathematics performance. Researchers Danforth, Waliczek, Macey and Zajicek found that students who participated in the Schoolyard Wildlife Habitat program had significantly increased mathematics test scores when compared with peers from schools that used a more traditional curriculum. The study found few differences in reading scores. The team concluded: “These findings support related studies of students’ academic achievement when an interdisciplinary or integrated curriculum, particularly one with an environmental slant, was imposed.” Importantly, the study also showed that although the Caucasian sample of students outperformed others on the standardized tests, the most significant improvement of overall test scores was from improved scores for Hispanic students. (Danforth, 2008)

The American Institutes for Research conducted a study for the California Department of Education assessing the effects of one week residential outdoor education programs aimed



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The assessment also showed gains in self esteem, problem-solving, motivation to learn, and improved classroom behavior.

American Institutes for Research, 2005

at “at-risk” youth. Some 56% of these children had spent little or no time in nature and the outdoors. Comparing the relative impacts on students who experienced the outdoor education program with a control group, the researchers found there was a 27 percent increase in understanding of science concepts along with significantly higher levels of cooperation and improved ability to work out conflicts. Importantly, the assessment also showed gains in self esteem, problem-solving, motivation to learn, and improved classroom behavior. (American Institutes for Research, 2005)

Improved Prospects for High School Graduation and College Entrance

About one-third of students drop out of high school and in some large urban districts as many as one-half of the students leave high school before finishing. It might seem a stretch to say that high school graduation rates could be affected by greening a school’s campus but it might also have

some value. The Michigan study by R.H. Matsuoka that was discussed earlier in this report looked at 101 high schools to see if having natural views from windows, eating outside and having trees and vegetation in close proximity made a difference in academic achievement. One correlation found that the schools in the sample that had larger windows and more views of trees and other natural features also had students with higher graduation rates, with a greater percentage planning to attend college.

One assessment of school performance on the ACT supports this assertion. The ACT college entrance test assesses high school students’ educational development and ability to do college-level work. The multiple-choice tests cover four skill areas: English, mathematics, reading, and science. The writing test, which is optional, measures skill in both planning and writing a short essay. See the ACT website for added background. While performance on standardized tests is by no means the sole measure of educational success, there is evidence that performance on the ACT exam can be given a boost through environmental education. At the School for Environmental Studies in Minnesota, for example, a 2000 survey showed that students have exceeded state and national standards and are motivated and self-directed learners. The School for Environmental Studies students scored 24.2 on the ACT, compared to a Minnesota state average of 22.5 and a national average of 21.1. (NEETF, 2000)

Each year, the evidence that outdoor education and time outdoors support stronger performance on standardized tests increases and becomes more solid and definitive

Back to School: Back Outside! Action Planning

CHAPTER 3:

Schools have a number of simple and useful ways they can incorporate outdoor education and more outdoor time for children into their ongoing efforts.

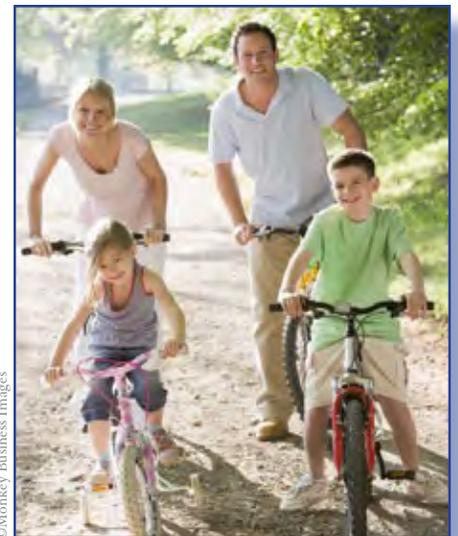


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An overlooked aspect of parenting in our current lifestyles is making sure that children get enough unstructured play time as recommended by the American Academy of Pediatrics.

Beginning at Home

Schools can help with a child's upbringing but they are never a substitute for good home care which includes: diet and nutrition, getting enough sleep and exercise, maintaining hygiene and having appropriate medical care. An overlooked aspect of parenting in our current lifestyles is making sure that children get enough unstructured play time as recommended by the American Academy of Pediatrics. The National Wildlife Federation sums up this and other research findings by recommending that parents set a daily Green Hour as a goal. It does not need to be all at once and some Green Hour time can be at school or walking to and from school. *Back to School: Back Outside* emphasizes how schools can provide more outdoor play time, greener environments, and opportunities for outdoor and natural science learning, but these school-based actions make the most sense if parents are helping their children get sufficient outdoor time at home too. Visit the National Wildlife Federation's Be Out There website and learn about the many Green Hour activities you can do with your children or suggest that they do at home. www.BeOutThere.org



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TOP FIVE WAYS PARENTS CAN ENGAGE CHILDREN AT HOME

- Pledge to get your children outside each day during the school year – One Green Hour each day (www.nwf.org/pledge)
- Plan an adventure with your children to learn about nature (www.nwf.org/familyfun)
- Create a natural play-ground in your own backyard (www.nwf.org/beoutthere)
- Make a play date with your child’s friends to take a hike or visit a nature center
- Participate in a community clean up or environmental stewardship project with your kids

Having School Recess

Recess is one time during the school day that children are able to be carefree, allowing their minds, bodies, and even their voices to be uncontrolled. The American School Health Association, the National Association of State Boards of Education, the National Association for Sport and Physical Education, the National Association for the Education of Young Children, the Centers for Disease Control and Prevention, and a non-federal Task Force on Community Preventive Services have acknowledged the benefits of recess, physical activity, and physical education as a regular part of a child’s school life.

Recess is a terrific opportunity for children to spend part of their day outdoors. Most elementary schools in the U.S. have recess although it has been trimmed back in many school districts to allow more time for test preparation and classroom lessons. The National Center for Education Statistics (U.S. Department of Education) recently investigated

food and physical activity in public elementary schools with a survey of 1,198 public U.S. elementary schools. It found that nine out of ten elementary schools have recess (usually once a day) for about 25 minutes on average. The survey also found there was less recess in lower-income schools. (Parsad, 2006).

A recent set of findings from a wide range of sources support the idea that outdoor recess has significant added benefits for students if it occurs prior to the lunch period. Much of the emphasis of this inquiry by school districts and principals has been on improved eating and nutrition among the students. The Montana Team Nutrition Program found through their research that when recess preceded lunch, there was also a “decrease in discipline problems on the playground, in the cafeteria, and in the classroom.” Children returned to class more settled, calmer, and ready to learn.

The National Wildlife Federation’s Be Out There campaign encourages all children to have a daily Green Hour. School recess can be an important part of a daily dose of the outdoors, resulting in improvements in a student’s overall well-being and ability to learn, and helping inspire a life-long appreciation of wildlife and nature. www.BeOutThere.org

Greening the School Grounds

While some schools are models of natural settings, most of America’s schools were developed without thought to natural landscaping or vegetation. They are built inexpensively on large open fields and typically feature large paved areas.



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TOP 12 WAYS TEACHERS , PARENTS AND SCHOOLS CAN BRING NATURE BACK TO INTO THE CLASSROOM
Green Your School Grounds
<ul style="list-style-type: none"> • Create an outdoor classrooms at your school (www.nwf.org/schoolyardhabitats) • Support your teachers by help chaperone at school activities outside • Build in space and equipment for recess at your schools • Green the grounds by planting trees (www.nwf.org/trees) and native plants to encourage wildlife on the grounds
Green Your School’s Curriculum
<ul style="list-style-type: none"> • Work with local and national organizations to adapt environmental education lessons to fit your schools standards • Commit to teaching outside once a month – no matter your subject area • Increase student engagement in hands-on learning , no matter the age by providing real world teaching opportunities • Integrate environmental education into your team teaching and mentoring
Green Your Students
<ul style="list-style-type: none"> • Provide ways for students to learn how to “green their school” and help to create the plan (www.eco-schoolsusa.org) • Invite in the community to teach how students can make a difference and learn about careers • Have your students commit to use their skills learn through environmental education in all their subject areas • Create a “green gym” for students to increase physical activity at schools including safe walk to school program

Researchers Alexis Schulman and Catherine A. Peters, in 2008, compared land cover on 258 U.S. public elementary and middle schoolyards in Baltimore, Boston, and Detroit. They used aerial photographs from the mid- to late-1990s and Geographic Information System (GIS) software to assess schoolyard land cover. They found that schoolyards covered more than 68% of the school property and that they were dominated by turf grass and impervious surfaces. They had very little tree cover--less than 10% on average. (Schulman, 2008) The basic finding is that schoolyards are not very natural settings. Are educators missing an opportunity? One survey finds that educators who provided sterile outdoor environments with limited play choices and opportunities were those who either did not understand or underestimated the potential of the outdoors to stimulate various aspects of children’s learning and growth (Jones, 1989). Another found that fewer than half of the teachers in the mid-1990s thought of natural features at the school or in the vicinity as a part of their outdoor curriculum. Those who did seemed to believe that it would improve the site and play area attractiveness as opposed to furthering student educational needs. (Davies, 1996). The ability of teachers to see the potential of school ground greening is important. Many teachers view the outdoors as secondary to the learning which occurs indoors.

Recent studies extolling the soothing effects of greenery on children in a learning environment indicate that a new approach may be warranted. Just having more trees and vegetation on the school grounds—no matter how simple or modest a plan—can help create an environment more conducive to learning. Effective examples of ways to “green” school grounds are as simple as planting trees and shrubs, building plots for ornamental plants and flowers, and placing large potted trees or plants on the roofs of inner city schools. In addition to the educational benefits of greening of the school grounds, the activities are good ways to involve the community and parents.





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Learning with Nature and the Outdoors

There are a wide range of educational resources and training programs available to educators and administrators who would like their schools to offer more outdoor activities and nature education. These include school garden and wildlife habitat programs. They, green school programs, and wildlife habitat programs also include many valuable programs for school ground greening and related education. The National Wildlife Federation has several of these programs, including:

- ◆ **Certified Schoolyard Wildlife Habitat Program:** Through this on-site program, educators and students can learn how to create a habitat that will attract and support local wildlife. These wildlife habitats become outdoor classrooms, where students not only learn about wildlife species and ecosystems, but also hone their academic skills and nurture their innate curiosity and creativity. Schoolyard Habitats is a part of the National Wildlife Federation’s Be Out There™ initiative, which aims to inspire families across America to open the door and get outside! A daily dose of the outdoors improves
- ◆ **Eco-Schools USA:** Through school-based action teams of students, administrators, educators, parents, and community volunteers, Eco-Schools combines effective “green” management of the school grounds, facilities and the curriculum. Schools that are certified in the program undergo a thorough application process and succeed in organizing and implementing a comprehensive assessment of their school. The Eco-Schools USA program is made up of seven steps, incorporating eight environmental pathways. In today’s learning environments where schools are striving to meet and exceed high standards of learning, educators and youth leaders must be creative in presenting content. The school grounds offer engaging, hands-on and real-world locations for teaching concepts in a variety of disciplines. Research has demonstrated that in all discipline areas, students who are given the opportunity to directly engage in outdoor education and experiential learning have been able to significantly increase their capacity for learning. <http://www.nwf.org/Global-Warming/School-Solutions/Eco-Schools-USA/Become-an-Eco-School/Pathways/School-Grounds.aspx>
- ◆ **Trees for the 21st Century** Trees for the 21st Century is a unique educational and tree-planting program for children ages 6 to 18, involving science-based learning, tree-planting, and ongoing



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The ability of teachers to see the potential of school ground greening is important. Many teachers view the outdoors as secondary to the learning which occurs indoors.

stewardship activities. Through the Trees for the 21st Century initiative, schools can teach children about the value of the environment, expand the world inventory of trees to protect and improve natural resources, and help children value long-term stewardship of trees, Earth's "perfect organic machines." <http://www.nwf.org/Get-Outside/Be-Out-There/Educators/Trees-for-the-21st-Century.aspx>

◆ **Access Nature:** This inclusive NWF outdoor education curriculum focuses on habitats. Each of the 45 hands-on activities in this 60-hour curriculum is written for kids ages 6-18, and contains specific adaptations for participants with disabilities (hearing, learning/cognitive, motor, and visual). To facilitate classroom use, a chart aligns each activity with National Science Education Standards. Whether you use the entire curriculum or select individual modules, Access Nature helps students develop skills in environmental and biological sciences, observation and data collection, planning, organizing, decision making, environmental

stewardship, language arts, creative arts, and leadership.

◆ **NWF Outdoor Lesson Plans:** The lesson plans presented here are a sampling from NWF's collection of over 1,000 lesson plans designed to introduce students to life science, ecology, wildlife biology, scientific identification and observation. All lesson plans are aligned to the National Science Education Standards. <http://www.nwf.org/Get-Outside/Be-Out-There/Educators/Lesson-Plans.aspx>

Examples: Lessons designed to introduce students to concepts of ecology, habitat care and species identification:

- ◆ What's your Habitat? (grades K-4, 5-8)
- ◆ Habitat for Sale (grades 3-8, K-2)
- ◆ Sensory Discovery Walk (grades K-6)
- ◆ Water Water Everywhere (grades 3-8)
- ◆ Who Can Live Here? (grades 9-12)
- ◆ Wind Power (grades 3-4, 5-8)
- ◆ Tree Detective (grades 3-6)
- ◆ Woodland Chase (grades 3-6)
- ◆ Habitat Hunt (grades 3-6)
- ◆ Habitat Web (grades K-6)



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Walking to School

In the U.S., the number of children walking to school is significantly down over the past 30 years. No one wants children to be exposed to danger, but not all walks to school are dangerous. There are ways to make them safer and the benefits are huge.

About 14 percent of children walk to school today as compared to 50 percent a few decades ago. Even children who live close to school are walking less, opting instead for a bus or a ride from a parent. A study of children living within walking distance of schools found that more than 90 percent of young people walked in the 1960s while less than one half of youth are walking today. In a survey of 2,000 parents, some barriers were explored. One is age. The survey found that 5- to 11-year-old children were more likely to go to school by automobile than 12- to 14-year-olds. Also “children in the Northeast and West were more likely to walk to school than children in the South.” In addition, researchers found that about 70 percent of parents identified distance as the primary barrier while about 9 percent identified traffic danger. (Beck, 2008)

By working together with public works and public safety organizations, local school districts can help assess

Making School Comprehensive Wellness Plans Greener

The Department of Health and Human Services reports that as of 2007, at least 40 states have produced policy guidance documents to help education agencies create wellness policies. (Weschler, 2007). In the Child Nutrition and WIC Reauthorization Act of 2004, Congress established a requirement that school districts with a federally-funded school meal program develop and implement wellness policies that address nutrition and physical activity. (USDA, 2004) The National Alliance for Nutrition and Activity encourages schools to use, distribute, and adapt the Model School Wellness Policies. In addition to focusing on eating habits and nutrition, the Alliance supports all K-12 students having the opportunities and encouragement to be physically active on a regular basis, extending beyond traditional physical education classes. This includes students receiving the nationally-recommended amount of daily physical activity (at least 60 minutes per day). (CDC, 2008)



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and support improvements needed to make it safer and easier for students to walk or bike to school. Groups such as the Safe Routes to School Partnership and National Center for Safe Routes to School offer creative solutions, funding recommendations,

and resources for developing comprehensive and safe programs to encourage more walking and biking to school. The group offers resources for programs such as the “walking school bus” where children meet up under parental supervision and walk to school in groups. (University of North Carolina, 2009)

School Year Action Plans for Moms and Dads

This report focuses on the role schools can play in the provision of outdoor time and outdoor education for children. In this context, there are many positive steps parents can take to make sure their kids are getting enough outdoor play time and outdoor education. Here are some examples of ways that parents can help:

- ◆ **Home:** As noted above, moms and dads can encourage their kids to play outdoors on a more regular basis and they can get help from the National Wildlife Federation’s Green Hour activities guides by visiting our website at www.BeOutThere.org
- ◆ **Neighborhood:** Parents who are concerned about outdoor safety but still want their children to enjoy more outdoor time can team up with other parents in the neighborhood or at the school to create Green Hour “co-ops” and take turns each week watching the kids while they play outdoors.
- ◆ **Walks to school:** Parents can encourage their children to walk to school one or more times each week. Parents who are concerned for safety can walk to school with

TWO WAYS COMMUNITIES CAN SUPPORT ENVIROMENTAL EDUCATION AT THEIR SCHOOLS
Support the school in “going green” and increasing environmental education at the schools
<ul style="list-style-type: none"> • Support Field Trips for students • Develop Safe Routes to School programs to encourage more students to walk • Participate in create an outdoor classroom at the school or assist with fundraising for outdoor programs • Volunteer to help at the school including before and after-school programs • Lend your voice to support local, state and federal legislations to increase outdoor education time in school and with daycares
Lead by Example
<ul style="list-style-type: none"> • Create a green plan for your neighborhood and community to improve access to the outdoors • Mentor a young person on your own appreciate and engagement with nature • Support environmental education as a intergrated learning approach for your school administrators, districts and teachers

their kids, arrange school walking co-ops with other parents to take turns walking the kids to school or, for older children, help the children set up their own teams to and from school.

- ◆ **Voices for outdoor play time:** Through parent/teacher organizations, meetings with principals and other means of communication, parents can advocate that their children's schools provide more outdoor play time for children, including making sure that recess occurs before lunch time, which research says offers better learning and nutritional benefits.



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- ◆ **Help with school ground greening programs:** Parents can be advocates for providing more trees, natural vegetation and learning gardens at the school grounds and may be able to volunteer some of their own time to help with plantings and garden care to maintain greener school grounds.
- ◆ **Support field trips:** Parents can offer to help schools and educators to conduct field trips



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by volunteering their time and vehicles or by helping raise added funds that might be needed.

- ◆ **Support school outdoor learning programs:** By better understanding the positive effects that outdoor education programs have on a child's overall academic performance, including higher standard test scores, moms and dads will be more supportive of their children spending time learning about nature and wildlife. Parents should let educators and school administrators know that such programs are seen as valuable and should be a part of their child's school experience. Speaking up and making your parental voice heard can go a long way to making outdoor education a reality.

Needed Policy Reforms:

There are several opportunities being discussed in the U.S. Congress and in state legislatures to support more outdoor time and outdoor learning for children. These include the development of stronger statewide plans for environmental literacy and outdoor education and more public funding for park and recreation agencies and public health agencies concerned with getting more outdoor time for children. To learn more about these proposed reforms visit: www.BeOutThere.org

Other Resources:

There are a number of valuable resources for schools to use in providing more outdoor time and environmental education for children. A central resource for the identification of curriculum is the EE-Link site provided by the North American Association for Environmental Education. <http://eelink.net/pages/EE+Programs>

In addition please see:

- ◆ Sustainable schoolyards
<http://www.sustainableschoolyard.org/>
- ◆ Green schoolyard
<http://greenschoolyardnetwork.org/>
- ◆ After school programs
<http://www2.ed.gov/pubs/afterschool/3whatworks.html>

The evidence is compelling. Hands-on and real-world aspects of most environmental and outdoor education improve students' desire to learn and boost their performance on most measures of student success.

In sum, there are many easy ways that parents, educators and school administrators can provide more outdoor time for children at home and at school. Schools have packed schedules and educators are often overwhelmed with their current duties so it will be essential for any efforts to increase outdoor time and outdoor education at school to recognize those pressures. But it is

equally important that every school and every educator learn more about the indoor childhood trend and the basic wisdom of such efforts as the Be Out There Campaign's Green Hour goal. Schools should not be expected to handle the problem alone. It is also important for parents help carve out some down time and outdoor play for the kids at home. This report demonstrates that the potential educational benefits of doing so are high. Inaction is not an option. The adverse health and wellness costs of keeping our children locked away indoors are also dangerously high.



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Hands-on and real-world aspects of most environmental and outdoor education improve students' desire to learn and boost their performance on most measures of student success.



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About NWF's *Be Out There* Campaign



Be Out There's mission is to return to the nation's children what they don't even know they've lost: their connection to the natural world. Kids today spend twice as much time indoors as their parents did, missing out on the simple pleasures and lasting mental and physical health benefits of daily outdoor time.

Be Out There's practical tools for families, schools and communities will make being outdoors a fun, healthy and automatic part of everyday life. By raising awareness, inspiring behavior change and taking action, *Be Out There* will help get American children and families back outside—where they belong!

Raising awareness

- Organizing **National Wildlife Week, Great American Backyard Campout, Hike & Seek** and other exciting *Be Out There* events for families, schools and communities
- Working with the American Academy of Pediatrics (AAP) and other respected medical bodies and professionals to advocate an hour of outdoor play per day
- Developing informative and engaging Public Service Announcements (PSAs) to help get the message across
- Commissioning studies to gain deeper understanding of the issue and its societal impacts



Be Out There's practical tools for families, schools and communities will make being outdoors a fun, healthy and automatic part of everyday life.

MEDIA USE OVER TIME			
Among all 8- to 18-year-olds, average amount of time spent with each medium in a typical day:			
	2009	2004	1999
TV content	4:29a	3:51b	3:47b
Music/audio	2:31a	1:44b	1:48b
Computer	1:29a	1:02b	:27c
Video games	1:13a	:49b	:26c
Print	:38a	:43ab	:43b
Movies	:25a	:25ab	:18b
Total media exposure	10:45a	8:33b	7:29c
Multitasking Proportion	29%a	26%a	16%b
Total media use	7:38a	6:21b	6:19b
<i>Kaiser Family Foundation, Generation M2: Media in the Lives of 8 to 18-Year-olds, January 2010-</i>			



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Taking action:

- Development of national guidelines and training materials to bring natural play and outdoor learning areas to schools, parks, child care centers and zoos
- Working with Congress and state legislatures to pass laws and regulations that fund programs to get kids outdoors and remove red-tape that prevents outdoor educational opportunities
- Successfully advocating for legislation that will support added public funding for outdoor programming across America.
- Gathering over 25,000 signatures and the support of 250 national organizations on a petition to urge the Surgeon General to promote the benefits of daily outdoor play
- Encouraging people to call on the Presidential Administration and Congress to support federal funding for environmental education and outdoor recreation programs.



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Inspiring behavior change

- A rich portfolio of online family resources such as **Naturefind** and **Wildlife Watch** give families ideas for being out there in their own backyard and beyond.
- *Be Out There's* presence on **social networking sites** keep you up-to-date on the latest and greatest about the outdoors.
- School-based programs such as **Eco-Schools USA**, **Schoolyard Habitat** and other NWF programs engage students around the country in conservation education and stewardship building.
- Award-winning publications, including *Ranger Rick magazine*®, *Your Big Backyard*®, *Wild Animal Baby*® and *National Wildlife*® magazine support the *Be Out There* movement.



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