

# The Black Rock Forest Project

## Creating Connections in the Living Laboratory

Terry Murray

**In 1991 the Newburgh (NY) Enlarged City School District initiated a series of educational programs in Black Rock Forest, a 3,700-acre preserve. This article describes the planning, implementation, and student reactions to programs designed to rekindle the connection between learning and the environment.**

This we know. The earth does not belong to man, man belongs to the earth. This we know. All things are connected like the blood that unites one family. All things are connected. Whatever befalls the earth befalls the sons of the earth. Man did not weave the web of life; he is merely a strand in it. Whatever he does to the web, he does to himself.

— *Attributed to Chief Seattle*<sup>1</sup>

"We have access to 3,700 acres of protected ponds, streams, and woodlands. How should we use them?" In May 1991, twenty teachers, department heads, and administrators from the Newburgh Enlarged City School District, in Newburgh, New York, gathered to ponder this question. As a new institutional member of the Black Rock Forest Consortium, the district was entitled to use the natural resources of this forest preserve to enhance and expand its educational efforts.

For the district staff assembled at this initial brainstorming session, the possibilities seemed limitless — almost overwhelming — and the practical logistics were challenging. Given the size of this urban/suburban school district (more than 11,000 students, pre-kindergarten through twelfth grade), the potential environmental impact on the Black Rock Forest was sobering.

From this initial gathering in 1991 has evolved the Black Rock Forest Project — a thoughtfully planned and developed educational initiative. To date, 500 students, 40 staff members, and 45 parents from four district schools have been involved in long-term programs at Black Rock Forest. The process of planning, implementing, and managing this ambitious task is a lesson in environmental, educational, and human *connections*.

Located approximately 50 miles north of New York City, the Newburgh Enlarged City School District draws students from the City of Newburgh and the towns of Newburgh and New Windsor. The district includes eleven elementary schools, a middle school, two junior high schools, and one high school. According to 1990 census information, this district served a population of 72,948, with 26,454 in the city of Newburgh and 46,495 in the towns of Newburgh and New

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Windsor combined. The population drawn from this mix of suburban and urban settings is culturally, socially, educationally, and economically more diverse than that of neighboring communities. In 1979, challenged by increasing segregation of urban and suburban schools, the district initiated magnet programs at two of the urban schools and one of the suburban schools. These magnet programs were designed to reduce minority group isolation and enhance the academic opportunities for students in the target schools. The magnet schools approach to promoting diversity has proved to be very effective for this consolidated school district. All eleven of the district's elementary schools, the middle school, and one of the junior high schools were magnet schools. It was through Newburgh's magnet schools and the state and federal funding that supports them that the district joined the Black Rock Forest Consortium in 1991.

The Black Rock Forest is located in Cornwall, New York, approximately eight miles south of Newburgh. It is owned by the Black Rock Forest Preserve and operated by a consortium of thirteen schools, colleges, and institutions who share in its management, use, and upkeep: the American Museum of Natural History, Barnard College, Brookhaven National Laboratory, Brooklyn Botanical Gardens, City College of New York, Columbia University, Dalton School, Friends Seminary, Lehman, Newburgh Enlarged City School District, New York Academy of Sciences, Storm King School, and United Nations School. Activity in the forest by consortium members, individually and collaboratively, has focused primarily on scientific research, education, and preservation.

From the onset, the Black Rock Forest Project has been goal directed. During the early stages of planning and development, a cross-section of school district staff members, administrative personnel, and lay volunteers gathered for an all-day session to share in the development of a vision for this project. The ideas, resources, and support generated through this event provided the foundation for developing both a structure and objectives for the project's development.

### Developing a plan

Having identified Black Rock Forest as an ideal resource for enhancing and expanding its educational effectiveness, the Newburgh School District was seeking innovative approaches that would respond to the academic and human needs of a diverse community of learners. The success of a natural setting and an experiential approach in providing whole-person experiences that are direct, meaningful, and growthful has been well documented (Heding & Conrad, 1986a, 1986b). Programs in Black Rock Forest, through hands-on pro-

jects and activities, could address a wide range of learning styles and respond to the learners' social, emotional, and academic needs. These approaches could unite and integrate curriculum areas in ways that are stimulating, engaging, and relevant to life issues. A values-based approach to outdoor education has the potential to foster awareness and commitment, as well as develop the knowledge and skills needed to address the environmental and social issues of the twenty-first century.

Drawing on the shared vision of district staff members, board members, and students — and incorporating the ideas of key consultants and resources — the planning team began developing programs to address the following needs<sup>2</sup>:

*The need for environmental literacy.* The quality of future life depends directly on each person's understanding and acceptance of responsibility for our global environment. Outdoor education can be a process for recognizing the values and clarifying the concepts necessary to understand our interrelatedness with nature and with one another.

*The need to strengthen students' knowledge of academic subjects.* The acquisition of concepts and skills in reading, math, and science remain important educational priorities. Identifying and developing direct, relevant approaches that redefine and redirect math, science, and technology education are critical challenges.

*The need for social and emotional education.* Recognition and implementation of a formal affective curriculum are critical to the development of students who are skilled and self-confident in dealing not only with academic subjects, but also with the challenges of living in an increasingly complex and diverse world.

*The need for reality.* Lessons of life are everywhere in the outdoor classroom. Going beyond words and symbols, children can interact with the natural world and with one another while dealing with direct, purposeful tasks. Students explore nature and human nature.

### Critical decisions

Several early decisions in the planning and development processes of the Black Rock Forest Project have proved critical to the environmentally and educationally sound growth of the program:

1. *Focus on quality, not quantity.* Through targeting specific schools and age groups in the district for involvement, high-quality, sustained experiences have been possible.

2. *Plan carefully, train fully, monitor closely.* By articulating and communicating objectives and guidelines, involving and training staff members in each participating school, and carefully guiding all programs in the forest, the project has been safe,

effective, and welcomed by the forest staff and other consortium members.

3. *Promote integrated, interdisciplinary educational approaches.* By encouraging programs in Black Rock Forest that are initiated in the classroom, linked to school themes and approaches, and processed through follow-up activities, sound holistic and experiential learning practices have been developed.

4. *Develop and maintain a conscious and responsible environmental ethic.* As the steward of a rich natural resource and educators for future generations, the district has taken on a tremendous responsibility to use the forest effectively and appropriately.

Currently, four district schools are involved in ongoing programs in Black Rock Forest. They are: The Magnet Middle School, The Primary School, Horizons-on-the-Hudson Magnet School, and the North Junior High School. Although each school has adapted the approach to meet its unique needs, the four are linked by a commitment to a set of objectives, a statement of environmental ethics, and an instructional model that is both holistic and experiential.

In his book *Rethinking Education*, Phil Gang has developed a new conceptual framework for education. Recognizing that of all our human institutions, education has the greatest potential for effecting positive social and political change, Gang advocates a new educational paradigm to foster positive global transformation. This new educational perspective advocates approaches that are democratic, experiential, humanistic, and holistic (Gang, 1990). As our objectives and instructional model reflect, the writings of Phil Gang, Edward Clark, Jr. (1988), David Orr (1989), and Ron Miller (1991) on these new directions in education have been catalysts and guides for articulating our educational approach in Black Rock Forest. While thinking globally, the Newburgh Enlarged City School District has attempted to act locally by developing an outdoor program filled with opportunities to incorporate these principles, and support this shared vision.

#### Making connections

##### *A beginning.*

Today is Tuesday, the 28th day of April. This is our first day as a whole group in Black Rock Forest. It is way different at Black Rock than at school because here you have some freedom and it's peaceful. In school, we could only walk up or down the stairs or in the hallway. We went to Sphagnum Pond, around Tamarack Pond, and then back to the stone house. We heard birds and squirrels. We also saw fish in the ponds. I thought that it was going to be boring here, but when I finally got here, and after a few activities I was fine. I think that you should never judge something if you have never tried something. I think that I'm gonna learn a lot about how the forests help people and how

important they really are. I think everyone should experience some time at Black Rock.

— *Seventh grader, Magnet Middle School*

##### *An ending.*

This experience was good because it was like a whole new different thing for me. I liked learning here. The reason why is because I never liked the forest before. Now, I don't want to leave.

— *Seventh grader, Magnet Middle School*

These journal entries illustrate students' attempts to connect their experiences in Black Rock Forest to the larger realities of their lives. The new insights, genuine emotion, and affection for their new natural "home" are reflective of the broader impact of the Black Rock Forest Project on participating students. Over the past two years, students and staff members have spent more than 500 hours in the forest as part of this district project.

As the program evolves, it weaves an intricate web that links individual experiences through interaction in a human and ecological community. Viewing the Black Rock Forest through this web of connections may offer some insights into its structure, impact, and future potential.

#### Environmental connections

There is a great deal of talk these days about saving the environment. We must, for the environment sustains our bodies. But as humans we also require support for our spirits, and this is what certain places provide. The catalyst that converts any physical location — any environment if you will — into a place, is the process of experiencing deeply. A place is a piece of the whole environment that has been claimed by feeling.

— *Alan Gussow, Friends of the Earth<sup>1</sup>*

Awe, wonder, reverence, and respect — all of these words were used frequently in the planning stages of the Black Rock Forest Project. Above all, this wonderful natural resource has afforded children with the opportunity to be immersed in the natural world, and through this immersion, to become comfortable, aware, and stimulated by this vast outdoor classroom.

As Alan Gussow so aptly states, for students in the Newburgh School District we wanted Black Rock Forest to be a "piece of the whole environment that has been claimed by feeling." For many students, this forest provides the first sustained experience in a natural setting. Primary project objectives were to support girls and boys in moving beyond their fears and limited experiences, and to rekindle their natural curiosity, creativity, and sense of wonder.

Close at hand, zealously protected, and rich in resources, the Black Rock Forest proved to be an ideal setting. This 3,700 acre wilderness environment envelops mountains, ponds, wetlands, brooks, well-main-

tained trails, and a wide variety of wildlife. The forest has a series of seven ponds, all at an altitude of over 1,000 feet. Six of these ponds provide the water supply for the villages of Cornwall and Highland Falls. Formed by Dr. Ernest Stillman, a research physician interested in forestry, Black Rock Forest has been used by Harvard University and most recently by the Black Rock Forest Consortium as a research and educational site. The forest's natural history is carefully documented through land use records, geological and meteorological records, and research data. In a recent newspaper article, Dr. William Schuster, forest director, highlights the important aspects of this Hudson highlands preserve:

The intrinsic value of the forest has many facets. The production of wood and wood products has been going on here for over 200 years; the watershed has been used by the village of Cornwall-on-Hudson for over 100 years, recreation, aesthetic value, the use of the forest as an educational tool and resource for scientific study, the cleansing properties for both air and water, the value as a wildlife habitat, the intact forest ecosystem — that has to be the highest value of all. Not only does the forest provide all of these things, but it does so simultaneously. (William Schuster, quoted in *Times Herald Record*, 15 Nov. 1992)

Developing a "sense of place" in any environment takes time. In each of the four participating district schools, staff members have planned for sustained, multiple-visit programs that would provide opportunities to acclimate to this new outdoor setting. These program plans have varied greatly, reflecting the objectives, structures, and educational approaches of each school. As the pilot site for the Black Rock Forest Project, the Magnet Middle School provided early leadership in exploring the forest and developing a variety of program structures. Sixth graders have visited the forest three or four times during each season and initiated long-term multiple-year projects; seventh graders have used the forest as their daily classroom for as many as seven consecutive weeks; and eighth graders have extended their science studies with fieldwork and data collection in the forest.

Horizons-on-the-Hudson Magnet School has planned and initiated a series of day-long visits to Black Rock Forest by all of its kindergarten and fifth grade classes. Located near the Hudson River, Horizons has incorporated a comparative study of these two distinct environments.

The Primary Magnet School, working independently as well as with the middle school, has selected a diverse group of students who have explored the forest through eight full-day trips during the fall and spring. These "Primary Experts" have started to share their

knowledge, skills, and love of Black Rock Forest as guides for classmates new to the forest.

The Sherpa Outdoor Leadership Program at North Junior High School has provided sixteen young adults with opportunities to study the forest while gaining outdoor leadership skills. Through day hikes, and low-impact camping and service projects, the Sherpas have developed a special relationship with Black Rock Forest.

As diverse as the approaches to programming in the Black Rock Forest project have been, all have sought one critical objective — to create an awareness of the delicate web of connections between all things, living and non-living, as well as an informed sense of responsibility to address present and future environmental needs. The process is a developmental one that moves from comfort, to awareness, to exploration, to knowledge and skill development, and finally to stewardship and action. The following selected journal entries and writing samples reflect some of the growth experienced on this learning journey:

Yesterday we went to Black Rock Forest for the last time (this season). My buddy was Natasha. We got to see Mr. Brady's other dog, Woodchuck. I had to help Natasha on the stumps. She did not need any help on the log. We had fun because there were things to see like caves and animal homes. It was all so exciting!

— Virginia, primary school student

I saw a garter snake. It felt strong. It was very bumpy and coily.

— Brian, primary school student

I remember a dead raccoon lying on the ground and after that we went back to our house. And when we came back a few months later from that, the raccoon's skin was gone and only the tossed up bones were there.

— Solomon, primary school student

The beautiful world of fish and water creatures  
While the wind blows on my face.  
I feel the love and tenderness of the human race.  
If I could jump in the air and glide like a bird in the sky  
I would love it.  
The two islands are the two eyes on my face.  
The water is my blood flowing freely in my body  
And the trees are my hair  
Grown freely without despair.  
Last of all, the land is my beautiful skin like a round ball.  
Now you know what Tamarack means to me.

— Lemont Collins, Magnet Middle School student

I learned that if you want to enjoy nature more you have to be quiet, calm, and basically just let your hearing and seeing senses do their job.

The thing that I realized the most is that you could go into the woods noisy and rowdy and not learn anything, but you could go in the same woods and be quiet and patient and get a lot more out of the woods.

I feel happy and proud of the things we did and the things I learned.

— *Sherpa Program participant, North Junior High School*

### Educational connections

Almost without knowing it, the primary mission of education has changed. Today, there is a common agreement that the mission of education is to provide students with the knowledge and skills required for "learning how to learn." What has not been recognized is that this new mission requires both a new content and a new process for education. And because content and process are so interdependently woven together, they cannot be addressed in the former fragmented, piecemeal fashion. (Clark, 1988)

Recognized for its educational innovations, the Newburgh Enlarged City School District has been open to the unique possibilities that active involvement in the Black Rock Forest Consortium has provided. The district, through its Magnet Schools program, already offers a diverse range of choices for district families. Fundamental academics, creative arts, humanities, a micro-community, international explorations, and communications and media are among the magnet themes currently offered. The Black Rock Forest Project has offered selected district schools an opportunity to enhance and expand their unique magnet focus in a setting that is stimulating and lends itself to interdisciplinary, hands-on approaches to teaching and learning. Walter Millman, associate superintendent for instruction comments, "The potential of Black Rock [Forest] is astounding at all levels of instruction. The forest is a means to reach all children and impress upon them their importance in the world we live in. The program encompasses not just science, but humanities, the arts and mathematics" (quoted in *Times Herald Record*, 15 Nov. 1992).

As a vast outdoor classroom, Black Rock Forest has provided unique opportunities to (a) integrate materials from a range of subject areas; (b) involve students directly in exploring typically abstract concepts; (c) address students' social and emotional needs as an integral component of their learning; and (d) develop problem-solving, investigative, and reflective abilities.

On a subtler but equally important level, this program has provided important new ways to structure time and space. Without the constraints of a routine imposed by clocks and bells or the physical limitations of a building, students have experienced a refreshing and empowering freedom.

Each participating school has been guided in developing programs at Black Rock Forest that support their unique mission and incorporate the academic connections that are central to this educational initiative.

### Newburgh Magnet Middle School

The Newburgh Magnet Middle School, grades six to eight, supports young adolescents in the transition from elementary school to high school. The distinctive features of a middle school approach have lent themselves effectively to a diverse range of applications in Black Rock Forest:

*Interdisciplinary curriculum* links subject to subject and grade level to grade level, promoting academic strength, efficiency, and cohesiveness.

*Small group instruction* provides opportunities to work in groups formed and reformed to fit a variety of needs, promoting the development of social skills and academic achievement.

*Advisory groups* promote the development of adult-student and peer-peer relationships in support of personal, group, and academic growth.

*Parent and community involvement* invites and encourages parent involvement in their children's education and student involvement in their community's daily life.

Program initiatives by the middle school have included:

1. *Sixth grade classroom activities.* Working in self-contained classrooms, the 3 sixth grade teachers have planned and implemented a series of one-day trips to the forest. This series of class trips has included at least three visits per season and has focused on a variety of themes, including a general orientation to the forest (e.g., familiarity with roads, trails, and landmarks; trail procedures and safety; basic map and compass work); leaf and tree identification; animal habitat study; trees to lumber study; and bluebird house construction, placement, and monitoring.

2. *Seventh and eighth grade teacher/team activities.* Working individually or in academic teams, middle school subject-area instructors have been developing laboratory experiences in the forest. These experiences have been planned to assist students in gathering data or samples for classroom study or applying course concepts through projects or problem-solving activities in the field. Teacher/team projects have included mapping plots of land using applied measuring, compass and plotting skills; and rock and mineral sample gathering for identification and display in earth science class.

3. *Classroom-In-The-Forest '92.* During the spring of 1992, 24 seventh grade students (half of the school's seventh grade population) were invited to participate in a unique and challenging educational experience. Between April and June, the students' daily classroom was the Black Rock Forest. During this time, they experienced a totally integrated curriculum that was developed and guided by middle school staff. Through

hands-on activities and projects, basic academic and social skills were to be reinforced through direct, relevant experiences.

During the 38-day experience, the students participated daily in flexibly timed and scheduled academic blocks (i.e., humanities, technology, and life skills), working in groups of eight. Guest speakers and artists augmented the instruction. Their days also included time for extended, multiple-day projects, and journal writing. As the experience progressed, student-defined projects were included. The program culminated in demonstrations and displays as part of the students' outcome assessment.

The impact of this experience for the students can be measured in several ways. The tangible products produced and skills demonstrated both individually and as groups are evidences of the concepts and skills gained and applied. Journal excerpts by students reflect some of the growth and change that occurred on both affective and academic levels.

4. *Advisory trips.* During the fall of 1992, all middle school students and staff members experienced a day in the forest as participants in an advisory group. This structured experience was focused on team building. Through participation in a series of group problem-solving activities and a hike, advisory group members were guided in discovering and applying the skills necessary for being part of a productive team.

5. *Laboratory summer school.* As a laboratory summer school site, the middle school developed a "Summer at Black Rock Forest" program during July 1992. During this 16-day program, the 140 students (grades 4-8) were divided into two groups (younger students and older students). The two groups alternated days in the forest with days at the middle school. The focus for the students was on forest exploration; for staff, the program provided opportunities to experiment with and adapt outdoor science and math materials from a variety of sources. The structure of the summer school program — a half day with students and a half day for staff development — supported the orientation and training of several additional Black Rock Forest leaders.

6. *Long-term projects.* The Black Rock Forest Blue Bird Project developed as an outgrowth of the forest exploration and activity development by the middle school's sixth grade teachers. The project was initiated as a concrete and logical culmination of the study of habitats and lumbering. The construction and placement of the birdhouses in a deer enclosure provided a unique opportunity for a long-term student research project. First placed during winter 1992, the blue bird houses' use by a variety of animals, insects, and birds has been carefully monitored by students through several seasonal visits.

As the sixth graders who placed the boxes have moved on into seventh grade, they have had opportunities to carry on the project. Currently, the site is being plotted for mapping, and first-year observations and conclusions are being written.

### Horizons-on-the-Hudson Magnet School

Horizons-on-the-Hudson Magnet School, grades kindergarten through six, is one of the three original magnet schools established in the district in 1979. The program is based on the belief that every child has gifts and talents that must be identified and nurtured. Two key features of the school's educational approach have been effectively incorporated into the planning and development of the school's initiatives in Black Rock Forest. First, the use of a literature-based, interdisciplinary approach to academic development is very apparent in the project program plan, which addresses math, science, reading, social studies, and writing skills through a series of interrelated, hands-on activities, both in the forest and in the classroom.

The school's Talents Unlimited Program — a structured approach to developing critical thinking skills — has been effectively used for both previsit preparation and postvisit followup. This program focuses on the



*Black Forest Executive Director, Bill Schuster, explores the forest's geology with North Junior High School eighth-grade earth science students. Photo courtesy of Terry Murray.*

development of critical and creative thinking skills within the framework of the classroom curriculum. The Talents Unlimited Program develops a task-analysis approach that includes stages of productive thinking, forecasting, communication, planning, and decision making.

For the 1992-1993 school year, Horizons developed a Black Rock Forest Project plan that involved all of the school's fifth grades and kindergartens in a series of three structured, seasonal visits to the forest. A partner-

ship between the two grades involved the fifth graders in both helping to prepare the kindergartners for their trip to the forest and then processing their experiences through drawing and writing.

This school's involvement with the Black Rock Forest Project is also consistent with its emphasis on environmental education and action. Through the efforts of the school's creative academic specialist, Cathy Plumstead, students at Horizons have explored the environmental impact of humans on their own neighboring Hudson River. As part of their efforts at Black Rock Forest, they are comparing and contrasting the conditions of these urban and natural settings. The students have also put their environmental awareness to work through successfully campaigning for a change in the district food service procedures. As a result of their lobbying, the district has changed from using disposable Styrofoam lunch trays to reusable plastic ones.

#### The Primary Magnet School

The Primary Magnet School, grades kindergarten through three, is also one of the three original district magnet schools. As clearly articulated in the school's mission statement, The Primary School is committed to creating "an environment that nurtures and stimulates the whole child [physically, emotionally, and intellectually] within a secure, humanistic early childhood framework." The distinctive features of The Primary Magnet School's program and structure are clearly reflected in their initiatives in Black Rock Forest. These features include (a) an integrated curriculum that fosters curiosity and enthusiasm for learning; (b) multi-age groupings; (c) parent and family involvement in the educational process and the school community; (d) schoolwide literacy with an emphasis on reading for meaning and writing for real purposes; and (e) the development of mutual respect and understanding through multicultural and nonsexist studies.

As part of the school's current efforts to direct and strengthen its educational endeavors, it has incorporated the Developmental Classroom concepts developed by the Northeast Foundation for Children in Greenfield, Massachusetts.<sup>3</sup> This approach emphasizes integrated learning through direct experience and manipulation using a process of guided discovery. The social curriculum presently being implemented at The Primary School is a critical and energizing first stage. Gradually, students and staff are being introduced to an educational approach that encourages collaborative planning between teachers and students; guided exploration of materials, concepts, and environments; and development of problem-solving and critical thinking skills.

The Primary School's initiatives in Black Rock Forest have provided an ideal opportunity to extend these efforts to include community exploration in an outdoor setting. These initiatives include:

1. *Primary School/Middle School Learning Buddies Program.* Building on a collaborative structure developed in 1991, twelve students from each school worked together through a series of forest explorations during the spring of 1992.

2. *"Primary Experts."* As a natural progression from the primary/middle school collaboration in the spring, the twelve Primary Experts have continued to explore Black Rock Forest through a series of trips, and have shared their knowledge, skills, and positive attitudes with less experienced learning partners at The Primary School. Since May 1992, the Primary Experts have visited the forest four times. The first visit in June provided an opportunity to share what they had learned through the Middle School Learning Buddies Program with twelve other primary students. In the fall, the Primary Experts returned to Black Rock Forest, first to reconnect with their spring experiences in the forest, and then to plan a visit with primary learning partners. The fall program culminated in a trip by the twelve Primary Experts, their learning partners, and twelve parents and staff members.

The quality of the students' learning experiences and the depth of their excitement and involvement are reflected in their journal writings and drawings. Seven-year-old Virginia writes: "I will always remember Black Rock Forest for the beautiful trees and animals. I loved climbing the mountain. It was hard, but I did it." Second grader Anthony's comments reflect an important awareness of the characteristics of poisonous and nonpoisonous snakes: "I saw a big black snake. I thought that it was poisonous, but it had a very small head. Poisonous snakes have large diamond heads." The development of a sense of community is a critical aspect of The Primary School's mission. Seven-year-old Alisha reflects this positive sense — "I liked when my buddy and my friends were there. I felt happy and good."

3. *Parent involvement.* Parents of primary students in the Black Rock Forest Project have made a conscious effort to talk with their children's teachers and other school staff members about the positive impact of this program. During parent/staff meetings last fall, six parents of project participants arranged conferences with Primary Black Rock Forest Project Leader Pat Sandler to discuss their children's involvement in this outdoor initiative. Increases in motivation for learning, self-confidence, curiosity for further exploration, and interest in writing were among the positive changes these parents observed in their children as a result of the Black Rock Forest experiences. The following

excerpt from a parent letter commenting on the impact of the program reflects parent enthusiasm and support for the program:

He [a Black Rock Forest Primary School participant] drew maps as he tried to describe how the trails were arranged. He made his father clear a path behind our house so that he could discover nature in our backyard. Most importantly, however, he gained self-confidence.

He began to tell his stories at school. He eagerly wrote in his journal. He drew pictures. He took pride in being one of the privileged children that was selected to represent The Primary School.

When the programs continued in the Fall, our son was more than ready. This time he was an authority. He was the teacher. He took his learning buddy under his wing. He showed him the ropes. He was so proud!

I have seen such a change in our son. He found success in a school-related program. He loved it and was good at it and it was fun! He benefited in many ways and his school work reflected it.

### North Junior High School

North Junior High School, grades seven through nine, has consciously and effectively addressed the need to promote a positive sense of community among students and staff members. To promote a drug- and alcohol-free environment at North Junior High School, staff members and students designed and implemented the Peer Leadership Program in 1989. Initial training was conducted through the Northeast Region Center — U.S. Department of Education. This program serves as an umbrella organization for a variety of student and faculty antidrug and anti-alcohol programs and activities. Once students selected for the program have completed a three-day residential training experience (peer leaders reflect a cross-section of the school in terms of gender, race, and academic ability), they select and receive additional training in one of four areas: (a) peer mediation, (b) peer teaching, (c) student activities/community service, and (d) Sherpa outdoor leadership training.

Each of these programs provides students with opportunities for personal growth and service to the

school and the community. In addition to the basic life skills of communication, team building, and problem solving, each student gains specific knowledge and skills in his or her area of concentration.

The Newburgh Enlarged City School District's involvement in the Black Rock Forest Project has provided a unique opportunity for peer leaders to gain the outdoor skills necessary to safely and effectively support the efforts of classroom teachers at North Junior High School and other district schools by acting as guides. By the end of 1992, the first group of fourteen Sherpas completed the basic peer leadership training and experienced several hikes as well as a three-day/two-night camping trip in the forest.

The initial impact of this outdoor leadership training can be measured in several ways. A journal entry made during the group's fall camping trip reflects the quality and variety of learning that occurred:

I learned not to go ahead, to stay with the group, how to put a tent up, and learned about other people.... I feel I am getting good at hiking, but I want to know more. I also feel I can do a lot better if I try harder. I really hope I will stay in this group and do better things. I'm looking forward to the next couple of trips.

Through their fall camping trip, the Sherpa group faced a true challenge — to effectively use this natural preserve in a low-impact manner. Camping is restricted in Black Rock Forest, and future overnight experiences by Newburgh Enlarged City School District groups were contingent on the actions of this group. In his followup letter to the Sherpa's leader, Lynn Faurie, Forest Director Dr. William Shuster's commends the group's efforts. In a very positive assessment of this group's ability to apply their training, Dr. Schuster writes:

Many Consortium members have feared that allowing camping would diminish the wild, natural quality of the Forest. However, your group has demonstrated that minimum- or no-impact camping is possible if a group is truly ecologically conscious and makes an effort. It demonstrates a great deal of maturity on behalf of your Sherpas. As a result, we welcome them to come again and will continue to allow camping by groups that demonstrate such ecologically sound practices.



Primary Magnet School 'experts' and staff atop Black Rock Mountain. Photography courtesy of Terry Murray.



Opportunities for service have emerged quickly for the Sherpa Outdoor Leadership Group. In conjunction with staff members of the Student Assistance Center (SAC), Sherpa leaders have joined students assigned to SAC in monthly trips to Black Rock Forest. These groups will maintain and improve an area in the forest bounding the Alec Meadow Reservoir. The Student Assistance Program is an alternative, in-school placement for students. It provides the time, setting, and staff support to work on behaviors that are educationally detrimental to these students, their classmates, and teachers. The staff hopes that the positive modeling and support of the Sherpa leaders will motivate and guide SAC students toward more positive, productive, and growthful behaviors.

#### **Collaborative efforts**

Our times call for collaboration. Given the magnitude of the challenges to our educational, social, and environmental systems, we are challenged to maximize our effort through effectively sharing skills, experience, and resources. The resulting networking fosters a unity of purpose and a focus of energy, often producing far more significant results. Both within the Newburgh Enlarged City School District and among consortium members, the Black Rock Forest Project has helped to promote positive interdependence.

#### **Magnet Middle School/Primary Magnet School Learning Buddies Program**

The Learning Buddies Program is a partnership between The Middle School and The Primary School. It was initiated by Jack Caldwell and Beverly Woods of the middle school and Pat Sandler of The Primary School. In planning the Classroom-in-the-Woods Program for seventh graders during the spring of 1992, staff members involved incorporated the Learning Buddies Program. Twelve seventh graders were partnered with twelve first and second graders from The Primary School. Over a four-week period, these "Learning Buddies" experienced a series of three days of activities in Black Rock Forest as well as a followup day hosted by the buddies at The Primary School.

The positive student interaction developed during these shared experiences met the needs of both schools. In preparing for and guiding activities with younger students, the middle school students were challenged to take responsibility, to exercise patience, creativity and caring — in essence, to assume adult roles. The impact of this experience for one of the seventh graders is evident from his journal entry: "Today we went on a Winnie-the-Pooh hike to Black Rock Mountain with the Learning Buddies, then they had to leave. Joey said 'Goodbye' and shook my hand. It felt good when he

said that because I knew I was part of his life at that one point at Black Rock."

As they were experiencing activities with their seventh grade "Buddies," The Primary Students were also becoming familiar with the forest. At the end of the seventh grade/primary visits, the primary students returned to the forest with twelve new primary school friends. They became the "Experts," providing leadership and support to their less experienced classmates. A second grade "Expert" commented on her new role: "Yesterday I helped Lisa get across the cut logs. When Lisa fell in the mud, I helped her out of the mud. I like it."

#### **Black Rock Forest Surface Water Monitoring Project**

A promising new dimension of the Black Rock Forest Project is the evolution of a collaborative effort involving The Magnet Middle School sixth grades; Dr. James Simpson of the Lamont Doherty Geologic Observatory, Columbia University; and Dr. William Schuster, director of the Black Rock Forest. The main focus of this project is water quality and the impact of both human activities and the forest ecosystem on the quality of surface water.

In his role as director of Black Rock Forest, Schuster has sought to consciously build connections between various consortium members — connections that maximize the talents and resources of all involved. In his recent progress report on this collaborative project, he states: "We are exploring collaborations that combine the particular strengths of each institution in ways that benefit all participants.... At Black Rock Forest we are pursuing mutually beneficial linkages between scientific research studies and groups using the Forest for field-based research."

As an integral part of its overall Black Rock Forest Program Plan, the middle school has sought long-term projects in Black Rock Forest to be initiated in the sixth grade. Each new class of sixth graders would establish a specific focus for long-term data collection and interpretation. As these students move on through their seventh and eighth grade years, these projects, supported by academic team staff members, would continue. The primary goals for this aspect of the middle school's Black Rock Forest Plan are: (a) to provide students with an opportunity to gain scientific concepts and skills through involvement in a meaningful, long-term project; (b) to gain an understanding and appreciation for the scientific process through a hands-on experience; and (c) to promote a deeper understanding and appreciation of our natural environment.

The middle school sixth graders took on the task of collecting surface water samples from 54 water monitoring locations that spanned the entire forest. Each sixth grader was assigned a spot and over the course of

the 1992–1993 academic year sampled and analyzed three water samples from this location. Each sample was analyzed for pH, temperature, odor, color, turbidity, flow, dissolved oxygen, calcium, magnesium, phosphorus, and nitrate. Advanced chemistry students from Newburgh Free Academy — the district's high school — worked with the sixth graders in testing their field samples. All of the data collected were entered into a computer, then graphed and analyzed by students and staff members. From these results, the middle school and Black Rock Forest staff members plan to guide the students in developing a testable research hypotheses based on this analysis, and then to proceed to test the hypotheses during the second and third years.

The work done by The Magnet Middle School sixth graders was linked to an ongoing scientific study of precipitation and stream flow chemistry at the Black Rock Forest being conducted by Dr. James Simpson and collaborators at the Lamont Doherty Geologic Observatory, Columbia University. Simpson and others are involved in extensive, long-term monitoring of the water chemistry entering and leaving the Black Rock Forest.

In support of the work being done through consortium member Columbia University, it is hoped that The Magnet Middle School will provide valuable details about the water chemistry at a wide range of points in the forest, pinpointing more accurately where critical biological and chemical processes are taking place. The potential outcomes of this collaborative project could have global implications as scientists continue to explore the buffering processes of forests in neutralizing manufactured and naturally produced acids in our water supplies and the "missing carbon" mystery related to the earth's capacity to respond to released carbons from the burning of fossil fuels.<sup>4</sup>

#### Human connections

Let a man once begin to think about the mysteries of his life and the links which connect him with the life that fills the world, and he cannot but bring to bear upon his own life and all other life that comes within his reach the principle of reverence for life....

— Albert Schweitzer<sup>1</sup>

Over the past 25 years, affective education has become a valid field of study and practice. Building on the philosophical foundations of humanistic psychologists, educational practitioners have developed effective strategies for addressing specific affective themes in the classroom. The work done by Sidney Simon, Jack Canfield, Gerald Weinstein, and others in developing positive self-concept and values clarification in the late 1960s and early 1970s was effectively adapted in a variety of educational settings. Through the therapeutic and educational work of these humanistic pioneers, intrapersonal and interpersonal growth are recognized as not only valid, but critical

areas of educational focus.<sup>5</sup> The more recent educational developments in the fields of cooperative learning, conflict resolution, peace education, and multicultural education have gained broad recognition during the 1980s and early 1990s.

If our approaches to developing programs in Black Rock Forest are truly going to focus on the whole person, then a formal affective curriculum needs to be an integral component in the district plan. As students are making connections to the natural environment and with academic content, they also need to understand themselves and their relationships to others. The reverence for life that Schweitzer speaks of begins within. Once felt personally, this reverence can emanate to encompass the human and natural communities that surround each of us.

*Fostering personal growth.* Indicators of personal growth through the Black Rock Forest Project are more elusive to document than the academic gains. This assessment issue is a broader challenge in the field of holistic education, and surely a continuing focus for our work with this project. To date, our assessment tools have included student journal writing, group processing, structured observations, and solicited and unsolicited parent feedback. Information gathered from these sources has reflected evidence of increased self-confidence and self-esteem, increased positive behavior, improved attendance, and improved academic performance for the majority of the students involved in this educational initiative.

In reviewing our efforts to date, we can identify a number of aspects of this project that have been contributing to this affective growth: the setting, the approach, real challenges, and opportunities for success.

*Fostering community.* Fostering the development of positive, interdependent communities has been another important affective goal. Program plans for all four participating schools have included opportunities for team building, group problem solving, cooperatively structured learning groups, and group discussion. Recognizing the importance of this social component and developing the skills necessary for leading team-building activities were key components of the Black Rock Forest Project staff in-service.

Student growth in this area has been readily identifiable through progressive observations of group interaction. Again, students journal entries reflect new attitudes and awareness about the group and their individual roles as members:

I was happy when me and Jamika worked with the compass together. We accomplished what we wanted to. I felt proud of myself when people were telling me the things that were good that I did and when people told me that I was like a mother or sister to them. I also felt

sad because next year I'm not going to be able to do all of these things and I'll miss the people in this group.

— Eighth grader, North Junior High School

*Leadership development.* As the emphasis in the workplace has shifted from a traditional competitive/individualistic goal structure toward a more cooperative model, the nature of leadership has also changed. Current theories of organizational leadership emphasize concepts of shared leadership, the creation of a shared vision, and empowerment of group members through cooperative teamwork (Johnson & Johnson, 1991).

It is within this contemporary framework that the Black Rock Forest Project has consciously attempted to nurture the development of individuals, whether staff members or students, who feel empowered to share their knowledge, skills, and vision in guiding our forest initiatives. Over the past two years, there have been many positive examples of this leadership and community development in action.

*Black Rock Forest staff in-service.* A critical aspect in planning and implementing the Black Rock Forest Project has been staff development. As the program has expanded to include four schools, the need to involve and train a core of staff members at each school has been essential to ensure quality and integrity in the present program and to provide for future stability and growth.

During the fall of 1992, eighteen staff members from the four project schools participated in a 32-hour in-service course designed specifically for the Black Rock Forest Project. It focused on the knowledge, skills, and attitudes necessary to effectively teach and lead in an outdoor setting and how to integrate outdoor and classroom experiences. The impact of this in-service is already evident as illustrated by:

- the development of comprehensive program plans by all four of the participating schools. A final requirement of the course, these plans challenged participating staff members to incorporate the holistic and experiential program model in articulating their school's program objectives, activities, and assessment/monitoring procedures.<sup>6</sup>
- the independent leadership being assumed in developing and supervising individual school programs in the forest. For the first time this past fall participating schools have led programs in the forest without direct supervision of forest or project staff.

*Participating school leadership/community development initiatives.* As identified earlier in this article, each school incorporated program elements supporting the development of leadership resources in groups while fostering a sense of community. Journal excerpts reflecting student observations on leadership effectively highlight this personal and social growth:

I loved when I was the leader. It felt special and funny. I learned not to make fun of people.

— I'esha, Primary School "Expert"

When I went to Black Rock Forest, Stanley was my learning buddy. I taught him the rules.

— Chris, Primary School "Expert"

### Completing the circle

We shall not cease from our explorations  
And the end of our exploring  
Shall be to arrive where we started  
And know the place for the first time.

— T. S. Eliot

In September, the Newburgh Enlarged City School District will celebrate its third autumn in Black Rock Forest. With each new season, staff members and students from the school district return to learn from this rich resource and strengthen their relationship with this ecological community and with one another. It is a deliberate process — systematic, yet sensitive. As a parent who chaperoned his child's kindergarten class trip to the forest observed, this process sometimes requires new eyes:

I grew up around Black Rock Forest and have long been a member of the Black Rock Fish and Game Club. I thought that I knew the forest like the back of my hand. Seeing it through the eyes of my five year old daughter changed my mind. I now look at it with awe and wonder, and I can't wait to go back. I'm seeing it through the eyes of a child for the first time.

Through our work in Black Rock Forest we have learned that it is possible to foster these fragile but vital environmental, educational, and human connections within the structure of a public school system. Doing so in an environmentally and educationally sound way requires a clear sense of philosophical direction, careful planning and monitoring, staff training, and a commitment to educational approaches that are *democratic, experiential, humanistic, and holistic* (Gang, 1990).

As project staff members continue to develop programs for upcoming seasons in Black Rock Forest, these efforts will focus on: (a) promoting further collaborative efforts between participating schools and with other consortium members; (b) fostering linkages between researchers and students that are mutually beneficial; (c) developing an operations manual to standardize policies, practices, and procedures for groups using the forest; (d) expanding service projects in the forest by participating schools; (e) establishing a ropes course in the forest; (f) further refining curricula and developing resources; and (g) developing a comprehensive bank of assessment tools for monitoring and evaluating educational programs that are holistic and experiential.

The Black Rock Forest Project has been a marvelous, mysterious mixed bag filled with wonder, challenge, fear

of snakes and deer ticks, affirmation, hope, smoke and rain drops, frustration, laughter, creativity, and perspiration. It has been a wonderfully human and naturally inspiring process that has reaffirmed the power and validity of holistic approaches to teaching and learning.

Inspired by the beauty and calm of Black Rock Forest, seventh graders Tina and DeShaunna wrote: "The world is awake, the sunrise sparkles loudly; how peaceful, how bold." May we guide one another in finding such a personal source of serenity and empowerment.

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### Notes

1. Quoted from Steve Van Matre's (1983) book *The Earth Speaks: An Acclimatization Journal* (Warrenville, IL: Institute For Earth Education).
2. Although the specific needs statements vary, the concept of addressing basic educational and human needs in developing outdoor education programs has been drawn from Donald and William Hammerman's (1973) book *Teaching in the Outdoors* (Minneapolis, MN: Burgess Publishing).
3. For further information on the programs developed by the Northeast Foundation for Children, write 71 Montague City Road, Greenfield, MA 01301.
4. A full report on the Black Rock Forest Surface Water Monitoring Project can be obtained through Dr. William Schuster, Black Rock Forest, P. O. Box 483, Cornwall, NY 12518.
5. See Ron Miller's (1988) article, "Two Hundred Years of Holistic Education" (*Holistic Education Review*, 1[1], 5-12) for a concise history of the development of holistic education and the role of affective educators in its growth and present status.
6. Our Program Plan form was adapted from Jed Williamson's experiential activity planning model. For an informative article on this process, read "Designing Experiential Curricula" (1986; *Experiential Education and the Schools*. Boulder, CO: Association for Experiential Education, pp. 56-59).