Developing a School Forest Resources Website for Wisconsin Educators

By

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ABSTRACT

The purpose of this project was to determine if developing a school forest resources website would help K-12 Wisconsin educators better utilize their school forests and outdoor sites. The project included surveying educators to assess if they would use a website designed for school forests and outdoor sites and to assess what factors would influence their use of this website. The scope of the website was determined from educator surveys and input from an advisory group. The website was subsequently developed to meet the needs of teachers. An on-line survey was created for educators to evaluate the website. Promotion of this website was an important part of the process so educators would be aware such a site existed. Analysis of the data indicated a high percentage of educators who felt they would be able to better utilize their school forests and outdoor sites after visiting this website and/or using its activities and resources.
ACKNOWLEDGEMENTS

You cannot do this master's program alone – it is all about people and support and networking and the natural resources that sustain us. It is a culmination of hard work and a dedication to the belief that each of us can make a difference in the world. It is also about those friends who have helped shape me through the years and to those I hope to help in the future. This program has allowed me to grow as a person – and has helped make me a better teacher.

First, this entire process would not have been possible without the help and guidance of my advisor, Dr. Dennis Yockers. Dennis got me into the master's program and supported me throughout it – providing ideas, encouragement, input and a caring attitude. He has been a great mentor and friend throughout the years, and for that, I sincerely thank him. Thanks also goes out to the other staff of the Wisconsin Center for Environmental Education and UW-Stevens Point faculty involved in teaching the master’s courses – they are a dedicated and caring group of instructors.

And to my family – words cannot express what they have meant to me. There was absolutely no way I could have completed this master's program without my wife, Lynne, and my daughter, Hannah. Their ongoing emotional, technical and physical support and love sustained me through times when there seemed to be no light at the end of the tunnel. To thank them is simply not enough for all the times I hounded them with "Could you please look this over just once more to edit what I wrote"; or "Hannah - HELP - this crummy computer
isn’t working and I think I lost my file for the hundredth time and I don’t know what to do”; as well as the precious time spent away from them working on this master’s.

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A warm thank-you goes out to my extended family – the DeVitas – with whom I stayed during three summers of intensive studies, and also to my classmates within the master’s program. We shared common goals, dreams, joys and frustrations - and supported each other throughout this experience.

And a huge thank-you to Chris Welch, my webmaster and friend, who designed the website, www.schoolforest.com, from the content I provided. He made the information come alive and allowed it to be accessed throughout the world on the Internet.

The list of friends and teachers who have influenced and guided me throughout my life is long. I thank them all. They deserve much of the credit. Each holds a special place in my heart, as do my brothers, John and Tom, and my sister, Rosie. They have been the foundation of my life and the source of never-ending support and love. They also provided input into my website.
Finally, this book is dedicated to my parents – especially my mom – who instilled and cultivated in me my love of nature. Rachel Carson once wrote, “If a child is to keep alive his inborn sense of wonder, he needs the companionship of at least one adult who can share it, rediscovering with him the joy, excitement and mystery of the world we live in.” (Carson, 1956). Not only is this quote one of my all-time favorites, but it also describes my mom’s relationship with me. It provided the focus for this project.

As educators, I feel developing this sense of wonder is one of the most important gifts we can share with others when teaching. It is a gift that my mother passed on to me… and isn’t that what this is all about – to turn people on to the outdoors, have them experience it, find connections, develop awareness, knowledge, understanding and appreciation of our natural world – and become better stewards of it?

“We cannot choose the time in which we live; we can only strive to make the time in which we do live a little better.”

(Levi Zendt in “Centennial”, the miniseries, 1978)
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSTRACT</td>
<td>iii</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>iv</td>
</tr>
<tr>
<td>TABLE OF CONTENTS</td>
<td>viii</td>
</tr>
<tr>
<td>LIST OF APPENDICES</td>
<td>viii</td>
</tr>
<tr>
<td>CHAPTER 1 – INTRODUCTION</td>
<td>0</td>
</tr>
<tr>
<td>CHAPTER 2 – LITERATURE REVIEW</td>
<td>5</td>
</tr>
<tr>
<td>CHAPTER 3 – METHODOLOGY</td>
<td>24</td>
</tr>
<tr>
<td>CHAPTER 4 – RESULTS</td>
<td>30</td>
</tr>
<tr>
<td>CHAPTER 5 – CONCLUSIONS AND RECOMMENDATIONS</td>
<td>45</td>
</tr>
<tr>
<td>BIBLIOGRAPHY</td>
<td>49</td>
</tr>
<tr>
<td>APPENDICES</td>
<td>52</td>
</tr>
<tr>
<td>Letter</td>
<td>Title</td>
</tr>
<tr>
<td>--------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>A.</td>
<td>Letter Verifying New Wisconsin School Forest Program Coordinator Position</td>
</tr>
<tr>
<td>B.</td>
<td>Grant Application to and Approval from the Wisconsin Department of Commerce</td>
</tr>
<tr>
<td>C.</td>
<td>Focus Group Questionnaire – June, 2000</td>
</tr>
<tr>
<td>D.</td>
<td>School Forest Website Questionnaires – July, 2000 and July, 2001</td>
</tr>
<tr>
<td>E.</td>
<td>School Forest Website Survey</td>
</tr>
<tr>
<td>F.</td>
<td>School Forest Website Flyer</td>
</tr>
<tr>
<td>G.</td>
<td>Emails to EE Master’s Classmates and School Forest Workshop Teachers</td>
</tr>
<tr>
<td>H.</td>
<td>EE News School Forest Website Article</td>
</tr>
<tr>
<td>I.</td>
<td>Website News Release</td>
</tr>
<tr>
<td>J.</td>
<td>2002 WAEE Fall Conference Website Program Description</td>
</tr>
<tr>
<td>K.</td>
<td>Focus Group and School Forest Website Questionnaire Results – 2000, 2001</td>
</tr>
<tr>
<td>L.</td>
<td>WEEB Board Letter</td>
</tr>
<tr>
<td>M.</td>
<td><a href="http://www.schoolforest.com">www.schoolforest.com</a> Homepage</td>
</tr>
<tr>
<td>N.</td>
<td><a href="http://www.schoolforest.com">www.schoolforest.com</a> Activities Link Page</td>
</tr>
<tr>
<td>O.</td>
<td><a href="http://www.schoolforest.com">www.schoolforest.com</a> School Forest Hikes and Trail Activities Link Page and Sample Activities</td>
</tr>
<tr>
<td>P.</td>
<td><a href="http://www.schoolforest.com">www.schoolforest.com</a> Elementary, Middle and High School Activity Pages</td>
</tr>
<tr>
<td>Q.</td>
<td><a href="http://www.schoolforest.com">www.schoolforest.com</a> Sample In-depth Activities (Text File and pdf File Formats)</td>
</tr>
<tr>
<td>Letter</td>
<td>Title</td>
</tr>
<tr>
<td>--------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>R.</td>
<td><a href="http://www.schoolforest.com">www.schoolforest.com</a> Matrix Pages</td>
</tr>
<tr>
<td>S.</td>
<td><a href="http://www.schoolforest.com">www.schoolforest.com</a> Matrix Page with Sample EE Standard</td>
</tr>
<tr>
<td>T.</td>
<td><a href="http://www.schoolforest.com">www.schoolforest.com</a> Student Interactive Activity</td>
</tr>
<tr>
<td>U.</td>
<td><a href="http://www.schoolforest.com">www.schoolforest.com</a> School Forest Activity Submittal Form</td>
</tr>
<tr>
<td>V.</td>
<td><a href="http://www.schoolforest.com">www.schoolforest.com</a> Gallery Link Page</td>
</tr>
<tr>
<td>W.</td>
<td><a href="http://www.schoolforest.com">www.schoolforest.com</a> School Forest Website Survey</td>
</tr>
<tr>
<td>X.</td>
<td><a href="http://www.schoolforest.com">www.schoolforest.com</a> School Forest Message Board</td>
</tr>
<tr>
<td>Y.</td>
<td><a href="http://www.schoolforest.com">www.schoolforest.com</a> Website Links Page</td>
</tr>
<tr>
<td>Z.</td>
<td>School Forest Website Survey Results</td>
</tr>
</tbody>
</table>
CHAPTER 1
INTRODUCTION

Statement of the Problem

Develop a school forest resources website through Trees For Tomorrow Natural Resources Education Center, to provide K-12 Wisconsin educators forest-related activities and resources that will help them better utilize their school forests and outdoor school sites.

Subproblems

- The First Subproblem: Survey educators to determine if they would use a website designed for school forests and outdoor sites and to determine what factors would influence their use of this website.

- The Second Subproblem: Determine the scope of the website.

- The Third Subproblem: Develop the website.

- The Fourth Subproblem: Create an evaluation tool to measure the effectiveness of the website.

- The Fifth Subproblem: Tabulate, analyze and interpret the data from the evaluations.
Hypothesis

When educators are provided with a school forest-related website containing a variety of activities and resources, teachers will indicate that the use of their school forests and outdoor school sites will increase.

Significance of the Problem

Time has become a limiting factor in today’s fast-paced world. Educators are hard-pressed to accomplish their educational objectives while continuing to meet state standards. Environmental education represents one of those state standards in Wisconsin.

School forests and outdoor sites are available, but underutilized. Even though there are over 400 registered school and community forests in Wisconsin, this lack of utilization can be traced to scheduling time constraints, distance and transportation costs to the sites and a lack of developed curriculum (Krantz, 2001). In addition, due to inadequate knowledge, training or uneasiness in presenting environmental education lessons at outdoor sites, teachers don’t always feel comfortable with the area and outdoor lessons they teach.

Students are not getting enough outdoor experiences. Their connections and relationships to the land are disappearing. For students to fully experience the outdoors and learn significantly more about ecological topics, teachers must take advantage of opportunities to get outside by facilitating stimulating hands-on activities with direct involvement with the natural environment (Disinger, 1984).

Establishing a school forest website through Trees For Tomorrow Natural Resources Education Center would provide an avenue for educators to break through
some of the barriers they encounter in trying to utilize their school forests and outdoor sites. The website would provide teachers with field-based forest activities tied directly to Wisconsin's Model Academic Standards for Environmental Education. It would also provide a wealth of resources (ideas, activities, and background information) by linking to other websites. Creation of this type of website would also be consistent with Trees For Tomorrow's mission to deliver balanced, objective information on the management and use of trees, forests and other natural resources.

If activities and resources were easily accessible – providing ideas, background information and instructional guidance – then teachers would feel more comfortable in taking their students to outdoor sites (Simmons, 1998). This would achieve the ultimate goal of getting the students outside and close to nature, "the key to getting students involved in environmental issues" (Rockland, 1995). Incorporating pre- and post-activities would enhance the effectiveness of the outdoor experience, especially follow-up activities that reinforce and solidify the concepts discussed on field trips (Farmer & Wott, 1995).

Limitations

- This project will be limited to select forest-related activities and resources for K-12 grade levels in Wisconsin.
- This school forest project does not seek to become a school's entire environmental education program.
- This project does not seek to replace outdoor, field-based programs with indoor, computer-based programs.
- This project may be limited by the amount of grant monies received.
Definition of terms

- Trees For Tomorrow Natural Resources Education Center: a non-profit natural resources education center based in Eagle River, Wisconsin.
- School forests: lands owned by school districts for use in outdoor education, provided for in section 28.20 of the Wisconsin statutes.
- Outdoor school sites: easily accessed areas surrounding the school. This includes already existing natural areas as well as sidewalks, playgrounds, parking lots, fields, gardens, etc.
- Website: a computer-based source of information on the Internet.
- Forest-related activities: activities having connections to forested lands that can be taught in a variety of subject areas.
- Resources: people, places and products that provide sources of information, ideas, activities and links to other websites for educators.
- Educators: individuals who teach others in both formal and non-formal educational settings.

Assumptions

- There is a need for this type of school forest web site among educators.
- Educators will be interested in the website.
- Educators have access to Internet technology.
- School forests are underutilized.
- Teachers' time is limited; therefore this website must provide easy-to-use activities and links to other websites for the purpose of encouraging use of their school forests and outdoor sites.
• An instructional design specialist will be needed to create the website design.
• The website will need to be updated and maintained.
CHAPTER 2
LITERATURE REVIEW

Value of Environmental Education

Environmental education must prepare individuals to be responsive to a rapidly changing technological world, to understand contemporary world problems, and to provide the skills needed to play an effective role in the improvement and maintenance of the environment (Ramsey, Hungerford, & Volk, 1992).

Preparing individuals to be good stewards of our earth begins with laying a solid foundation. This foundation is rooted in the two founding documents of the field: the Belgrade Charter (UNESCO-UNEP, 1976) and the Tbilisi Declaration (UNESCO, 1978).

According to The North American Association for Environmental Education (NAAEE), the Belgrade Charter was adopted by a United Nations conference, and provided a widely accepted goal statement for environmental education:

The goal of environmental education is to develop a world population that is aware of and concerned about, the environment and its associated problems, and which has the knowledge, skills, attitudes, motivations, and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones.

The Tbilisi Declaration built on the Belgrade Charter and established three broad objectives for environmental education. These objectives provide the foundation for much of what has been done in the field since 1978:
To foster clear awareness of and concern about economic, social, political, and ecological interdependence in urban and rural areas;

To provide every person with opportunities to acquire the knowledge, values, attitudes, commitment, and skills needed to protect and improve the environment;

To create new patterns of behavior of individuals, groups, and society as a whole towards the environment.

These goals have been modified slightly through the years, but their essence has been preserved.

In the model adopted by the State of Wisconsin, individuals are expected to acquire: perceptual awareness of the environment and of environmental issues as well as a sensitivity towards the environment; acquire knowledge of ecology and environmental problems; develop an environmental ethic, on which individuals may act to defend, improve or sustain the quality of life; develop citizen action skills to have the experience to identify, investigate and evaluate environmental issues; and develop citizen participation skills to act on issues if one’s beliefs and values support it (Engleson & Yockers, 1994).

We are fortunate in Wisconsin to have such a strong and rich history of environmental education. Our role as educators is to carry on this legacy, providing quality learning experiences for students. Environmental education’s interdisciplinary nature allows it to blend well into any subject area and it offers connections to the real world and issues from which concepts and skills can be learned. Environmental education views the environment and its natural
processes and systems, within the context of human influences, incorporating economics along with cultural, political, and social perspectives.

As Ramsey, Hungerford, & Volk (1992) indicated previously, our world needs aware, knowledgeable, caring individuals who are good thinkers, communicators and problem solvers. Environmental education helps develop these positive characteristics of citizenship. These individuals are tomorrow's leaders. The better we prepare them for these roles now, the better off all of us will be in the years to come. Environmental education is our investment for the future.

**Value of Using the Outdoors for Instruction**

We are losing touch with the land - the land that nurtures and sustains all life on our planet. If we are to be good stewards of this resource, we must value and treasure it. Aldo Leopold expressed these sentiments when he wrote, “We abuse the land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect...that land is a community is the basic concept of ecology, but that land is to be loved and respected is an extension of ethics.” (Leopold, 1970).

To gain that connection and respect for the land, you must see it, feel it and experience it. We can start by bringing students outdoors to experience the land through environmental education (Miles, 1991).

A recent study by Linda Cronin-Jones (2000) provided strong support for elementary students learning significantly more about ecological science topics through outdoor schoolyard experiences than through traditional classroom experiences. Her findings are consistent with those of Falk & Balling (1979), and
Milton, Cleveland, & Bennett-Gates (1995), who all reported that outdoor activities requiring direct involvement with natural areas help students learn more about environmental science topics than indirect or non-interactive experiences such as videos, readings or discussions.

In the study by Milton, Cleveland, & Bennett-Gates (1995), they raised an intriguing question: “If a positive attitude, sense of responsibility, and sense of personal ability can lead to responsible environmental behavior, then can responsible environmental behavior lead to a positive attitude, a sense of responsibility, and personal ability?” Their study seems to say it can.

Selecting Interdisciplinary Environmental Education Activities

Hungerford & Volk (1990) describe the need to extend program objectives and instruction beyond information and awareness to include behavioral changes and environmental responsibility.


The checklist defines what is needed for an effective program, regardless of its environmental content. The more characteristics from the checklist a program possesses, the more likely students will learn from it and teachers will continue to use it. This checklist should help quickly identify promising environmental education programs. The checklist includes:

1. Are the learning objectives clearly stated?
2. Do the objectives include environmentally responsible behaviors as well as awareness and knowledge?

3. Do the objectives cover and interrelate a wide range of environmental problems and issues?

4. Are the teacher's lesson plans adequate?

5. Are there adequate opportunities for students to practice the program's objectives?

6. Are the program's materials attractive and appealing to students and teachers?

7. Is the program unbiased?

8. Are tests or other measures included to assess the student's attainment of the program's objectives?

9. Do the objectives, instructional materials, activities, and tests all focus on the same behaviors and content?

10. Was the program field-tested?

11. Did the field-testing include data that verified proper evaluation of student learning?

Hungerford (1997) has refined a General Teaching Model by Miles and Robinson (1973) as a tool to help instructional planners develop valid programs for both formal and nonformal learners of all ages. The components of this Model are instructional objectives, pre-assessment, instructional procedures and evaluation.

The NAAEE has also created guidelines for selecting, developing and evaluating quality environmental education (EE) lesson plans and instructional
materials. Their publication, *Environmental Education Materials: Guidelines for Excellence* (1996), points out six key characteristics of high quality environmental education materials. For each of these characteristics, there are guidelines listed for environmental education materials to follow. These guidelines provide direction while allowing flexibility to shape content, technique, and other aspects of instruction. The *Guidelines for Excellence* provide a foundation on which to build evaluation systems that work for different people in different situations. The six key characteristics and their associated guidelines are:

1. **Fairness and accuracy:** EE materials should be fair and accurate in describing environmental problems, issues, and conditions, and in reflecting the diversity of perspectives on them.

2. **Depth:** EE materials should foster awareness of the natural and built environment, an understanding of environmental concepts, conditions, and issues, and an awareness of the feelings, values, attitudes, and perceptions at the heart of environmental issues, as appropriate for different developmental levels.

3. **Emphasis on skills building:** EE materials should build lifelong skills such as critical and creative thinking that enable learners to address environmental issues.

4. **Action orientation:** EE materials should promote civic responsibility - a sense of personal stake - encouraging learners to use their knowledge, personal skills, and assessments of environmental issues as a basis for environmental problem solving and action.
5. **Instructional soundness:** EE materials should rely on instructional techniques that create an effective learning environment.

6. **Usability:** EE materials should be well designed, clear and easy to use.

Other factors to consider in selecting activities include assessing if programs: address multiple intelligences and different learning styles; use the outdoors for active, field-based experiences; represent all grade levels; and select pre- and post-activities to set up as well as process the planned outdoor learning experience.

Though these ideas and suggestions are not all-inclusive, they provide a framework from which to work, providing guidance to help educators better plan and teach in today’s world.

**Value of Information Technology**

Technological advances are rocketing us into the future so quickly it is hard to assess where we were yesterday. Educators are finding that it is no longer adequate to approach literacy from the perspective of the printed word. Students also must be able to evaluate the images and information that they encounter on the Web and in the media – and they must be technologically literate to access this information (Lindeman, 1999).

Using Web-based instruction allows students to access the site at their convenience, demonstrates an innovative instructional technique, makes it accessible to students in distance learning classes, and makes it available as a reference while completing assignments. Instruction on the Web, however, must
be more than information. Students need to be given opportunities to practice
their knowledge using content in meaningful ways. Additionally, students need
feedback related to their progress (Tipton, M. H., Kovlik, C. L., & Shoffner, M. B.,
1998).

Alex Pan (1998) identified related issues and concerns with integrating the
Web in instruction. His list includes:

1. Finding sufficient time and developing good plans are critical for Web
   integration.
2. Students' involvement is the key to the success of Web implementation.
3. Useful Web resources are hard to come by.
4. The Web should not be used just for disseminating course materials.
5. Access to the Web is essential for curriculum integration.
6. Schools should create a policy for proper use of the Web.
7. Design a Web page with a good purpose.

Pan suggests in order to maximize the power of the Web, careful
consideration must be given to design and develop instructional activities so
students can benefit without wasting time. His suggestions include:

1. Plan Web-based learning activities ahead of time.
2. Relate the Web resources with the learning contents and develop
   instructional activities on the Web – with clear goals in mind.
3. Watch for proper use of the Web resources.
4. Evaluate student performance.
5. Encourage communication via collaboration and cooperation.
6. Ask students to keep a log about what they have experienced.
7. Consider the needs of the audience when organizing Web pages.

In a study by Taylor and Disinger (1997) on the potential role of virtual reality (VR - computer generated life-like experiences) in environmental education, educators felt it will have an impact in the future. Their conclusions were:

1. VR is seen as a potentially beneficial tool in EE.

2. VR will allow students to “visit” natural environments unavailable to them by other means.

3. VR applications that use anthropomorphism were perceived as not beneficial to EE.

4. Research establishing what constitutes an effective VR learning environment and how this environment affects learning was important.

5. Research into VR environments that attempt to simulate the physical world, and do not contain experiences beyond what is possible in the physical world, were not beneficial.

6. Four barriers were identified which most likely would limit VR – lack of funds, fear that VR experiences would replace or be substituted for real experiences, lack of technical training for educators, and lack of evidence of VR’s educational effectiveness.

7. VR technology will likely be available in some form to the education community in 10 – 20 years.

8. For VR to be successfully integrated into the field of education, educators need to become involved now with the development of VR software.

9. Environmental educators and VR developers need to work together in defining VR’s role and future uses in EE.
10. Implementation of VR will force educators to reevaluate traditional teaching and learning methods in light of the new technology.

11. VR offers environmental educators a unique tool to expose students to many environments that are inaccessible in the real world. In essence, informational technology expands access from a local to global world much more easily. This creates interesting implications for educators. As educators, we need to be aware of the overuse of technology in the classroom at the expense of actually going outdoors to experience the world firsthand (Levi & Kocher, 1999). If we are truly going to understand the significance of our relationship to the land, we must spend time exploring it.

**Characteristics of Successful Websites and Evaluating Website Content**

Engaging the learner, supplying enrichment materials and providing access to other information sources are characteristics of a good website (Barker, 1999). Joanna Dunlap (1998) focused on three basic areas for effective instructional design: linking, layout and learner support. Organization of the website and how the material is displayed is critical. Dunlap also includes legibility, visibility, recognizability, and site/page layout as key factors in quality design.

Dunlap establishes that links are the basic building blocks of the Web. They are what allow learners to maneuver through a website or move from one website to another with the click of a mouse button. The ease and clarity of accomplishing this task along with the depth and breadth of each link is important.
Regardless of how wonderful the instructional site is, if the learner cannot access the site or does not possess the knowledge and skills to maneuver through it, their experience will not be a positive one.

The Environmental Education and Training Partnership (EETAP) Resource Library, funded by the U.S. Environmental Protection Agency (EPA) and the NAAEE, created *Evaluating the Content of Web Sites, Guidelines for Educators*, in 1999. This document is a reference tool for educators to use in preparing students to think critically on the use of the Web. Within these guidelines, the publication stresses that a few basic assumptions should be made clear:

1. Evaluating a site means applying individual judgment. Assess the value of a site in terms of the quality and usability of information as resources for learning.

2. Not all information is created equal. Information on the Web is not the same as articles in academic journals, textbooks, or other sources of scientific data. In the print media, articles go through often extremely rigorous peer reviews by experts. Anyone can put information on the Web.

3. There is good information on bad sites, and bad information on good sites. Know what different opinions and biases are in order to better understand the complex issue at hand.

4. Information on the Web should be viewed as no more or less than information from other sources. Just because something is on the Web, does not mean it is so. Compare multiple sites and sources for accuracy.
5. The student or individual evaluating the content on a website has a bias in how they view the information. Be aware of this bias in interpreting the site’s information.

6. Authorship on the Web does not mean “authority.” Anyone can put information or opinions on the Web.

7. Evaluation of websites is a means, not an end. The purpose in helping students learn website content evaluation is critical thinking. Get students to ask questions – not conduct an evaluation.

8. There are two different types of website evaluations – evaluation of the site itself, and evaluation of the content.

In EETAP’s Guidelines for Educators, the criteria used for evaluating the construction of the website itself are:

1. Format and appearance
2. Functionality
3. Searchability
4. Uniqueness
5. Providing help for visitors.

The criteria EETAP uses in evaluating the content of websites focuses on five key themes:

1. Authority: know who wrote the information, their qualifications and credibility, who manages the site and if the information is research based.
2. Audience: assess if the purpose of the site is clear, the target audience identified, and the information appropriate.

3. Context/Coverage: assess why this site is on the Web, if it is biased, how thorough the information is and what other sites are linked.

4. Accuracy: assess if the site is using "good information/science," sources are identified and the information can be verified.

5. Currency: assess if the information is current, the data timely and the site maintained regularly.

Essentially, environmental education stresses "how to think, not what to think," and these guidelines assist in helping individuals critically assess the Web and what is on it.

School Forest History and Research in Wisconsin

Currently in Wisconsin, there are over 400 registered school or community forests, scattered over 67 counties, totaling over 67,000 acres (Kranz 2001). A school forest is a specialized community forest owned by a school district. Wisconsin State Statutes give school districts the authority to obtain school forestland.

School forests came about after the early logging era in Wisconsin. Much of northern Wisconsin had been over-harvested and subsequent forest fires left a burned but cleared landscape for would-be farmers. Yet this land was discovered to be too rocky and too far north for suitable farming. Abandoned farmlands became tax delinquent.
Wakelin McNeel, an early school forest visionary and Wisconsin 4-H leader in the 1920s, had a vision to put this land to use by using students to replant the barren landscape. This was an idea borrowed from Australia and introduced to Wisconsin in 1925 by Dean Russell of the University of Wisconsin College of Agriculture. Russell spearheaded legislation that permitted school districts to own land for forestry programs. The first school forests in Wisconsin – in Laona, Wabeno and Crandon – were dedicated in 1928.

School districts acquired lands in a variety of ways. Though most land was acquired when school districts were deeded tax-delinquent lands by counties, others were willed to districts, donated or purchased. In 1949, Wisconsin Statutes were revised to include schools as eligible to receive free trees from state forest nurseries and to use the services of state foresters to set up forest management plans.

Intentions were for school forests to provide students with hands-on, field-based experiences in tree planting and forest management. These outdoor laboratories provided a link to the understanding of the interrelationships of our natural resources and connections to people. This school forest legacy has been kept alive and passed on through the years.

The Wisconsin Department of Natural Resources (DNR) – in cooperation with the University of Wisconsin-Extension, the Wisconsin Department of Public Instruction (DPI) and the U.S. Forest Service's Conservation Education Program - initiated a study in 1999 on school forests in Wisconsin. This study surveyed the state’s school forest coordinators. The goal of the research was to gather baseline data about existing school forest resources and their current use.
Rebecca Krantz (2001) completed a report on this research of school forests. Some of the major findings of the study were that:

- School forests are underutilized by schools for teaching due to a variety of barriers, which include: budgets, time constraints due to class scheduling, distance and transportation costs to the school forest, a lack of developed curriculum and a lack of training for teaching effectively in the outdoors.
- Most school forests are close to schools.
- School forests come in a variety of sizes, with over one quarter being larger than 120 acres.
- In addition to school forests, over 50 percent of coordinators reported that they use parks and neighborhood trees as learning stations.
- School forests with more facilities and types of outdoor classrooms were used more frequently.
- 73 percent of the school forests in the study have an annual budget of $500 or less.
- 78 percent of the school forest coordinators reported that students use the forest as part of an established or integrated curriculum.
- Only 48 percent of school forest coordinators reported that their school forest had a written management plan.
- School forest coordinators have significant backgrounds in forestry.
- The most frequently conducted learning activities at school forests were tree identification – by a wide margin, followed by a variety of wildlife activities, compass use, tree measuring and water ecology studies.
In June of 2001, Gene Francisco, the Chief State Forester of the Wisconsin DNR, stated that, "This report provides a starting point for future discussions on how to encourage a greater use of outdoor learning sites, such as school forests and school grounds. Our school forests are valuable outdoor classrooms for all ages and can be used in all subject areas. In an increasingly urban society, school forests help us make the connection between the values of healthy forests and our social, economic and ecological needs. There is a living connection between forests and people...and school forests connect forest resources to a student’s everyday needs. School forests can provide the educational foundation that students will use to make informed decisions about how they use and manage our forests and the environment."

Current Forest Education in Wisconsin

Because a demonstrated need for forestry education has been identified in Wisconsin, programs and organizations have been created to train and equip teachers with the resources and knowledge to effectively teach their students about forests. The goal is to provide teachers with the tools (activities, skills and information) so they can present forest concepts and techniques to students in an engaging manner that is both interesting and meaningful – so students will make the connections between forestry practices and the forest products that sustain their lifestyles.

WFREA, the Wisconsin Forest Resources Alliance, was one such organization created to provide a coordinated outlet for forestry education throughout Wisconsin. Its mission was also to teach sustainable forestry – the
practice of managing dynamic forest ecosystems to provide ecological, economic, social and cultural benefits for present and future generations. WFREA is designed to accomplish its mission by working in partnership with educators, university faculty, forest industry and state and federal agencies.

WFREA coordinated the production of two forest-based teacher guides. The first, Wisconsin Forests Forever Teachers' Guide, was published in 2000 along with a CD-ROM, and contains 13 activities for grades 4 – 6 that are designed to help students appreciate our forest resources and understand the need for careful stewardship. The second, How to Grow a School Forest: A Handbook for Wisconsin Educators, published in 2001, is a comprehensive school forest resources manual that guides teachers in virtually every detail of school forest management, from starting with the steps of establishing a school forest committee, searching for land, inventorying your site, and developing a master plan, to the resources to help you through each of these steps.

LEAF (Learning, Experiences, & Activities in Forestry), the Wisconsin K-12 Forestry Education Program, was created in 2001 to help promote forestry education in Wisconsin. The LEAF program was established legislatively as a partnership between the Wisconsin DNR-Division of Forestry and the Wisconsin Center for Environmental Education at the College of Natural Resources at the University of Wisconsin-Stevens Point. Funding for the program is provided through a surcharge on the sale of seedlings from the Wisconsin DNR-Division of Forestry Nurseries.

LEAF's mission is to initiate and facilitate the development, dissemination, implementation and evaluation of forestry education programs within Wisconsin schools. The program's goals include: producing and disseminating a Conceptual
Framework for K-12 Wisconsin forestry education and an associated K-12 Activity Guide of "Wisconsinized" activities for use in the classroom and field; providing teacher training opportunities and forestry education courses for teachers; building partnerships with other Wisconsin K-12 forestry education stakeholders and supporting their efforts; and assisting schools with the infusion of standards-based forestry education concepts into their classroom curriculum.

A school forest meeting was held in Stevens Point in June of 2001 with representatives from the Wisconsin and Minnesota DNR, the U.S. Forest Service, private non-profit organizations, school forest coordinators and teachers, and college and university faculty to share information and perspectives on the state of Wisconsin school forests and forestry education. My advisor and I were among those participating in this meeting. Ideas discussed included an analysis of the successful Minnesota school forest program, analysis of the current state of our Wisconsin school forest program, current forestry education programs and resources within Wisconsin, the future direction of the Wisconsin school forest program and how this goal might be achieved.

This group formed an unofficial Wisconsin School Forest Advisory Committee and collectively made a decision to draft a proposal to the DNR, recommending that a centralized school forest program was needed in Wisconsin, and that a new school forest coordinator position be created to direct this effort. Committee members followed through on drafting and submitting a letter to the DNR. The work and effort of this committee paid off as a new state school forest coordinator position was created and funded to begin in 2002 (Appendix A)! This position will work cooperatively with the new LEAF program, centralizing forestry education in the state of Wisconsin.
Summary of Literature Reviewed

Environmental education's value of helping prepare individuals to become better stewards of our earth has been well documented throughout the years. Environmental education is our investment for the future.

If environmental education is to be successful, students must experience the land – see it, feel it, investigate it – to gain the connection and respect for it, and not lose touch with it. This is the land that nurtures and sustains all life on Earth. School forests can provide this living connection between forests and people.

Educational teaching strategies and techniques have evolved over time as well. Technology and the use of computers and the Internet have exploded onto the scene as viable means to enhance and supplement the learning process.

Teachers must be prepared to effectively facilitate this learning process. They must select and create well-balanced, high-quality environmental education materials and lesson plans. They must get their students outdoors to experience the natural world firsthand. They must also be able to effectively break through a variety of barriers to achieve these goals – barriers such as time and scheduling constraints, distance to school forests, lack of training, knowledge and comfort in teaching in and about the outdoors, and a lack of quality environmental education materials.

If a school forest resources website could be developed and designed to assist teachers to break through some of the barriers they encounter, they should be able to better utilize their school forests and outdoor school sites to provide students with active, field-based learning experiences, the means to process those learning experiences – and keep the legacy of school forests and their values thriving into the future.
My master's program began in the spring of 2000. However, Gail Gilson-Pierce, the Assistant Director of Trees For Tomorrow Natural Resources Education Center where I worked, had already laid the groundwork for my project by submitting a grant to the Wisconsin Department of Commerce (Appendix B) earlier that spring as part of a Forestry Education Grant Program. This grant was to try to establish Trees For Tomorrow as a school forest information clearinghouse in northern Wisconsin. It had three funding components: 1) establish a school forest resource library at our center, 2) create a school forest website, and 3) organize a school forest workshop for teachers to develop their school forests as effective teaching sites.

It was not until December of 2000 that we learned certain portions of the grant were to be funded (Appendix B). The creation of a school forest website was one of them. Until this confirmation, I had been working under the assumption that this school forest website project would be funded.

My first research subproblem was to survey educators to determine if they would use a website designed for school forests and outdoor sites and to determine what factors would influence their use of this website. I met with my advisor, Dr. Dennis Yockers, during June of 2000 to create a list of questions (Appendix C) to ask a group of teachers from the Appleton area attending a Trees For Tomorrow forestry workshop. I asked these questions verbally to this “focus
group," tape-recording their responses with their permission. I later tallied their responses.

Dr. Yockers and I met in July of 2000 and 2001, where we reviewed the original focus group questions and refined them to create written questionnaires (Appendix D). These questionnaires were distributed to teachers attending school forest workshops at Trees For Tomorrow in July of 2000 and 2001 – two focused, captive audiences. All responses were compiled, analyzed and shared with Dr. Yockers to see if teachers would be receptive to a school forest website.

The questionnaires asked teachers a series of questions to determine the grade levels and subject areas they taught; whether they had a school forest and frequency of use; how comfortable they felt using outdoor sites in their curriculum; the greatest barriers faced when using their school forest; whether they used the Internet in their planning and teaching; whether they would use a school forest website, and if so, what types of information and activities would be most useful as well as influence their use of the site; would they be willing to help review the website; and if the information they needed were provided on a website, do they feel this would increase use of their school forest.

This input could not only help verify the importance of the creation of this type of website, it could also help guide the scope and sequence of its development.

My second research subproblem was to determine the scope of the website – brainstorming what should be included on the website and to what extent.
When word was received from the Wisconsin Department of Commerce in December of 2000 that the school forest website component of the grant was funded, the creation of the website was initiated.

A series of meetings were held between our Assistant Director, Gail Gilson-Pierce, our Director, Jim Halperin, and myself in December of 2000 and January of 2001, along with telephone conversations with my advisor, Dr. Yockers. The discussions focused on creating a simple, unique, user-friendly website which would increase the visibility of Trees For Tomorrow as well as provide a variety of resources and activities teachers indicated from the questionnaires that they could use in their curriculums to increase use of their school forests. Discussions also focused on the selection of a webmaster to handle the technical aspects and design of the website; identifying the website’s goals (making sure they were compatible with Trees For Tomorrow’s – under whose name the website would be housed – and the grant funding the project); setting general timelines; and the establishment of the basic framework of the website’s content.

My third research subproblem was to develop the website itself – to meet the needs of teachers – taking into consideration all the collected information and input, making it easier for teachers to plan as well as increase their comfort level teaching in the outdoors. The challenge was to design a website to try to overcome many of the barriers that teachers encounter in attempting to use their school forests or outdoor school sites as well as provide information teachers deemed important. It was also important to realize that this
website would not be able to meet everyone's needs. Decisions had to be made to keep the website focused on meeting its identified goals.

Work began in earnest on the website in August of 2001 after my second summer of master's classes. I poured over a wide array of environmental education materials, curriculum resources and websites to gain familiarity with them. I tapped into the network of friends I knew in the environmental education field asking for ideas and advice about developing websites as well as asking permission to use activities on our website or link to their websites.

These investigations and discussions solidified the goals of the website and its framework, providing guidance for its development.

**My fourth research subproblem** was to create an evaluation tool to measure the effectiveness of the website. An on-line website survey for educators was created (Appendix E) using EETAP’s *Evaluating the Content of Web Sites: Guidelines for Educators*, along with my advisor's input.

Creating and designing the on-line survey, however, was only part of the subproblem. I needed educators to fill out this survey so I could analyze their input to determine the effectiveness of the website. For this to happen, educators first needed to be aware the website existed. They then needed to log on, investigate the site, and either use some of the activities and then evaluate the site, or just evaluate the site after viewing it. In other words, I needed to market and promote the website.

Marketing and promotion began in April of 2002, when I attended a Wisconsin Society of Science Teachers (WSST) conference to promote Trees For
Tomorrow. My daughter, Hannah, designed a flyer advertising my website (Appendix F). I had a wonderful opportunity to talk to teachers, not only promoting Trees For Tomorrow, but also my website. I encouraged teachers to log on to the site, explore it, teach a few of the activities if possible, and then fill out the on-line school forest survey.

In April and May of 2002, I distributed this same flyer to teachers coming to Trees For Tomorrow with their students for one of our three-day natural resources education workshops. I encouraged them to fill out the on-line survey after investigating the website and testing out a few of the activities.

In early May of 2002, an email was sent out to all the teachers in the Masters in EE program at UW-Stevens Point (Appendix G). This email was a plea for help to my classmates to evaluate my website and fill out the on-line survey to provide me with data for my project. Dr. Yockers reviewed my draft email, gave input, and I modified it accordingly. This email was then sent out through Tim Byers (Continuing Education Program Manager at UW-Stevens Point) to everyone in the master’s program. I also sent a variation of this email (Appendix G) to the teachers from the school forest workshops who had indicated on their questionnaires they would be willing to evaluate the website.

Janet Hutchens, the editor of the DNR’s EE News, helped promote my website by including a brief summary of it in the spring 2002 issue (Appendix H). This issue goes out to all the schools within the EE liaison network as well as other educators.

Lori Voelker, a fellow EE masters student, wrote a news release (Appendix I) about my website as part of her seminar assignment. This news release was
sent out to a variety of newspapers throughout the state in August of 2002, advertising the website and what it could offer educators.

I also submitted a proposal to present at the fall Wisconsin Association of Environmental Education (WAEE) conference – in which the theme was linking technology and the outdoors (Appendix J). It seemed a perfect fit to showcase my website. I followed through on this program at the conference in October of 2002, selecting a few outdoor activities from the website to allow the teachers the opportunity to experience a sampling of what the website offered. I followed up this outdoor portion with an indoor “guided tour” of the website.

My fifth research subproblem was to tabulate, analyze and interpret the data from the on-line website surveys. These results were compiled and shared during my project presentation in the EE graduate seminar class in July of 2002 at Stevens Point.
CHAPTER 4
RESULTS

Survey Analysis of Educators

Fifty-two teachers were surveyed to determine if they would use a website designed for school forests and outdoor sites and to determine what factors would influence their use of this website (Appendix K). Forty-nine out of 52, or 94% said they would use a school forest website. These teachers represented all grade levels and subject areas; most already had school forests and used them to some degree, and most teachers felt fairly comfortable teaching environmental education at outdoor sites. All teachers had Internet access at their schools and many used it to prepare their lessons.

In determining what factors would influence their use of the website, teachers indicated:

- Having certain types of forestry information and contacts were critical.
- Having active links was important.
- Easy access to activities – especially high school activities with depth – and correlated to state standards, was also important.
- The website needed to be current and maintained.

Determining the Scope of the Website

The scope of the website’s content was created after website goals were established, after reviewing input from the focus group and teachers’ school forest questionnaires, and after analyzing the ideas generated from my advisory group’s
expertise. Ultimately, the decisions about what content to include, and how to design it, came down to the webmaster who was hired, Chris Welch, and myself. We continued to solicit advice as we created.

The following goals were identified to guide the website framework:

- Create a unique, attractive, high-quality, user-friendly website.
- Select an appropriate website URL and title.
- Create or find successful outdoor, field-based activities under the topics identified in the School Forests in Wisconsin Statewide Survey that teachers use most frequently at their school forests.
- Follow the teacher recommendations summarized from the school forest workshop questionnaires.
- Strive to create four activities for each grade level combination – elementary, middle and high school.
- Don’t reinvent the wheel and write all new activities – expose teachers to activities and curriculum resources already established as well as curriculum from Trees For Tomorrow to increase the visibility of our center and its programs.
- Website content needs to be compatible with Trees For Tomorrow’s multiple-use philosophy.
- Create this website as a companion to the Wisconsin Forest Resources Education Alliance’s How to Grow a School Forest – a manual developed to guide teachers every step of the way in establishing a school forest as well as providing the information on where to go to for further assistance.
Our website would pick up where their manual left off – providing the activities to use once the school forest becomes established.

The summary results from the focus group and school forest questionnaires (Appendix K) determined the greatest barriers to using their school forests as well as the information teachers felt would be most useful to them on the website. Averaging the percentages of the greatest barriers listed from the school forest questionnaires over two years, the top six barriers identified were:

- Scheduling time constraints (67%)
- Lack of developed curriculum and activities (59%)
- Limited prep time (39%)
- Class sizes too small or too large (31%)
- Lack of funding for transportation (28%)
- Distance to the school forest (20%)

These barriers were consistent with the findings in the 2001 Wisconsin School Forest Coordinator Research Survey results except for distance to the school forest and class sizes too small or too large. The 2001 Wisconsin School Forest Coordinator Research Survey listed distance to the school forest as the second greatest barrier by one percentage point over the lack of developed curriculum and activities. Data from my school forest questionnaires indicated distance to the school forest was not as great a barrier, as it was listed as the sixth greatest barrier. The 2001 Wisconsin School Forest Coordinator Research Survey study did not list a category of class sizes too small or too large as a major barrier.

The information from my school forest questionnaires that teachers felt would be most useful to include on the website – from greatest to least – were:
Activities and background information by grade levels and subject areas along with Wisconsin State standards.

Teacher submitted activities

Activities for students

Links to other websites

New information and sample site management plans

The website framework created after analyzing all the input included:

The website URL: www.schoolforest.com

The website title: School Forest Resources

The website subtitles:
* Helping You Achieve Wisconsin's Model Academic Standards
* Guiding You to Actively Use Your School Forest Site

The homepage and introduction

Activities:
* By grade levels
* Tied to Wisconsin State EE standards via a matrix format
* Introductory awareness activities
* In-depth activities
* Student interactive activities
* Teacher submitted activities

Links to other websites

Contact section via a school forest message board and school forest survey

Gallery section to download teacher submitted photos
Input from the teachers as well as my advisory group provided the direction and guidance to create the website. Teachers identified what they wanted and it was my challenge to provide it for them or direct them to where they could find the answers or information as easily and effectively as possible.

**Developing the Website**

Development of the website became an amazing on-going learning experience. Hundreds of hours were logged networking with others for website advice, writing and rewriting curriculum, choosing the best formatting for each of the curriculum activities, selecting appropriate activities from other curriculums, asking permission to post these activities on our website, correlating EE standards to activities, researching and selecting other appropriate websites with which to link, creating on-line surveys, writing and rewriting the homepage introduction, coordinating the pictures highlighting the website and facilitating the development of a very complex website with an out-of-town webmaster – all unique challenges.

As I created the website content through the months, I emailed it to Chris Welch, the site’s webmaster. Chris used this content to creatively design the website directly on the Internet. I could view the design on the Internet, give input and then we modified it accordingly. Throughout this process, the website has been constantly updated and modified with input from my advisor, my family, the staff at Trees For Tomorrow, my webmaster, and other teachers and resource specialists. The website was essentially completed by May of 2002.
Time became a limiting factor in trying to accomplish everything we set out to do – and do in a professional manner. Technical details and formatting also provided challenges at times. For example, choices had to made as to whether to format each activity as a text file – where illustrations are minimized but the activity is accessed almost instantaneously on the website, or as a pdf file – where illustrations are welcome (increasing the activity’s appearance and content) but the activity must be accessed through Adobe Acrobat Reader as a download item. Downloading can be frustrating sometimes due to the technical nature of a download and the time factor involved. Also, text files can include active links where individuals can just click and go to another site from the activity, whereas pdf files cannot – unless an expensive software package is purchased. Due to limited funds, my director did not want to purchase this software. As a result, we included some of each format style for variety and practicality.

Among the individuals I called for advice, Carrie Morgan, Al Stenstrup, Genny Fannucchi and Kirsten Held of the DNR were all helpful. Kirsten granted permission to use an activity from the Millennium Tree curriculum on our website. Eden Koljord of the Wisconsin Forest Resources Education Alliance and Pat Marinac of the Wisconsin Environmental Education Board, granted permission to use an activity from the Wisconsin Forests Forever curriculum as well as link to the organization’s website (Appendix L). Beth Mittermaier, an environmental education consultant and creator of the Wisconsin Forests Forever curriculum materials, emailed Chris Welch, our webmaster, the introduction to the curriculum as well as one of their curriculum units. Rob Weiner, a naturalist at Trees For Tomorrow, provided the slides used in the website to enhance its appearance.
David Stokes, a naturalist with Schlitz Audubon, granted permission to use a variety of his awareness activities on the website. Char Bezanson and Nalani McCutcheon, staff members of the former School Nature Area Project (SNAP) website, provided the advice of “Don’t rewrite curriculum, it’s out there already, pull things together and get the information out.” Nalani also sent me a CD of the SNAP website with her permission to use anything applicable as long as the former organization was credited.

Other curriculums such as Project WILD and Project Learning Tree would not grant permission for us to reproduce any of their activities on the Internet due to their policies of requiring educators to first go through a training program before any activities can be used.

The Birth of the Website

The final result of this process was the creation of the components of the website: a home page, the activities, the gallery, links and contacts. An introduction on the homepage (Appendix M) was written to welcome educators and draw their attention to an “exciting site they just have to check out.” The homepage also explained the goal of the website; justified why educators should check out this site; explained how to use the website and its unique features; invited teachers to submit their own successful activities; requested feedback on the website via an on-line school forest survey to help assess the effectiveness of the site; identified who put the website together, how it was funded and which organization was affiliated with the site; and thanked them for visiting the site. Links were established throughout
this homepage introduction to access any part of the website quickly and efficiently – as well as from the website banner at the top of the homepage.

The homepage also linked to the Wisconsin Forest Resources Education Alliance website, explaining that if you didn’t have a school forest or management plan, their manual – *How to Grow a School Forest* – can be downloaded, providing everything you need to know about establishing a school forest. It further explained that our website, [www.schoolforest.com](http://www.schoolforest.com), was designed as a follow-up to this manual, so that once you have established your school forest, our website provides the activities to use with your students while at the forest.

By clicking on the activities link, all the school forest activity categories are displayed and able to be accessed (Appendix N).

In the activities section, 26 school forest hikes and trail activities, along with an introduction to them (Appendix O), were created or reproduced as simple, introductory awareness activities adaptable for any grade level and available time. The essence of most of these activities is to have students brainstorm ideas before the hike, make observations or collect information during the activity itself, then process the activity with a few key questions. Wisconsin EE standards are listed with each activity – but only those that directly address an EE standard. Appendix O also highlights a few of these activities. An added incentive was that these activities could also be used at most outdoor school sites, not just school forests.

From the original goal of providing four in-depth activities for each grade level combination, four elementary level activities, three middle school level activities and two high school level activities were included on the website
(Appendix P). These activities were tree and wildlife focused, topics teachers were most likely to use at their school forests. Appendix Q highlights two of these in-depth activities as examples – one as a text file format, the other as a pdf file format.

Matrix pages were created for each grade level category – elementary, middle and high school – linking every activity to the Wisconsin State EE standards (Appendix R highlights a few of these pages). These matrix pages identified each activity’s “direct hits” to specific EE standards within the framework categories of questioning and analysis through citizen action participation. The unique feature of this matrix was that when you clicked on the EE standard number itself, the actual standard in written form would appear (Appendix S).

One activity was reprinted with permission from the DNR – Forest-Opoly (Appendix T) – for the student interactive activities section. My daughter came up with a unique formatting idea that Chris Welch designed for this activity. The activity enabled students to make choices using a dichotomous key format while learning about sustainable forestry.

A link was created for teachers to submit their own successful activities (Appendix U) – providing an opportunity for the website to grow – and teachers to feel ownership in the website. A gallery link was also included in this website for teachers to submit downloaded photos of their students in action (Appendix V).

A contact link was set up for teachers to evaluate the website via an on-line survey (Appendix W) – supplying data for my research project. This contact link also allowed teachers to submit comments or questions via a school forest.
message board, which allowed me to respond to their comments or questions as a direct means of communication (Appendix X).

Of all the websites considered for our links section, 105 were selected for final inclusion after extensive viewing and researching (Appendix Y – the first page of the links is included as a sample). My daughter, Hannah, did the bulk of this work – researching and compiling the information from websites I gave her. Websites were organized into four categories (environmental education, wildlife, water and forestry), listed alphabetically by organization and included a one line summary describing the website’s focus and our assessment of its quality.

One of our goals was not to duplicate other websites, but design a unique, professional website that would provide high-quality activities, resources and connections for teachers to access quickly with their limited planning time. If this website made a teacher’s job easier, then hopefully they would be more likely to use the activities and utilize their school forests or outdoor sites.

Continual discussions have also occurred involving the future of this website with key individuals – my advisor, Dr. Yockers; my director at Trees For Tomorrow, Jim Halperin; and Sterling Strathe, the director of the new State Forestry Education Program (LEAF) – a partnership between the DNR and the University of Wisconsin-Stevens Point’s Wisconsin Center for Environmental Education. Due to the costs and labor involved in maintaining a website such as this, as well as the need to centralize forestry education within the state of Wisconsin, the possibility of having the new Forest Education Program incorporate this website into theirs has been discussed.
Creating an Evaluation Tool to Measure the Effectiveness of the Website

From the on-line school forest website survey created (Appendix W), and the variety of techniques used to advertise and promote the website, 17 educators completed the survey as of October 15, 2002.

Though marketing and promoting the website took a tremendous amount of work, without this effort, few would ever have realized such a website existed, with little chance of it being evaluated for its effectiveness – no matter how well crafted an on-line survey might have been.

The variety of techniques used in this marketing approach allowed me to reach a diversity of educators in a short period of time. Having educators evaluate the website and complete the on-line survey was critical in attempting to measure its effectiveness.

Tabulating, Analyzing and Interpreting the Data from the On-line Website Surveys

The School Forest Website Survey (Appendix W) was organized into three sections: background information; website content and design; and most and least valuable aspects of the website as well as suggestions for additions to the website. Teachers could also provide me optional information on their name, school district and email address. Appendix Z shows the compiled survey.

The background information section included questions on grade levels and subjects taught, whether teachers had a school forest or outdoor teaching site, how often they used these sites, and their comfort level using these sites. Most teachers were at the high school level and taught science, though all grade levels
and subject areas were represented. Ten out of 17, or 56% of teachers, indicated they had a school forest. Fourteen out of 17, or 82% of teachers, indicated they had an outdoor teaching site. Though all but one teacher felt fairly to very comfortable using their school forest or outdoor site, seven teachers indicated they did not use either within the last year, five used these areas less than five times, three used them 5 – 10 times and only two indicated they used their areas more than 10 times. These results were consistent with findings from the 2001 School Forests in Wisconsin, A Report on the 1999 Statewide Survey of Wisconsin’s School Forest Coordinators.

Under the website content and design section, teachers could evaluate the website through a series of 11 questions that had categories of strongly agree, agree, neutral, disagree and strongly disagree. The data was compiled using percentages calculated from the responses. Not every teacher responded to every question. Following is an assessment of each question:

- 87% either strongly agreed or agreed that the overall website design was interesting to look at
- 100% either strongly agreed or agreed that the educational purpose was clear
- 94% either strongly agreed or agreed that the activities and content were well written
- 74% either strongly agreed or agreed that the gallery section was useful and important – though this was the only question out of the 11 where anyone marked a disagree or strongly disagree response, i.e., 6% disagreed that the gallery section was useful or important
- 87% either strongly agreed or agreed that the website was user-friendly
- 100% either strongly agreed or agreed that the links were connected to active, relevant sites
- 100% either strongly agreed or agreed that the website used good, objective information/science
- 77% either strongly agreed or agreed that after visiting this website, they felt they would be better able to utilize their school forest or outdoor site
- 74% either strongly agreed or agreed that after using activities or resources from this website, they would be better able to utilize their school forest or outdoor site.
- 35% either strongly agreed or agreed that they have used this website’s activities and resources and found them helpful, 64% were neutral
- 93% either strongly agreed or agreed that they haven’t used this website’s activities or resources but planned to in the future

Comments listed under the most valuable aspects of the website included:
- The links were impressive and most helpful
- The website was easy to maneuver through
- The activities were very helpful and I like the integration of other subjects
- Relating the activities to standards is good
- Good information and pleasant graphics
- The intent of the website is clearly spelled out
- The matrix chart with activity standards was well done
• Having the ability to contribute photos and activities is a good way for the site to evolve in a positive way
• Darn good job, Joe
• Engaging activities were clearly explained
• Networking
• Interactive link for students
• Wide range of available information is excellent

Comments listed under the least valuable aspects of the website included:
• I don’t understand the gallery
• I went to the WFREA site and couldn’t get back
• I didn’t find anything that wasn’t valuable
• Unable to access the school forest hikes and trail activities
• As much as I like pictures, the gallery
• More activities by grades to reduce different grades using the same trail activities
• I had a difficult time using the site, it wouldn’t let me pull up anything

Comments listed under the suggestions for additions to the website included:
• Add more activities – for all grade levels and subject areas
• Keep adding activities – don’t let the website fade
• In the gallery section, you may want to add pictures of plants and animals for teachers to download
- Link to grants, current events, or articles related to Wisconsin and land forest management
- List all activities on one page so I can peruse them and decide if I'll be able to adapt them for my grade level
- Add themes, training ideas and helpful hints for a successful trip
- Link directly to each activity from the standards matrix page

This data was extremely positive, indicating the website was well received in every category of content and design – even though this survey and knowledge of the website came out late in the school year and most teachers did not have the chance to actually test out the activities. A few comments from teachers indicated they could not access certain parts of the website. Some of the problems seemed to stem from technical computer difficulties at their end.

What was most gratifying was that the data indicated almost 80% of the teachers either strongly agreed or agreed that they will be better able to utilize their school forest or outdoor site after visiting this website and/or using its activities and resources. This substantiates my hypothesis that teachers will indicate that the use of their school forests and outdoor school sites will increase when they are provided with a school forest-related website containing a variety of activities and resources.
Conclusions

The purpose of this project was to develop a school forest resources website to provide K-12 Wisconsin educators forest-related activities and resources that would help them better utilize their school forests and outdoor sites. The challenge was to design a website to try to overcome many of the barriers that teachers encounter in attempting to use their school forests or outdoor school sites as well as provide information teachers deemed important. I believe this website met this challenge. The need by teachers in today's fast-paced world for this type of resource has been demonstrated and researched. Teachers have used this website. This project also developed partnerships with other Wisconsin forestry organizations, further strengthening forestry education within the state.

Teachers seemed genuinely pleased with the website and on-line survey. This input gave me a true sense of satisfaction that what I had created was important, meant something to teachers and served a worthwhile purpose.

Setting teachers up for success by providing them with quality, engaging and proven outdoor activities – already tied to Wisconsin State EE standards – makes their limited prep time more efficient as well as increases their comfort level to teach more effectively in the outdoors. Having the ability to contribute activities and photos can develop ownership in the site by teachers – allowing it to grow and evolve in a positive way.
If school forests and outdoor sites are better utilized – providing stimulating real-life experiences for students so they understand the significance of their relationship to the land – it is hoped students would become better stewards of the land and our natural resources. As Baba Dioum was quoted, “In the end, we will conserve only what we love. We will love only what we understand. And we will understand only what we are taught.”

Recommendations

1. Keep the website active and intact – do not let it phase out.

2. Through the website’s introductory page, continue to solicit teacher-submitted ideas and activities; this will allow them to develop “ownership” in the site – enabling it to grow over time.

3. Within the website, continue to modify and add activities at all grade levels; create a direct link to each activity from the standards matrix page; list all the activities and their “thumbnail sketches” on one page so they can be viewed more easily; and monitor, add and update the links on an ongoing basis.

4. Continue to promote the website through the Wisconsin Center for Environmental Education liaison network, EE News, emails, and contacting other websites to have them link to this site.
5. Inservice educators whenever possible through workshops and conferences to expose them to this website and its resources.

6. Continue to solicit evaluations of the website through the on-line school forest website survey to validate the usefulness of the website.

7. Continue to solicit input through the on-line school forest message board, communicating with educators to help answer questions directly or to guide them to the proper resource.

8. Increase the number of student activities, allowing this website to be used by students in the classroom or at home. I would recommend a format similar to NRES 600 (Wisconsin Environmental Studies) at UW-Stevens Point. Environmental questions such as what impacts will global climate change have on Wisconsin’s environment could be posed in the activity. Websites would then be listed, allowing students the opportunity to research information, formulate their own conclusions, participate in class discussions and debates, or compose their thoughts in essays. Teachers would have the option of assigning questions of this nature to their students for extra credit, regular assignments or as part of issue investigations.

9. Teachers indicated they would like each activity to be correlated to Wisconsin’s Model Academic Standards in all of the major subject areas. Currently, an innovative matrix system correlates just the environmental education standards
to each activity within each grade level category. Unless another grant was
received to cover the costs of a webmaster to reformat or expand the matrix
system currently used, it would be unrealistic to add these other standards. I
would recommend continuing to list just the environmental education standards
for any new activities added in the matrix system. However, an advisory group
of teachers could be formed to identify the Wisconsin Model Academic
Standards in the other major subject areas for all current and future activities,
and added as part of each activity’s summary information.

10. Continue to explore the possibility that this website be incorporated into the
new Learning, Experiences & Activities in Forestry (LEAF) program, the
Wisconsin K-12 Forestry Education Program that is a partnership between
the Wisconsin DNR and the Wisconsin Center for Environmental Education.
Incorporating this website into this program would help centralize forestry
education in Wisconsin, build partnerships between forestry organizations
and avoid duplications in resources. It would also solve pending problems
due to limitations of grant monies, Trees For Tomorrow’s resources to pay
maintenance fees, and effort to maintain and update the website.
BIBLIOGRAPHY


Appendices

Appendix A

Letter Verifying New Wisconsin School Forest Program Coordinator Position
This is great news! I'm very...very...very...happy.
Thank-you Eden for sharing this information and for just being there for us!
Hurray!!!!
Great news...Wendy.... :)

Genny Fannucchi
Forest Resource Education and Awareness Specialist
Division of Forestry
PO Box 7921
Madison, Wisconsin 53707-7921
Phone (608) 267-3120
FAX (608) 266-8576
Thank you for being a part of this process; we have reason to celebrate!!!

Sincerely,

Eden Koljord
WFREA Coordinator

>
Appendix B

Grant Application to and Approval from the Wisconsin Department of Commerce
Part II – Project Exhibits

Project Title: A Wisconsin School Forest Clearinghouse
Applicant: Trees For Tomorrow

A. Narrative Documentation:
1. Narrative Description:
   Overview - Trees For Tomorrow proposes to assemble a comprehensive collection of school forest education materials and then make those materials available to teachers and others through a school forest resource library, website and workshop.

Program component 1: School Forest Resource Library.
The library, comprising approximately 60 volumes to start, will be located in the education center on the Trees For Tomorrow campus in Eagle River. Volumes will include curriculum and activity guides relevant to school forest properties along with reference works. Titles will be chosen in consultation with Dr. Dennis Yockers and the Wisconsin Center for Environmental Education (WCEE) at the University of Wisconsin – Stevens Point. The library will be open regular hours and will welcome teachers and other resource professionals who need access to materials which can facilitate their use of school forests as a teaching tool. The library will be particularly useful to teachers in the northern part of the state who do not have easy access to the libraries at WCEE or other colleges. The specialized nature and limited size of the library will assure efficient and productive research by teachers who use it.

Goal: Establish a specialized, accessible, free collection of resource materials for teachers which they can use to assist in school forest curriculum development, responsible school forest land management and school forest improvements which effectively improve student learning.

Objectives: • to provide teachers, school forest coordinators and other interested resource professionals, particularly in the northern half of the state, year ‘round access to specialized resource materials five to six days per week, including evenings. • to provide teachers who participate in “Developing and Using Your School Forest Workshops” exclusive access during the workshop and afterwards to resource materials for completing course assignments associated with this graduate-level course.

Program component 2: School Forest Website.
The website, www.schoolforest.com, will contain an index of all materials in the library along with select reproductions of the more popular activities and curricula. Additional features will include links to select forestry-related and resource education sites, along with a limited directory of forest education resources. As with the library, the aim of the web site will not be to create exhaustive lists or an overwhelming volume of material, but to focus the content so that it is as specific as possible and therefore useful to those seeking guidance on the use of their school forest.
Goal: To increase access to school forest resource materials by designing and maintaining an internet web site that includes school forest activities, sample school forest site management plans, ideas for generating income for school forests, current trends in school forest environmental education, ideas for school forest improvements and links to other relevant web sites.

Objectives: • to provide a memorable web domain name and easily accessible web site to all teachers with access to the internet. • to market the availability of the web site by statewide news releases, limited paid advertising in select publications and inclusion in various free forestry and environmental education publications. • to provide activities arranged by grade level that are field-tested and appropriate for use at most school forests. • to provide a list of useful forestry education equipment, with cost and source information. • to encourage school districts to engage a professional forester for the development of a site management plan and explain how such plans can generate revenue for school forest development, supplies and activities. • to promote the use of a school forest as one way to meet state standards for environmental education. • to provide practical tips and resources for constructing signs, trail surfaces and teaching areas like amphitheaters. Emphasis on construction by students themselves. • to provide links with at least six directly relevant other web sites which can offer useful supplemental information.

Program component 3: School Forest Workshop.
The workshop, titled “Developing and Using Your School Forest”, will be held in July, 2001 at Trees For Tomorrow. Three previous school forest workshops held by “Trees” in 1998, 1999 and 2000 were filled with a waiting list, indicating a strong interest and definite need to make this workshop content available to more Wisconsin school districts. Up to 25 teachers and administrators will be invited to participate. During the five day workshop participants will be provided with the information, resources and sample field activities necessary to develop their school forest as an effective teaching site. Emphasis will be placed on developing a site management plan; using existing curriculum resources to develop a school forest activities which enhance in-school curriculum; basic site development including trails, signs and teaching areas; and sources for technical support and guidance after the workshop. A multi-agency approach will be used to utilize the strengths of several professionals who have been active in promoting school forest management and use on a statewide basis.

Goal: Assure that participating teams of teachers and administrators have information and resources necessary to develop and use their school forest property as an effective field teaching site, and as an extension of their in-school environmental education curriculum.
Objectives: • to provide participants basic knowledge of: forest management concepts and issues; how to develop management goals; where to get help in conducting a site inventory and management plan. • to provide participants knowledge of: resources and techniques for developing school forest curriculum that enhances in-school curriculum; how to get administrative support; how to provide inservice sessions to other teachers on school forest use; how to recruit, train and use older students as school forest program staff. • to provide participants knowledge of: resources and techniques for developing trails, signs and basic teaching areas at a school forest site. • to provide participants knowledge of: where to go for additional resources and support after the workshop.

2. Background information: Trees For Tomorrow was founded in 1944 by several Wisconsin paper companies for the purpose of helping reforest areas of the state which had been cutover and burned. The organization hired foresters, gave away tree seedlings and helped landowners prepare management plans for thousands of acres of newly replanted forest land. The organization also opened a natural resource education center to teach school students and others about practical conservation methods along with the value of managing forests for multiple uses.

As the forests of the north grew, education replaced tree planting as the organization’s main mission and today Trees For Tomorrow operates Wisconsin’s busiest natural resource specialty school. Over 5,000 attend annually, mostly middle and high school students who come for three day workshops during the school year. The workshops are designed to acquaint students with the diversity and complexity of Wisconsin’s forest and water systems. At the same time, students learn reasoning and policy-making skills which help them decide how their generation will satisfy the many competing demands which are placed on our forest resources today.

Most learning takes place as students participate in a variety of hands-on activities conducted in the field under the direction of a professional staff of 11 foresters, biologists, naturalists and other environmental educators.

Trees For Tomorrow is managed by an experienced team of administrators and educators. Jim Halperin has been Director for 6 years. Previously he served for twelve years as a member of the Wisconsin Legislature specializing in natural resource and forestry issues. Before that he served as Department Director of Aging Programs in Vilas County and as Assistant Administrator of the Wisconsin State Senate. Gail Gilson-Pierce has been Assistant Director at “Trees” for 12 years. Previously, she served as Community Services Director for the YWCA in Burlington, Iowa and as Environmental Education Coordinator for the Bay Beach Wildlife Sanctuary in Green Bay. Associate Director of Education Joe Panci has been with TFT for 16 years. Previously he worked as a forester for the U.S. Forest Service and for Michigan State University.
In September, 2000 "Trees" will be accredited as a "special function school" by the North Central Association Commission on Schools which recognizes its capabilities in the areas of curriculum development and teaching skills.

"Trees" is operated under the direction of a 27-member Board of Directors and 25-member Advisory Council (lists attached), which are made up of experienced business executives, education administrators, government agency supervisors and professional/service organization leaders.
November 3, 2000

Jim Halperin
Director
Trees for Tomorrow, Inc.
P.O. Box 609
Eagle River, WI 54521

Dear Mr. Halperin:

We are pleased to inform you that your application for the annual Forestry Education Grant Program has been approved by the Wisconsin Department of Commerce and the UW-Stevens Point College of Natural Resources Timber Management Program.

This award is in the amount of $20,210, or no more than 75% of eligible project costs, to be used as described in your application budget. Although your application budget requested $21,710 from the Forestry Education Grant Program to develop and implement your project, the items of your budget that are not being funded through this award include $1,500 related to the cost of the library volumes.

You will soon be receiving a contract that fully describes the terms and conditions of the award. In the interim, if you have any questions, please contact Mary Gage, Business Finance Specialist, at (608) 266-2766.

Again, congratulations and thank you for helping to improve the education of Wisconsin youth in promoting the importance of forestry in the Wisconsin economy.

Sincerely,

Brenda J. Blanchard
SECRETARY
Appendix C

Focus Group Questionnaire – June, 2000
1. You have come to Trees For Tomorrow to learn about forestry and how to infuse it into your curriculum. What do you need to increase your effectiveness in implementing this material into your curriculum?

2. What types of resources do you think you'd need to teach about forests and forestry?

3. Do you see a role technology can play to meet these needs?

4. How many of you have easy access to computers and the Internet in your school? In your classroom? At home?

5. How many of you utilize the Internet?

6. Are there any barriers you encounter to using the Internet in your classroom or in preparing your lessons?

7. I am considering developing a website through Trees For Tomorrow for my master's degree project which would assist educators with forest-related resources and activities. Do you think this is a good idea and would it be useful to you?

8. What do you think should be included on the website? Resources? Activities? Links to other sites? Interactive programs or informational?

9. What topics on forestry would you like to see covered?

10. Anything else you'd like to add to give me guidance?

11. Would any of you be available and willing to serve on an advisory group to help guide this study?
Appendix D

School Forest Website Questionnaires – July, 2000 and July, 2001
School Forest Website Questionnaire – July, 2000

I realize teachers are extremely busy these days. I am attempting to determine if a school forest website with activities, resources, and links to other websites would be beneficial to you by reducing the time it takes to prepare lesson plans. Would you please take a few minutes to fill out this questionnaire and hand it in to Gail on Friday? Thanks for your time and input!

1. What grade level do you teach? ___K-3 ___4-6 ___7-8 ___9-12

2. What subject area(s) do you teach? __________________________________________

3. Do you have a school forest? ___yes ___no

4. Within the last school year, how many times have you used your school forest with your students? ___0 ___1 ___2-5 ___6-10 ___>10

5. How comfortable are you teaching environmental education indoors? ___not very comfortable ___fairly comfortable ___very comfortable

6. How comfortable are you teaching environmental education at outdoor sites? ___not very comfortable ___fairly comfortable ___very comfortable

7. Select & rank your (3) greatest barriers to using your school forest, with (1) being the greatest:

___distance to the school forest
___lack of administrative support
___limited prep time
___scheduling time constraints
___funding for transportation
___safety/liability of students
___lack of developed curriculum
___lack of facilities at the site
___lack of knowledge regarding outdoor teaching techniques
___lack of knowledge regarding resources at the site
___class sizes too small or large
___lack of equipment
___other (please specify) ______________________________________

8. Do you have Internet computer access in your school? ___yes ___no

9. Do you have Internet computer access in your classroom? ___yes ___no

10. Do you utilize the Internet in preparing for your lessons? ___yes ___no

11. Do you use the Internet in teaching and involving your students as an educational tool within your curriculum? ___yes ___no

12. Would you use a school forest website? ___yes ___no

Please complete the rest of the survey on the other side
13. What type of information would be most useful to you on a school forest website? Select and rank your top (3), with (1) being the most useful:

- activities by grade levels and subject areas
- background information on specific subject areas
- links to other websites and resources
- teacher-based information only
- activities for students as well as teachers
- lists of teaching equipment
- technical assistance on trail construction, signs, etc.
- question and answer section
- sample forest site management plans
- other (please specify): ______________________

14. What types of activities should be included on the website? Please list.

15. What types of resources, i.e. funding opportunities, resource agencies or personnel, should be included on the website? Please list.

16. Would you be willing to serve on a steering committee to help guide the development of the website and information on it? ____yes ____no
   If yes, please include your name and phone number:
   name: ______________________________
   address: ______________________________
   e-mail address: __________________________

17. Are there other questions we should be asking in developing this school forest website?

Thanks again for your time and support!

Please complete the rest of the survey on the other side
I realize teachers are extremely busy these days. I am attempting to determine if a school forest website with activities, resources, and links to other websites would be useful to you. If so, what should I include to make it most usable, and would this website help increase your use of your school forest? Please take a few minutes to fill out this questionnaire and hand it in to Gail on Friday. Thanks for your time and input!

1. What grade level do you teach? [ ] K-3  [ ] 4-6  [ ] 7-8  [ ] 9-12

2. What subject area(s) do you teach? ________________________________

3. Do you have a school forest? [ ] yes  [ ] no

4. Within the last school year, how many times have you used your school forest with your students? [ ] 1  [ ] 2-5  [ ] 6-10  [ ] >10

5. Do you integrate environmental education into your classroom? [ ] yes  [ ] no

6. How comfortable are you using outdoor sites in your curriculum? [ ] not very comfortable  [ ] fairly comfortable  [ ] very comfortable

7. Select & rank your (3) greatest barriers to using your school forest, with (1) being the greatest:
   [ ] distance to the school forest
   [ ] lack of administrative support
   [ ] limited prep time
   [ ] scheduling time constraints
   [ ] funding for transportation
   [ ] safety/liability of students
   [ ] lack of developed curriculum & activities
   [ ] lack of facilities at the site
   [ ] lack of knowledge regarding outdoor teaching techniques
   [ ] lack of knowledge regarding resources at the site
   [ ] class sizes too small or large
   [ ] lack of equipment
   [ ] other (please specify) ________________________________

8. Do you have Internet computer access in your school? [ ] yes  [ ] no

9. Do you have Internet computer access in your classroom? [ ] yes  [ ] no

10. How comfortable do you feel using the Internet? [ ] not very comfortable  [ ] fairly comfortable  [ ] very comfortable

11. Do you utilize the Internet in preparing for your lessons? [ ] yes  [ ] no

Please complete the rest of the survey on the other side
12. Do you use the Internet in teaching and involving your students as an educational tool within your curriculum?  ____yes  ____no

13. Would you use a school forest website?  ____yes  ____no

14. What type of information would be most useful to you on a school forest website? Select and rank your top (3), with (1) being the most useful:
   ____activities & background information by grade levels and subject areas
   ____links to other web sites & resources, i.e. equipment, background info, foresters, etc.
   ____interactive student activities
   ____technical assistance on trail construction, signs, etc.
   ____question and answer section
   ____teacher submitted activities
   ____sample school forest site management plans
   ____new information/update section, i.e., funding opportunities, workshops, etc.
   ____other (please specify): ________________________

15. If the information in question 14 were provided on a school forest website, do you feel this would increase your use of your school forest?  ____yes  ____no

16. What types of activities should be included on the website? Should state standards for all subject areas (or maybe just environmental education) be included in the activity?

17. Would you be willing to help review this website when it goes on-line?  ____yes  ____no

   If yes, please include your name and phone number:
   name: ____________________________________________
   address: ___________________________________________
   e-mail address: ______________________________________

Thanks again for your time and support!

Please complete the rest of the survey on the other side
Appendix E

School Forest Website Survey
School Forest Website Survey

Background Information
1. What grade level do you teach? ___K-5 ___6-8 ___9-12
2. What subjects do you teach? __________________________________________
3. Do you have a school forest? _yes ___no
4. Do you have an outdoor teaching site? __yes ___no
5. Within the last year, how many times have you used your school forest or outdoor site?
   ____none ___<5 ___5-10 ___>10
6. How comfortable are you using your school forest or outdoor site?
   ___very comfortable ___fairly comfortable ___not very comfortable

Website Content and Design

<table>
<thead>
<tr>
<th>Website Content and Design</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
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<td>1. Overall website design is interesting to look at</td>
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<td>2. Educational purpose is clear</td>
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<td>3. Activities and content well written</td>
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<td>4. Gallery section is useful and important</td>
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<td>5. Website is user-friendly</td>
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<td>6. Links are connected to active, relevant sites</td>
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<tr>
<td>7. Website uses good, objective information/science</td>
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<tr>
<td>8. After visiting this website, do you feel you will be better able to utilize your school forest or outdoor site?</td>
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<tr>
<td>9. After using activities and resources from this website, do you feel you will be better able to utilize your school forest or outdoor site?</td>
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<td>10. I have used this website's activities and resources and found them helpful</td>
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<tr>
<td>11. I haven't used this website's activities and resources but plan to in the future.</td>
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</tr>
</tbody>
</table>

Most Valuable Aspects of Website:

Least Valuable Aspects of Website:
Suggestions For Additions to Website:

Optional Information
Name: ____________________________
School District: ____________________
Email Address: _____________________

If you like this website, please let others know about it. Thanks!
Joe Panci - Associate Director-Education
Trees For Tomorrow Natural Resources Education Center
Appendix F

School Forest Website Flyer
Guiding you to actively use your school forest

- Outdoor forest-related activities
- Trail activities
- On-line activities
- Curriculum resources
- EE Standards
- Submit activities and photos
- Links

Site developed by Joe Panci
Sponsored by Trees for Tomorrow, Natural Resources Education Center
Appendix G

Emails to EE Master's Classmates and School Forest Workshop Teachers
Hi fellow grad classmates and EE educators. This is a memo from Joe Panci, currently enrolled in the EE masters program at UWSP – and hoping to finish the program this year. I need your help to give me input (i.e. data) - this spring - for my master’s project presentation this summer.

If you could take a moment to review this memo and then pass it on to other teachers you feel may be interested - and have them take a look – I would sincerely appreciate it.

My project is a website – www.schoolforest.com - designed to give educators the resources needed to actively use their school forests as outdoor classrooms. These activities will also work well at most outdoor school sites. You don’t have to be an expert on the outdoors; these activities will guide you along the way - they are easy and fun - and you’ll be excited to learn right along with your students.

There are over 400 registered school or community forests in Wisconsin and numerous outdoor school sites. This website will help you utilize these special places and bring your students enriching learning experiences by:

- Allowing you to effectively use your planning time by selecting activities – elementary, middle and high school - you can plug directly into your curriculum
- Justifying your use of these activities by correlating each of the activities to Wisconsin State Environmental Education Standards
- Providing links to other activities and curriculum resources.
- Allowing you to feel more comfortable in the outdoors by tapping into proven, time-tested activities
- Providing opportunities to submit your own successful activities to share with others, including digital photos of your students in action
- Providing on-line activities for students
- Providing lists of resource specialists for program assistance

Would you please be willing to log on onto the website and evaluate the site itself by filling out the school forest survey under the Contact section. Or even better, if you could log onto the website and actually use an activity, then log back on to fill out the survey, this would be great! This data is important for my project presentation this summer.

I am trying to find out if this Website is helping you – or will help you - better utilize your school forest or outdoor teaching site by providing you with user-friendly ideas, activities, and connections to other resources to help you turn your kids on to the outdoors.

With your input, this Website can grow into a community of people actively utilizing their school forests and outdoor school sites. Please pass this website on to others! Thanks!

Joe Panci – hoping to help you - as well as graduate!
Email Memo to Teachers in School Forest Workshops

May 5, 2002

Greetings!

This is a memo from Joe Panci at Trees For Tomorrow in Eagle River and I need your help! Last year you took the School Forest Workshop at "Trees" and Dennis Yockers had you fill out a School Forest Web Site Questionnaire I had put together, attempting to determine if a school forest web site with activities, resources and links to other sites would be useful to you - to help you better utilize your school forest or outdoor school sites by providing easy access to these resources. You indicated in the questionnaire that you would be willing to help review this website when it goes on-line. It is now on-line - and I really do need your help.

I am currently enrolled in the Masters in Environmental Education program at UWSP – and hoping to finish the program this year. I need your help to give me input (i.e. data) - this spring - for my master’s project presentation this summer. I realize this email is late in the school year, but if you could take a moment to log onto the web site - www.schoolforest.com - review the site, then fill in the school forest survey in the contact section - I would be eternally grateful. If you could do this by June 21 - the first day of summer, I will be able to compile your input into data I will use to present for my project. If you know of any other teachers who may be interested, I would also appreciate passing this web site on to them so they could also view and evaluate it.

And even better, if you feel this web site really is good, if you could use an activity from the web site next fall, then log back on www.schoolforest.com to fill out the survey again to let me know how well it might have helped you, this would be fantastic! The fall data will be used to write up my research project.

Your input will help me - but I am really trying to help you, as teachers, get quick and easy access to a series of exciting, worthwhile activities designed to help you turn your kids on to the outdoors.

With your input, this Website can grow into a community of people actively utilizing their school forests and outdoor school sites.

Joe Panci – hoping to help you - as well as graduate!
The Year of the Trails, proclaimed in 2002, celebrates all types of Wisconsin trails including city, county, state, federal and private properties. Students of any age can be a part of the fun. Don’t wait to take your class or youth group out on one of our state’s beautiful trails to experience the wonders of nature. Plan a trail trip of your own, or join in one of more than 100-planned Year of the Trails activities.

The Year of the Trails celebrates the many important benefits trails provide including environmental, economic, health, alternate transportation and community building opportunities. Trails also provide surrounding corridors of land for wildlife and plants to flourish. These corridors offer great outdoor environmental education study opportunities. Some trails, like the Glacial Drumlin State Trail, feature prairie restoration plantings and interpretive signs.

Did you know that Wisconsin leads the nation with its extensive trail network? Thousands of miles of trails wait to be explored in beautiful loop trails that wind through parks and in linear trails that follow former railroad beds.

Special Events
A wide variety of trail-related events are planned throughout Wisconsin during 2002. Samples of a few statewide events are listed below. Encourage students to attend these programs by scheduling field trips or by offering students extra credit for participating and completing a project reflecting their trail experiences.

National Trails Day, June 1, 2002—This day promises much trail-filled fun as events planned throughout the country take place to emphasize the importance of trails and the need to maintain them. It is sponsored by the American Hiking Society and supported by the National Park Service, United States Department of Agriculture, Forest Service, Bureau of Land Management, and the Federal Highway Administration.

State Parks and Trails Open House, June 2, 2002—Wisconsin State Parks and Trails are open to the public free of charge. Use this day to explore new trail properties, and enjoy one of the many fun trail events taking place during the open house celebration.

For information about other Year of the Trails events in your area, please visit the Department of Natural Resources, Bureau of Parks and Recreation, Year of the Trails Web site at: http://www.dnr.state.wi.us.

With all this fun planned in 2002 for the Year of the Trails, there’s never been a better reason to hit the trail.
Get Hooked on Angler Education

Adults who want to share their love and knowledge of fishing with children are encouraged to attend angler education workshops this spring. Interested teachers can also receive five clock hours in return. Workshops train volunteer instructors who then offer their own community programs to introduce children to basic fishing skills and knowledge of our lakes and streams. Workshops provide free materials to participants. Following training, participants will have access to additional materials and fishing equipment on loan.

Angler education workshops are free except for workshops fee, in combination with other aquatic resources education programs. Check below for the current workshop schedule. Please register two weeks in advance. Special training and inservices can be scheduled by contacting Theresa Stabo at (608) 266-2272, by e-mail at: stabot@dnr.state.wi.us, or write to Angler Education, DNR Bureau of Fisheries Management & Habitat Protection, PO Box 7921, Madison, WI 53707. Visit the angler education Web page for workshop updates at: http://www.dnr.state.wi.us.

March 2. Angler Education. Great Lakes Research Facility, Milwaukee. (9:00 A.M.-3:00 P.M.) Get ideas for organizing after-school fishing clubs and attracting families to community fishing clubs. Hook fishing to state academic standards. Lunch is included, no fee. Register by calling Dick Rebicek at (262) 594-6218, or e-mail: rebicr@dnr.state.wi.us. Contact: John Hoeben at (608) 266-2272. 

March 5. WILD about Fish! Hoyt School, Madison. (4:00-9:00 P.M.) This workshop combines the Angler Education Program with the award-winning Project WILD program. Discover how you can blend these programs together and use in science, physical education, language arts, social studies, art and other curriculum areas at all grade levels. Dinner is included; $20 fee for Project WILD materials. The workshop will be held at Hoyt school, 3802 Regent Street, in room 19. Contact Thermes Stabo at (608) 266-2272, or by e-mail at: stabot@dnr.state.wi.us. 

March 16. Green Bay. (9:00 A.M.-3:00 P.M.) Location to be announced. Contact Gene Tiser at: (920) 492-5836, or by e-mail at: tiser@dnr.state.wi.us. Please note that lunch is included. Cost: free.

March 16. Fishing Has No Boundaries, VFW Center, Hayward. (9:00 A.M.-3:00 P.M.) Fishing Has No Boundaries members will share experiences as participants learn new teaching techniques for working with disabled people. Adapted fishing equipment will be available. This is a great session for adaptive physical education programs. The VFW is located at the intersection of Hwy 63 and Main Street. Please note that lunch is included. Cost: free. Contact: Diane Mcnamer at: (608) 243-3462.

March 23. DNR Headquarters, Eau Claire. (9:00 A.M.-3:00 P.M.) Contact Dean Johnson at: (715) 831-3267, or e-mail: johns3@dnr.state.wi.us. Please note that lunch is included. Cost: free.

April 17. WILD about Fish! School Forest, Wausau. (4:00-9:00 P.M.) This workshop combines the Angler Education Program with the award-winning, Project WILD program. Discover how you can blend these programs together and use in science, physical education, language arts, social studies, art and other curriculum areas at all grade levels. Dinner included; $20 fee for Project WILD materials. Contact Al Hauber at (715) 359-7582 or by e-mail at: hauber@dnr.state.wi.us.

The Gift of Trees

Soil and Water Stewardship Week: April 28—May 5

The best time to plant a tree was 20 years ago. The second best time is now!

Soil and Water Stewardship Week is sponsored by the National Association of Conservation Districts (NACD) whose members include 3,000 local conservation districts that manage soil and water conservation programs on private lands in every community.

Since 1955, NACD has selected an annual theme and developed educational materials for public school teachers and for churches of all denominations. The 2002 theme, "The Gift of Trees" and associated materials help promote good stewardship of the land, water, wildlife, and natural resources which improve quality of life for all. Today, as our country rapidly approaches 300 million people, it is clear that we must continue to improve the management and conservation of trees and forests, from the nearest city street to the most remote mountaintop. Be sure to order the materials by March 15. Visit their Web site at: http://www.nacdnet.org.
Appendix I

Website News Release
News Release Developed by Lori Voelker for EE Master’s Seminar

July, 2002

Do you have a school forest or nature area that you would love to use in your curriculum? Joe Panci, Associate Director of Education at Trees for Tomorrow Natural Resources Education Center in Eagle River, Wisconsin, can help you. As part of the requirements for the Master of Science degree in the Environmental Education Program for Teachers at the University of Wisconsin Stevens Point, Panci created a website for educators to do just that. At www.schoolforest.com, educators can find activities (complete with Wisconsin’s Environmental Education Standards), links to forestry information and materials, and a picture gallery of successes.

Panci’s main goal when creating this website was to create a site that would “help educators turn their kids on to the outdoors by providing stimulating, hands-on, outdoor forest-related activities and to link these activities to Wisconsin’s Environmental Education Standards.” According to the on-line survey, he apparently succeeded. Eighty percent of the teachers who took the survey after visiting the website said they have or will be using activities from the site in their nature areas or school forests. Two of the main reasons teachers give for not using outdoor sites are that they aren’t comfortable teaching in the outdoors and they don’t have time to develop activities. Panci’s website takes care of this for them. The website is easy to use, looks appealing and has a plethora of activities for all grade levels and all disciplines.

“Environmental education is our investment for the future,” Panci states. “We are losing touch with the land that nurtures and sustains all life on this planet. If we are to be
good stewards of this resource we must value and treasure it.” He believes, “Any time you can get children outside doing hands-on activities, you turn them on to the outdoors, allowing them to see connections and relationships to the land.”

When asked if only teachers could use this website, Panci exclaims, “Absolutely not, parents, scout leaders, camp counselors, anybody who works with our youth would benefit from using this website. In fact there are even activities for students to do right there on the website.” The two most popular activities seem to be “Tree Identification”, complete with a tree guide, and “Forest Measurements”. Panci hopes to maintain the website, and as word gets out about it, that educators will submit more activities to share with others.

If you would like to find activities to use with your children or to submit activities and/or pictures go to www.schoolforest.com. If you have any questions you can email Joe Panci through the website or call him at Trees for Tomorrow (715) 479-6456.
Appendix J

2002 WAEE Fall Conference Website Program Description
Ecology and Technology: Over the Internet and Through the Woods

Name: Joe Panic

Organization: Trees for Tomorrow Natural Resources Education Center

Address: P.O. Box 609

City: Eagle River, WI

State: WI

Zip Code: 54521

Phone: (Day) 715-479-6456

Phone: (Evening) 715-479-6760

E-mail: jlp@newnorth.net

Please attach a short summary of your session or workshop which will appear in the conference program. (50 words or less)

Session/Workshop Title: School Forest & Outdoor Teaching Site Resources - Help is on the way!

Please check the box below and complete the top portion of this form. Additional information will be sent to you as soon as it is available.

Q Yes! I want more information about exhibiting at the 2002 WAEF Fall Conference!

Workshop Time

Q Full Day Session (Friday only)

Q Half Day Session (please check preferred day)

Q Friday O Saturday

Maximum # of Participants: __________

Workshop Fee: __________

A/V Needs:

Q TV/VCR  Q Slide Projector

Q Overhead Projector Q Other

Room Needs:

Q Tables O Open Area O Other

Q Computer Lab

Return the Call for Presenters form by May 1, 2002 to:

WAEF, 233 Nelson Hall, UW-Stevens Point, Stevens Point, WI 54481

Fax: 715-346-3835

E-mail: waee@uwsp.edu

Questions? Call WAEF at 715-346-2796.
2002 WAEE Fall Conference

Ecology and Technology: Over the Internet and Through the Woods

Conference Tracks

1. Back to Basics
This track highlights programs and projects that utilize technology in and out of schools and nature centers to enhance environmental education. Presenters are invited to share their indoor experiences using distance learning, online courses, video conferencing, software, the Internet and technological facility enhancements. Outdoor experiences can include water testing, forestry, GPS equipment, animal tracking, weather monitoring devices or any other technology and equipment that aids in hands-on EE.

2. Honoring Traditional EE
This track focuses on the environmental education essentials that educators cannot get from technology. If you have skills in storytelling, EE in the classroom, nature center programs, naturalist skills, you are heartily invited to present in this popular track to share your programs and stories with us.

3. Techie Wannabes
This "how to" track is looking for people willing to share their knowledge of technology and field equipment. Teach the rest of us the tricks to getting on the technology track! We are looking for hands-on workshops and programs that train educators how to design web pages, develop software, use field equipment and more.

October 4-6, 2002
Wisconsin Lions Camp
Rosholt, WI

Do environmental educators sacrifice time-honored ways of teaching when they join the fast-paced information age? In October, technology and tradition are facing off in Rosholt, WI to show how using resources from the past and the future enriches rather than threatens environmental education. So, grab your GPS units and your binoculars because you are invited to share your knowledge, skills, and ideas at the 2002 WAEE Fall Conference.

To be a part of this exciting conference complete the back of this form and return by May 1, 2002 to:

WAEE,
233 Nelson Hall,
UW-Stevens Point
Stevens Point, WI 54481
Fax: 715-346-3835
E-mail: waee@uwsp.edu

Questions? Call WAEE at 715-346-2796.
Technology and Ecology:
Over the Internet and Through the Woods...

Wisconsin Association for Environmental Education
2002 Fall Conference

October 4-6, 2002
Wisconsin Lions Camp
Rosholt, WI
Patterns in the Landscape
Susan E. Fowler – Harmony By Hand
The landscape is composed of natural and people-created patterns. What stories do these images share? Let’s EXPLORE! This session uses quilt patterns, literature, sign language, music and interactive drama to discover nature, culture, land uses and watersheds!

High-Touch through High-Tech!
Kath Crowley Conn – Nature Net: the Environmental Learning Network
Don’t be a slave to your computer! Technology is a tool that can let us communicate more effectively with teachers, parents, and fellow organizations. Learn how to use the Internet simply and efficiently to promote what counts best—your organization’s programs. Sessions will include an overview of regional networking efforts and how the Internet is used in these networks, and will also describe and demonstrate a current initiative underway to create an on-line directory of nature centers in Wisconsin.

The ABC’s of Nature Awareness
Mary Swiftka & Jessica Miller – Mosquito Hill Nature Center
No computers or techno-gizmos here, just some great hands-on activities for elementary students to foster awareness and appreciation of the natural world. Come prepared to spend time in the outdoors getting your hands and knees dirty (that’s ok, your mom won’t mind). Create a sense of wonder in your students by offering them the opportunity to learn in an outdoor classroom.

Fuel Cells and Our Hydrogen Economy: A Hands-On Workshop
Steve Bower – Waunakee High School
Participants will gain an understanding of the science and practicality of fuel cells. Loads of relevant and student tested energy materials will be handed out, including the book, Material World. This is supported through a WEEB Grant. Participate in our hydrogen future, attend this cutting edge workshop!

Technology
Michele Nickels – Nicolet Distance Education Network
Technology can increase and enhance environmental education. Discover how K-8 students and teachers of the Nicolet Distance Education Network are effectively utilizing technology including: the Interactive Television (ITV) classroom, video conferencing, Internet, digital cameras and more in conjunction with environmental education programming and projects.

School Forest & Outdoor Teaching Site Resources
—Help is on the Way!
Joe Panci – Trees For Tomorrow
Looking for school forest or outdoor site activities? We’ve got them. Looking for a web site that allows you to plan for these outdoor adventures in inside comfort? We’ve got that too! Hit the outdoors first to sample a few of the activities housed within www.schoolforest.com, then pop inside for a guided tour of the web site.
Appendix K

Focus Group and School Forest Website Questionnaire Results – 2000, 2001
Tape Recorded Focus Group Questionnaire Forestry Workshop Results
15 Teachers
June 22, 2000

1. You have come to Trees For Tomorrow to learn about forestry and how to infuse it into your curriculum. What do you need to increase your effectiveness in implementing this material into your curriculum?
   - The physical school site – a place to go
   - Site plans
   - Administrative support
   - Time to be able to do this
   - Use of forestry tools is limited on “young” school sites

2. What types of resources do you think you’d need to teach about forests and forestry?
   - Access to activities
   - Time
   - Inservice training
   - Appropriate books, curriculum materials, CD Rom resources, websites
   - Actual trees
   - Equipment or ability to check equipment out through a central resource center
   - Variety of habitats
   - Contacts with industry and other professionals in the field

3. Do you see a role technology can play to meet these needs?
   - Yes, distance learning course

4. How many of you have easy access to computers and the Internet in your school? In your classroom? At home?
   - Everyone had easy access at each level

5. How many of you utilize the Internet?
   - Everyone

6. Are there any barriers you encounter to using the Internet in your classroom or in preparing your lessons?
   - More valuable to get out and do hands-on activities in the field than to do on-line activities – or perhaps do a brief intro on-line, such as how to use a Biltmore stick, then get outside

7. I am considering developing a website through Trees For Tomorrow for my master’s degree project that would assist educators with forest-related resources and activities. Do you think this is a good idea and would it be useful to you?
   - Everyone agreed that this was a good idea and would be useful to them.
8. What do you think should be included on the website? Resources? Activities?
   Links to other sites? Interactive programs or informational?
   ▪ Most felt an informational website would be the best, for example, short
     summaries on how to do things...chemical analysis of forest soils, fiber
     testing for paper, rate of nutrient decomposition, etc.,

9. What topics on forestry would you like to see covered?
   ▪ Contacts with industry, Speakers Bureau, identify key resource people
   ▪ Maps, i.e., what is happening where
   ▪ Write in questions and have the experts answer
   ▪ Successful interactive units that teachers submit
   ▪ List of environmental science books related to issues
   ▪ Current issues, topics and legislation
   ▪ List of current logging operations

10. Anything else you'd like to add to give me guidance?
    ▪ Need to maintain website and links so they are current
    ▪ Updates on what is happening locally
    ▪ Always seems to be an abundance of elementary information and activities
      so need to include high school information – with depth – and activities
    ▪ Include pre-activities to set teachers up to go outside
    ▪ Include activities for all grade levels

11. Would any of you be available and willing to serve on an advisory group to help
    guide this study?
    ▪ Some indicated yes and mentioned they may be willing to do a one day or
      overnight session to brainstorm activities and website in a central location
      within the state or test out some of the activities created with their students
      and evaluate them
School Forest Website Questionnaire – July 2000
Summary Results – 19 Teachers

I realize teachers are extremely busy these days. I am attempting to determine if a school forest website with activities, resources, and links to other websites would be beneficial to you by reducing the time it takes to prepare lesson plans. Would you please take a few minutes to fill out this questionnaire and hand it in to Gail on Friday? Thanks for your time and input!

1. What grade level do you teach? (3) K-3  (4) 4-6  (7) 7-8  (5) 9-12

2. What subject area(s) do you teach? (4) All subjects: (1) Art; (13) Sciences

3. Do you have a school forest? (17) yes (1) no

4. Within the last school year, how many times have you used your school forest with your students? (4) 0  (3) 1  (6) 2-5  (2) 6-10  (1) >10

5. How comfortable are you teaching environmental education indoors? (2) not very comfortable (12) fairly comfortable (5) very comfortable

6. How comfortable are you teaching environmental education at outdoor sites? (0) not very comfortable (10) fairly comfortable (9) very comfortable

7. Select & rank your (3) greatest barriers to using your school forest, with (1) being the greatest:

   1  2  3
   - 17% 6% distance to the school forest
   22% 6% limited prep time
   22% 6% 17% scheduling time constraints
   17% 6% 11% funding for transportation
   - - - safety/liability of students
   17% 33% 22% lack of developed curriculum
   6% 6% - lack of facilities at the site
   - 11% 6% lack of knowledge regarding outdoor teaching techniques
   6% - - lack of knowledge regarding resources at the site
   6% 17% 11% class sizes too large
   - - 6% lack of equipment
   6% 6% - other (please specify): (1) Lack of an EE coordinator
   (2) Tying into State standards

8. Do you have Internet computer access in your school? (19) yes (9) no

9. Do you have Internet computer access in your classroom? (18) yes (1) no

10. Do you utilize the Internet in preparing for your lessons? (12) yes (6) no

11. Do you use the Internet in teaching and involving your students as an educational tool within your curriculum? (11) yes (6) no

12. Would you use a school forest website? (18) yes (1) no

Please complete the rest of the survey on the other side
Thanks again for your time and support!
13. What type of information would be most useful to you on a school forest website? Select and rank your top (3), with (1) being the most useful:

<table>
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<tr>
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<th>Percentage</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>1</td>
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<td>28%</td>
<td>background information on specific subject areas</td>
</tr>
<tr>
<td>3</td>
<td>11%</td>
<td>links to other websites and resources</td>
</tr>
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<td></td>
<td>17%</td>
<td>teacher-based information only</td>
</tr>
<tr>
<td>5%</td>
<td>17%</td>
<td>activities for students as well as teachers</td>
</tr>
<tr>
<td></td>
<td>11%</td>
<td>lists of teaching equipment</td>
</tr>
<tr>
<td></td>
<td>17%</td>
<td>technical assistance on trail construction, signs, etc.</td>
</tr>
<tr>
<td></td>
<td>11%</td>
<td>question and answer section</td>
</tr>
<tr>
<td>17%</td>
<td>6%</td>
<td>sample forest site management plans</td>
</tr>
</tbody>
</table>

14. What types of activities should be included on the website? Please list.
- (3) connect activities to subject areas, State EE standards & grade levels
- (1) school forest development - templates, timelines, cost comparisons, etc.
- (1) hands-on student activities & ideas for students to research about forests
- (1) using high school students as instructors
- (1) biodiversity/population studies - mark & recapture, Lincoln-Peterson method
- (1) environmental integrity projects, i.e., soils, water quality, air, etc.
- (4) variety of lesson plans - river, pond, forest, prairie, earth science, trees, etc.
- (1) butterfly gardens, birdhouses, nests, related art activities
- (1) many of same topics discussed during this workshop
- (1) Wisconsin specific activities & information
- (1) activities that expand student awareness & sensitivity to the environment
- (1) Leave No Trace activities & principles

15. What types of resources, i.e. funding opportunities, resource agencies or personnel, should be included on the website? Please list.
- (1) DNR, County foresters, other resource personnel
- (7) funding sources & examples of successful grants
- (3) school forests, teachers and websites across the State
- (3) links to organizations, i.e., WSST, WEST, & possibly other States
- (2) workshop information & conferences, dates, etc.
- (2) key people identified in an activity to contact in case of questions
- (1) information on specific subject areas
- (1) ideas for student research projects
- (1) current updates in what's happening in the outdoors in Wisconsin, i.e., new legislation, hunting regulations, whooping crane reintroduction, newest resources, etc.

16. Would you be willing to serve on a steering committee to help guide the development of the website and information on it? (5) yes (14) no (If yes, please include your name and phone number):
- Dennis Fawver, 1760 250th Ave., Luck WI 54853, fawver1@hotmail.com
- Barb Thompson, N6648 Scotch Coulee Rd., West Salem WI, 54669, bthompson@unxhost.wsalem.k12.wi.us
- Andy Hilt, 1318 Sunnydale Circle, West Bend WI 53090, andyhilt@execpc.com
- Jay Joppa, 5269 Beech St., Laona WI 54541, jjoppa@laona.k12.wi.us
- Robert Welch, Waupaca Field Station, E110 Emmons Creek Rd., Waupaca WI 54981, welchr@execpc.com

17. Are there other questions we should be asking in developing this school forest website?
- I believe the DNR should have a great deal to do with this. Statutes said they should be involved in managing the school forests, so why not the website?

Please complete the rest of the survey on the other side
Thanks again for your time and support!
I realize teachers are extremely busy these days. I am attempting to determine if a school forest website with activities, resources, and links to other websites would be useful to you. If so, what should I include to make it most usable, and would this website help increase your use of your school forest? Please take a few minutes to fill out this questionnaire and hand it in to Gail on Friday. Thanks for your time and input!

1. What grade level do you teach? (4) K-3 (7) 4-6 (5) 7-8 (12) 9-12

2. What subject area(s) do you teach? (6) all; (6) science; (4) tech-ed, ag-ed; (1) physical ed; (1) administrator; (1) gifted & talented

3. Do you have a school forest? (18) yes (0) no

4. Within the last school year, how many times have you used your school forest with your students? (2) 1 (8) 2-5 (3) 6-10 (5) >10

5. Do you integrate environmental education into your classroom? (17) yes (0) no

6. How comfortable are you using outdoor sites in your curriculum? (0) not very comfortable (7) fairly comfortable (11) very comfortable

7. Select & rank your (3) greatest barriers to using your school forest, (1) being the greatest:

   1. 2. 3.
   11% 6% distance to the school forest
   28% 11% 11% lack of administrative support
   44% 28% 17% limited prep time
   11% 11% 6% scheduling time constraints
   17% 6% 22% funding for transportation
   6% 6% 6% safety/liability of students
   17% 6% 22% lack of developed curriculum & activities
   6% 6% 6% lack of facilities at the site
   11% 6% 6% lack of knowledge regarding outdoor teaching techniques
   11% 6% 6% lack of knowledge regarding resources at the site
   11% 6% 6% class sizes too large
   6% 6% 6% lack of equipment
   11% 6% 6% other (please specify)

8. Do you have Internet computer access in your school? (18) yes (0) no

9. Do you have Internet computer access in your classroom? (16) yes (2) no

10. How comfortable do you feel using the Internet? (3) not very comfortable (6) fairly comfortable (9) very comfortable

11. Do you utilize the Internet in preparing for your lessons? (11) yes (7) no

Please complete the rest of the survey on the other side. Thanks again for your time and support!
12. Do you use the Internet in teaching and involving your students as an educational tool within your curriculum?  (10) yes  (8) no

13. Would you use a school forest website?  (16) yes  (2) no

14. What type of information would be most useful to you on a school forest website? Select and rank your top (3), (1) being the most useful:

<table>
<thead>
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<th>1</th>
<th>2</th>
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<tr>
<td>11%</td>
<td>11%</td>
<td>6%</td>
<td>links to other web sites &amp; resources</td>
</tr>
<tr>
<td>17%</td>
<td>17%</td>
<td>22%</td>
<td>interactive student activities</td>
</tr>
<tr>
<td>6%</td>
<td>6%</td>
<td>6%</td>
<td>technical assistance on trail construction, signs, etc.</td>
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<tr>
<td>-</td>
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<td>-</td>
<td>question and answer section</td>
</tr>
<tr>
<td>17%</td>
<td>28%</td>
<td>22%</td>
<td>teacher submitted activities</td>
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<td>6%</td>
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<td>-</td>
<td>sample school forest site management plans</td>
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<td>22%</td>
<td>28%</td>
<td>new information/update section</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
<td>other (please specify):</td>
</tr>
</tbody>
</table>

15. If the information in question 14 were provided on a school forest website, do you feel this would increase your use of your school forest?  (15) yes  (3) no

16. What types of activities should be included on the website? Should State standards for all subject areas (or maybe just environmental education) be included in the activity?

- (12) tie into State standards all subjects & activities
- (1) break activities up into primary, intermediate & secondary
- (1) have activities across the four seasons
- (1) activities on forest management, wildlife, tree id, habitat mgmt. & water resources
- (1) make sure activities are doable
- (1) activities which would enhance or teach certain elements of each subject area for pre-K – 12
- (1) group activities involving habitat id or habitat improvement projects

17. Would you be willing to help review this website when it goes on-line?  (11) yes  (5) no  (1) maybe If yes, please include your name and phone number:

- Gary Wirkus, 5802 Reynolds Ave., Dorchester WI 54425, gwirkus@colby.k12.wi.us
- Wade Jepsen, 601 S. Goldenrod Dr., Appleton WI 54915
- Scott Liddicoat, 1431 Springdale Ln., Green Bay WI 54304, sdicoat56@aol.com
- Mark Strozinsky, R.V.H.S., 660 Varsity Blvd., Spring Green WI 53588, mstrozinsky@rvschools.org
- Mike Niller, R.V.H.S., 660 Varsity Blvd., Spring Green WI 53588, mmiller@rvhs.org
- Dan Hegewald, 5602 S. Timber, Mosinee WI, DNRege@dwayew.net
- Cheryl Flyte, W13602 Cottonville Ave., flyte@westfield.k12.wi.us
- Lynn Hudock, 2181 Lucerne Ct., green Bay, WI 54311, lhudock@netnet.net
- Lynne Beck, N8311 Co. N, Neshkoro WI 54960, beckl@westfield.k12.wi.us
- Al Szepi, Norwalk-Ontario-Wilton School District, Box 130, Ontario WI 54651
- Bill Cutsforth, 2394 23 ½ Ave., Rice Lake WI 54898, bscutsy@chirhardun.net
- Virgil Berndt, 338 N. Franklin St., Stetsonville WI 54480, berndt@tds.net

Please complete the rest of the survey on the other side

Thanks again for your time and support!
Appendix L

WEEB Board Letter
September 13, 2001

Joe Panci
Trees for Tomorrow
PO Box 609
Eagle River WI 54521

Wisconsin Environmental Education Board

Your request, to use material originally created by Beth Mittermeir for the “Wisconsin Forest Forever” curriculum within the Trees for Tomorrow website is approved. If possible, please credit the Wisconsin Environmental Education Board

Sincerely,

Pat Marinac
Grant Committee Chair
Appendix M

www.schoolforest.com Homepage
Looking for stimulating, hands-on, outdoor forest-related activities and resources to help you teach your students? Then this website is for you!

Turn your kids on to the outdoors. Rekindle their zest for learning. Increase their awareness, knowledge, understanding and commitment to the land that sustains us. You don't have to be an expert on the outdoors; these activities will guide you along the way - they are easy and fun - and you'll be excited to learn right along with your students.

**GOAL**

Schoolforest.com has been designed to give educators the resources needed to actively use their school forests as outdoor classrooms. The activities will also work well at most outdoor school sites.

**WHAT'S IN IT FOR ME?**

There are over 400 registered school or community forests in Wisconsin and numerous outdoor school sites. This website will help you utilize these special places and bring your students enriching learning experiences by:

- Allowing you to effectively use your planning time by selecting activities you can plug directly into your curriculum
- Justifying your use of these activities by correlating each of the activities to Wisconsin State Environmental Education Standards
- Providing links to other activities and curriculum resources
- Allowing you to feel more comfortable in the outdoors by tapping into proven, time-tested activities
- Providing opportunities to share your own successful activities with others by filling out our school forest activity submittal form
- Providing opportunities to submit digital photos of your students in action at your school forest or outdoor school site by filling out the school forest photo gallery submittal form
- Providing on-line activities for students
If you don't have a school forest, or if your forest has no management plan, log on to Wisconsin Forest Resources Education Alliance’s (WFREA) website, www.wfrea.org. This website enables you to download their manual: How to Grow a School Forest. The manual lays the groundwork for your school forest, and this website provides you with the activities and ideas to use with your students while at the forest.

**USING THIS WEBSITE**

- The Activities link accesses you to all the School Forest Activities.
- The School Forest Hikes and Trail Activities include simple forest awareness hikes - adaptable to any grade level and guaranteed to capture your student's interest while allowing you to ease into utilizing your school forest.
- The Elementary, Middle and High School Activities represent a cross section of interdisciplinary lessons - with matrices showing which Wisconsin Environmental Education State Standards are directly addressed with each activity. Some activities must be accessed using Adobe Acrobat Reader, which can be downloaded for free from www.adobe.com/products/acrobat/readstep.html.
- Student Interactive Activities provide activities your students can do in the classroom - on line.
- The Links section lists a wealth of websites. Just click and go.
- Leave messages with us via our Contact link.
- View collections of school forest pictures via our Gallery link.

**FEEDBACK NEEDED**

This website was established as a master’s degree project. Could you please fill out the following school forest survey to help me find out if this website is helping you better utilize your school forest.

Based out of Trees For Tomorrow Natural Resources Education Center in Eagle River, Wisconsin, this website was made possible by a grant from the Wisconsin Legislature and Wisconsin Department of Commerce.

With your input, this website can grow into a community of people actively utilizing their school forests and outdoor school sites.

Joe Panci
Associate Director of Education
Trees For Tomorrow Natural Resources Education Center
Appendix N

www.schoolforest.com Activities Link Page
School Forest Activities

School Forest Hikes and Trail Activities
Elementary Activities
Middle School Activities
High School Activities
Student Interactive Activities

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http://www.schoolforest.com/activities.shtml 1/12/2003
School Forest Hikes and Trail Activities

School Forest Hikes
Shape Hike
Touch Hike
Beautiful - Ugly Hike
Numbers and Sounds Hike
Size, Weight, and Strength Hike
Smell Hike
Color Hike
Alphabet Hike
Most Unusual Hike
Nature Pictures Hike

Trail Activities
Plot Study
Follow the Leader
Theme Exploration Hike
No Touch Scavenger Hunt
Camouflage
Quiet Times
Sound Mapping
Drawing with Natural Materials

David W. Stokes Trail Activities
Animal Homes Relay Race
Barefoot Walking
Solo Walk (traditional)
Observation Cards
Bag-A-Leaf
HOMG - Human Object Match Game
Soil Habitat Walk/Survey
Remember When: Closing Activity

Your school forest can be a great place to lead some simple yet interesting hikes. Hikes require little preparation or equipment, can be easily integrated into any curriculum and adapted for any grade level. Why not try different hikes for different seasons, or do the same hike during different seasons to sharpen your students' observational skills?

Don Tincher, a middle school teacher from Berlin, Wisconsin, who has used these activities, says, "I enjoy having my students do these activities because they include ideas from several subject areas. In education, we tend to see ourselves as 'science teachers,' 'math teachers,' 'reading teachers,' etc., when in fact we are all teachers of many academic areas over the course of a school year. I believe these activities do an excellent job of infusing several disciplines into one plan."

Taking a closer look at these often-overlooked places can open your students' eyes to the wonders of their own world. Often in nature we are able to find things that are examples of shapes, ideas, feelings, sizes, colors and smells we experience in our daily lives. Here are several suggestions for school forest hikes that encourage students to take a closer look at familiar things.

Time
These hikes may take anywhere from 15 minutes to an hour or more depending on available time.

Materials
Although these hikes may be conducted without any special equipment, you may want to take some of the following items along to enhance the experience.

- magnifying glasses
- binoculars
- field identification guides
- pencils
- paper or index cards for writing or drawing
- crayons or watercolors
- clipboards
The School Forest Hikes are adapted from "Science and Children," a publication of the National Teachers Association. The Trail Activities are adapted from a collection of ideas from the Trees For Tomorrow Education Staff.

The David W. Stokes Trail Activities are a sampling from David's book, Reaching For Connections.

Reprinted with permission from Reaching For Connections by David W. Stokes, www.dwstokes.com
School Forest Hikes

Color Hike

E. E. standards addressed:
A.4.1, A.4.2, A.4.3, A.4.4
A.8.4, A.8.5

Before hiking, brainstorm a list of colors with your students that you might discover in your school forest, or use the list below.

Record objects with the following colors:
- gold
- red
- blue
- brown
- orange
- purple
- black
- white
- tan
- yellow
- gray
- green
- Can you find other colors?
- List some objects made up of more than one color.
- Do these colors change through the seasons? Why or why not?
- Are some colors more common than others? Which ones? Why or why not?
- Is there any significance to these patterns?
Trail Activities

Theme Exploration Hike

E. E. standards addressed:
A.4.1, A.4.2, A.4.3, A.4.4
A.8.4, A.8.5
B.4.8
B.8.5

Focus each hike or portion of a hike on a different theme such as fungi, water, wildlife, soils, human impacts on the ecosystem, mosses, ferns, scat, etc. and let the students lead from place to place. This encourages students to observe and look for things in the natural world.

Before hiking, have students create a list of questions they would like to investigate for each theme chosen for their hike.

Have students record any new questions which come up during the hike, then research these questions later.
David W. Stokes Trail Activities

Bag-A-Leaf

E. E. standards addressed:
   A.4.1, A.4.2, A.4.3, A.4.4
   A.8.4, A.8.5
   B.4.1, B.4.7

Grade/age level: elementary, middle and high school
# of people: any number up to 30
Energy level: passive/quiet

Procedure
Just before going for a walk gather your group in a circle. Introduce the idea that plants need water and that green plants give us water. In jest, express your disbelief that green plants give us water. Propose to the group that they work in pairs, alone, or demonstrate one example for the entire group. Tell them to take a Zip-loc plastic bag and find a green leaf they can cover with the bag. Hint, the leaf must remain attached to the plant. Zip the bag closed as tight as it can get. Then tell the group to remind you to check the condition of the bag when you return from your walk. While you are walking ask the group if they can guess what might be happening in the bag. When you return to the bag, it will probably be filled with moisture droplets. Note: This activity will be most successful on sunny days.

Conclusion
Green plants give off water as a by-product of photosynthesis. A mature sugar maple tree, in the heat of summer is estimated to release 200 gallons of water per day.
Appendix P

www.schoolforest.com Elementary, Middle and High School Activity Pages
Elementary Activities

View which WI Academic E.E. Standards these activities address by clicking links below:

A: Questioning and Analysis

B: Knowledge of Environmental Processes and Systems

C: Environmental Issue Investigation Skills

D: Decision and Action Skills

E: Personal and Civic Responsibility

Hark Who Grows There?
Download

Overview: In this activity students will play a modified hide-and-seek game to discover differences between various types of forests and densities of trees. These differences will serve to lead the students to an understanding of how forests are managed for a variety of purposes - from wildlife habitat and cover, to pulp and saw log production, to recreation for humans.

Tree Spree
Download

Overview: Using a series of brief activities, this unit allows students to focus on trees by discussing their unique characteristics, use a dichotomous key to identify key native Wisconsin tree species, and assess what they have learned through a tree identification relay race. A wrap-up discussion will help students realize what important products come from Wisconsin forests, and encourage them to express their ideas for conservation of forest resources.

Wisconsin's Millennium Tree:
Text

Overview: In this activity, students will explore the habitats of animals and plants that make up a forest community. After exploring the members of their own community, they will discover ways the citizens of the forest community are interdependent.

Where's My Tree
Download

Overview: Students use common measuring tools to find trees large enough to supply them with wood and paper for one year.
Middle School Activities

View which WI Academic E.E. Standards these activities address by clicking links below:

A: Questioning and Analysis
B: Knowledge of Environmental Processes and Systems
C: Environmental Issue Investigation Skills
D: Decision and Action Skills
E: Personal and Civic Responsibility

Hark Who Grows There?
Overview: In this activity students will play a modified hide-and-seek game to discover differences between various types of forests and densities of trees. These differences will serve to lead the students to an understanding of how forests are managed for a variety of purposes - from wildlife habitat and cover, to pulp and saw log production, to recreation for humans.

Tree Identification
Overview: Students learn the importance of trees, study the amazing variety of characteristics used to identify them and practice using a dichotomous key to identify Northwoods trees.

Forest Measurements: How & Why
Overview: After a series of warm-up activities designed to connect you to the forest, students will “slip into the shoes” of a forester while learning the importance of a forest inventory within the planning process. Students will identify a variety of forest landowner goals, be introduced to single tree or plot sampling inventory techniques and relevant terms, as well as use forest measurement tools to estimate timber volumes. Finally, students will make management recommendations based upon their tree or plot inventories, considering economic, social and ecological values.

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High School Activities

View which WI Academic E.E. Standards these activities address by clicking links below:

A: Questioning and Analysis

B: Knowledge of Environmental Processes and Systems

C: Environmental Issue Investigation Skills

D: Decision and Action Skills

E: Personal and Civic Responsibility

Tree Identification: Download

Overview: Students learn the importance of trees, study the amazing variety of characteristics used to identify them and practice using a dichotomous key to identify Northwoods trees.

Forest Measurements: How & Why Download

Overview: After a series of warm-up activities designed to connect you to the forest, students will “slip into the shoes” of a forester while learning the importance of a forest inventory within the planning process. Students will identify a variety of forest landowner goals, be introduced to single tree or plot sampling inventory techniques and relevant terms, as well as use forest measurement tools to estimate timber volumes. Finally, students will make management recommendations based upon their tree or plot inventories, considering economic, social and ecological values.
Appendix Q

www.schoolforest.com Sample In-depth Activities
(Text File and pdf File Formats)
Wisconsin’s Millennium Tree:

Activity #8: Forest Community

Wisconsin Academic Standards Addressed

Environmental Education Standards:

- Knowledge of Environmental Processes and Systems: B.4.4 and B.4.5.

Grade Elementary

Key Concepts/Content

- To identify five members of a forest community and show how they are dependent on each other.
- To define and give examples of the terms interdependence, niche, and habitat.
- To identify interrelationships between forest citizens.
- To describe the implications of removing citizens from a forest community.

Teacher Background

All life in the forest is dependent on other organisms for survival. Trees depend on animals for seed dispersal, birds depend on trees to supply insect lunches, and deer may depend on low shrubs for cover and food. There is an endless supply of connections that can be made about the forest community. Each one is an example of the interdependence of organisms in an ecosystem.

In this activity, students will explore the habitats of animals and plants that make up a forest community. After exploring the members of their own community, they will discover ways the citizens of the forest community are interdependent.

Getting Ready

Establish a learning station by finding an area with diverse vegetation including ground plants and trees.

Word Cards—Take 5 x 8 note cards (or larger) to display vocabulary words and their definitions. One side may be filled with pictures showing examples of the vocabulary word.

Vocabulary Words:

- Interdependence

http://www.schoolforest.com/text.php
Niche

Consumer

Producer

Decomposer

Safety Issues

• When taking students outside, be sure to follow all district guidelines.
• Caution needs to be taken when handling insects and plants.
• Teachers should conduct a pre-survey of the area to ensure plants such as poison ivy, poison sumac, and nettles will not pose a problem.

Materials Needed

Tools for observing the forest community members, such as:

• Activity Sheet
• Hand microscopes
• Clipboards
• Binoculars
• Field guides to plants, insects, birds, etc., and bug-viewing glasses
• Word cards (prepared earlier)
• Board or something to write on outside

Procedures

1. Ask the students, sitting in a circle, to define the word "community." On a board or newsprint, list occupations in your community. Add a few if necessary for diversity. Ask the students how the different citizens are connected or dependent on each other.
2. Draw lines between the members showing the connections. Now start to erase one occupation at a time. Discuss what happens to the community.
3. Show the word cards "niche" and "interdependence." Explain that members of a community have their niche in society and are interdependent on each other.
4. Point out to the students that there are many kinds of communities other than human communities.
5. Explain that today they are going to examine a forest community and investigate the "citizens" of the forest.
6. Divide the group into pairs and explain that their first task will be to become familiar with the citizens that make up the forest community. Give each group a clipboard, worksheet, and any equipment they might need. Show the word cards for producer, consumer, and decomposer. Define the words together.
7. Have the students explore the designated area for signs of forest citizens. They should be able to list them on the data sheet.
8. Ask each pair of students to pick one organism and complete a data sheet before they return to one large group for presentation of that organism. Try to avoid duplication.
9. As each student presents his/her organism, record it on the board or newsprint. When everyone is finished, add a few more organisms to the forest sheet that the students feel are important. Just like in the discussion of their own community, what would happen if an organism was eliminated from the forest community?

Evidence of Student Understanding

Emphasize interdependence and promote discussion using these question topics.

http://www.schoolforest.com/text.php

1/12/2003
• Are there any members of a community that are not dependent on other forest citizens for survival?
• Could any forest community survive without the support of surrounding communities?
• Can people survive without other living things?
• What things are we dependent on for survival?
• Could a forest community survive without humans?
• Could humans survive without the forest?

Reprinted with permission from the Wisconsin Millennium Tree Steering Team Members, Wisconsin DNR, Wisconsin DPI, and USDA Forest Service.

References/Resources

• Wisconsin’s Millennium Tree Curriculum—Sustainable Forestry Activities for Elementary School Students. 1999. www.dnr.state.wi.us/org/caer/ce/eek/teacher/milltree.htm


• WI National Forests: www.fs.fed.us/r9/cnnf

• WI State Forests: www.dnr.state.wi.us/org/land/forestry/stateforests

• WI County Forests: www.wisconsincountyforests.com

• WI Private Forests: Wisconsin Woodland Owner’s Association www.geocities.com/rainforest/1704/

• Environmental Education for Kids—EEK! WI DNR. www.dnr.state.wi.us/org/caer/ce/eek

• Ranger Rick’s Naturescope: Trees are terrific. The Forest Community. Pages 34-35, National Wildlife Federation, 1400 16th St. NW, Washington, DC 20036-2266

Overview: Trees touch our lives in many ways. Students learn the importance of trees, study the amazing variety of characteristics used to identify them and practice using a dichotomous key to identify Northwoods trees.

Outline:

I. Preparation

II. Warm-Up

Brainstorm

III. Main Activity

A. Brainstorm

B. Dichotomous Key

C. Tree Samples

D. Field Course

IV. Assessment

A. Discuss Answers

B. Share Opinions

V. Vocabulary & Web Sites

I. Preparation:

Review the lesson procedure and any background information as needed. Gather enough samples from deciduous and coniferous trees so each pair of students will have one of each to practice on in the classroom. Gather any samples of bark, branching patterns, needle configurations or other visual aids needed. Organize clipboards and answer sheets for each group of students. Decide which trees will be identified by students outdoors and make sure all of them are visibly numbered. Approximate preparation time is 30 minutes.

II. Warm-Up:

In groups, have students brainstorm a list of uses and benefits which trees provide, i.e., oxygen, lumber, homes for animals, toilet paper, etc. Have groups share their answers. Add any uses or benefits missed that you feel are important. Ask if people could survive without trees and also if trees could survive without people. Have students justify their answers. Ask if it is important to identify trees and why or why not. Ask students if they are aware of any jobs which depend upon knowing the difference between tree species and why this is important. For example, wildlife biologists know certain animal species prefer certain trees and habitats. In managing for these animals, biologists work with foresters to create more of, preserve or maintain these types of trees and habitats.

III. Main Activity:

In the same groups, have students brainstorm characteristics that can be used to identify trees. Record and any background information as needed. Gather enough samples from deciduous and coniferous trees so each pair of students will have one of each to practice on in the classroom. Gather any samples of bark, branching patterns, needle configurations or other visual aids needed. Organize clipboards and answer sheets for each group of students. Decide which trees will be identified by students outdoors and make sure all of them are visibly numbered. Approximate preparation time is 30 minutes.

II. Warm-Up:

In groups, have students brainstorm a list of uses and benefits which trees provide, i.e., oxygen, lumber, homes for animals, toilet paper, etc. Have groups share their answers. Add any uses or benefits missed that you feel are important. Ask if people could survive without trees and also if trees could survive without people. Have students justify their answers. Ask if it is important to identify trees and why or why not. Ask students if they are aware of any jobs which depend upon knowing the difference between tree species and why this is important. For example, wildlife biologists know certain animal species prefer certain trees and habitats. In managing for these animals, biologists work with foresters to create more of, preserve or maintain these types of trees and habitats.
**characteristic** - something which stands out and is unique to that species.

Explain to students that they will be using a special tool called a dichotomous key to identify trees. This key uses many of the same tree characteristics the students have just brainstormed. Ask students what the prefix "di" means (two). How many choices do they think the dichotomous key will give them (two)?

To show students how the key works, have them work with a partner. Distribute a "Conifer or Softwood Key" and a "Deciduous or Hardwood Key" to each pair of students. Make sure the hardwood key is appropriate for the season.

Using an overhead transparency of the conifer or softwood key (this key is generally easier to start with), demonstrate how to use the key. Emphasize that for each number in the key, they have two choices. They must choose the description which most accurately fits their tree. As they move to the end of the line describing the appropriate choice, there will either be an underlined tree name (indicating they have identified the species), or a number (which tells them the next set of characteristics to go to). Review this procedure with the deciduous key as well to ensure understanding.

Review new vocabulary words or terms used in the keys to ensure everyone understands their meaning.
them that they will apply these skills to identify designated trees outdoors.

Depending upon the outdoor site used, tree locations, numbers of students and numbers of adults, the entire group can stay together or be split into teams. If the entire group stays together, everyone can move from tree to tree, identifying each tree, working individually or in small teams.

If the group will be split into teams, form the teams and review tree locations on a map, or visually point out the numbered trees the students will need to identify in the designated area.

Teams can consist of partners from the classroom activity or a group of students with a teacher to help facilitate and focus each team. Hand out clipboards and answer sheets and explain that each tree identified will also need to have a key characteristic listed as well.

Tell students how much time they have to identify the trees. Stress quality over quantity - it is more important to take the time to understand how to correctly key out the trees rather than get to every tree and not understand what they are doing.

Stress to students the importance of looking at more than just a tree's needles or leaves. They should look at the tree's bark, branching pattern, buds, roots, etc. They should also stand back and look at the tree's overall shape and size and where the tree is growing. Have them draw the tree's silhouette.

Tell students when and where to meet to discuss their answers. If they have no further questions, begin the outdoor segment. Circulate among teams, helping as needed.

Repeat this activity in the winter.

IV. Assessment:
After the allotted time for identification is over, gather the students together to review the trees. Ask the students to tell you the answers they recorded. Have them mark the correct answers next to the corresponding number.

Depending upon how much time is available, go back to each tree and review its key characteristics and major uses. If time is running short, review only the trees students had trouble identifying correctly.

This is also a time when you can tell them little tricks to remember different trees. For example, a white pine has five needles and "white" has five letters.

Revisit the question asked earlier - Is it important to identify trees and why or why not? Also, ask if anyone's perspectives about trees have changed by participating in this activity, and if so, how.

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V. VOCABULARY:

**Alternate branching** - A branching pattern where branches are arranged singly at intervals along the main branch (also refers to leaf and bud arrangement).

**Compound leaf** - A leaf blade that is divided into separate parts known as leaflets.

**Conifer** - A tree which bears its seeds in cones and has needle-like leaves.

**Deciduous** - A tree that annually sheds all of its leaves; most broadleaf trees are deciduous. A few conifers, such as the tamarack, are also deciduous.

**Dichotomous key** - A tool to help identify an object such as a tree using the process of elimination. The key consists of pairs of choices of differing characteristics in sequence so that ultimately each object is distinguished from all the others.

**Evergreen** - A tree that does not lose all of its leaves at one time; generally a conifer.

**Hardwood** - A term commonly given to a deciduous or broadleaf tree or the wood from such trees.

**Leaf scar** - The scar left on a twig when the leaf falls off.

**Needle bundle** - When the needles on a tree are clumped in bundles instead of singly attached to the twig. This is found in pine trees.

**Needle stem** - The stem that attaches the needle to the twig of the tree; found on hemlock needles.

**Opposite branching** - A branching pattern where branches occur in opposing pairs along the main branch (also refers to leaf and bud arrangement).

**Palmate leaf** - A leaf where the principle veins radiate from a central point.

**Scaly needles** - Needles that look like overlapping scales; found on cedar trees.

**Simple leaf** - A single leaf blade that is attached to a woody twig by its stem.

**Softwood** - A term commonly given to conifer trees; interestingly, the wood of many conifers is harder than that of some so-called hardwood trees.

**Spur branch** - A branch on which the leaves or needles are densely clustered; also the structure where the needles are found on a tamarack.

**Terminal buds** - Buds that are located at the end of the branch.

**Whorled** - A pattern arrangement of three or more leaves, branches or buds radiating circularly from a single spot.
Web Sites:

• Go to the forestry links section of the school forest web site for active hot links.

1. www.dnr.state.wi.us/org/and/forestry/treeid/index.htm

2. http://forestry.msu.edu/uptreeid
   Tree Identification Key for Michigan's Upper Peninsula, created by Bill Cook, Extension Forester@Michigan State University.

3. www.uwrf.edu/ag-education/forestry
   Wisconsin Ag-Ed Teachers Forestry Manual. Go to chapter 4 on Forest Ecology for tree identification information. This manual includes a wealth of forestry information.

4. www.hardwoodhandbox.org
   This website lists common uses of hardwood tree species.

5. www.enature.com
   Select “Trees” under the online field guides for tree information

6. www.fpl.fs.fed.us/
   Forest Products Laboratory website in Madison, WI. This lab is part of the U.S. Forest Service. The website offers more technical information on trees.

7. www.forestinfo.org/
   Temperate Forest Foundation website. The Cool Facts section includes a huge list of tree products, as well as interesting facts and statistics on wood and paper use.

8. www.forestworld.com/wow/wowonline_home.html
   Forest World Woods of the World website. You must register (free) to access the site, but about 910 tree species and products are referenced. Use the “Search By” link to access tree species information.

9. www.wisc.edu/herbarium
   Wisconsin's vascular plants website.

10. www.wisc.edu/botit/links.html
    The Department of Botany @ UW-Madison's website. Digital images of trees and plants as well as information on vegetation/forest types of WI.

11. http://plants.usda.gov/
    U.S. Department of Agriculture, Natural Resources Conservation Service, National Plant Database

    UW-Madison Arboretum website. Wealth of information on Wisconsin woodland plants database.
HARDWOOD SUMMER KEY

1. opposite branching (2)
1. alternate branching (5)

2. simple leaves (3)
2. compound leaves (4)

3. palmate leaf with smooth edges; fruits in fall SUGAR MAPLE
3. palmate leaf with toothed edges; fruits in spring RED MAPLE

4. 5 to 9 leaflets with stems; grows on drier sites; soft, diamond-shaped bark pattern WHITE ASH
4. 7 to 13 leaflets with no stems; grows on wetter sites; soft, corky bark with no distinct pattern BLACK ASH

5. leaves with 7 to 9 pointed lobes; acorns often present on tree or on the ground NORTHERN RED OAK
5. leaves are not lobed (6)

6. bark is papery and peels off the trunk easily (birches) (7)
6. bark is not like above (8)

7. chalky, white bark PAPER BIRCH
7. yellow-bronze bark; inner bark smells of wintergreen YELLOW BIRCH

8. leaf stems are flat (aspens) (9)
8. leaf stems are round (10)

9. many small, fine teeth on leaf edge; smooth, light greenish-gray bark QUAKING ASPEN
9. few coarse, large teeth on leaf edge; bark is similar to quaking aspen but often has a greenish-brown tinge BIGTOOTH ASPEN

10. simple leaves, oval shaped with pointed tips, double-toothed along the margin (11)
10. leaves not like the above (12)

11. leaf bases are uneven, coarsely toothed; leaves smooth underneath and either sandpaper-like or smooth above AMERICAN ELM
11. leaf bases even and slightly heart-shaped, leaves are smooth; twigs are finely branched; a small tree which grows in the understory IRONWOOD

12. tree often grows in clumps; leaves are large and heart-shaped with asymmetric bases; fruits look like hard peas; inner bark can be reddish AMERICAN BASSWOOD
12. tree is usually small with many light flecks on the twigs; leaf is pointed, often with rusty fuzz underneath along the mid-vein BLACK CHERRY
12. bark looks like aspen (smooth, greenish-brown); leaf has a pointed tip; buds are very sticky; often grows along river banks BALSAM POPLAR

SPECIES INCLUDED IN THIS KEY:

Sugar Maple (Acer saccharum)  
Red Maple (Acer rubrum)  
White Ash (Fraxinus americana)  
Black Ash (Fraxinus nigra)  
Bigtooth Aspen (Populus grandidentata)  
Balsam Poplar (Populus balsamifera)  
Quaking Aspen (Populus tremuloides)  

Paper Birch (Betula papyrifera)  
Yellow Birch (Betula alleghaniensis)  
Northern Red Oak (Quercus rubra)  
American Elm (Ulmus americana)  
Ironwood (Ostrya virginiana)  
American Basswood (Tilia americana)  
Black Cherry (Prunus serotina)  

Revised for use at Trees For Tomorrow Natural Resources Education Center, Eagle River, WI 11/17/99
# Deciduous (Hardwood) Summer Key

## Identification Characteristics

<table>
<thead>
<tr>
<th>Simple Leaf</th>
<th>Compound Leaf</th>
<th>Toothed Leaf Edge</th>
<th>Uneven Leaf Base</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palmate Leaf</td>
<td>Lobed Leaf</td>
<td>Round Leaf Stem</td>
<td>Flat Leaf Stem</td>
</tr>
</tbody>
</table>

### Alternate Branching

### Opposite Branching

---

**Inches**

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
HARDWOOD WINTER KEY

1. opposite branching (2)
2. slender branching and twigs; buds not fuzzy (3)
3. pointed, brown buds; fruits or fruit stems often present SUGAR MAPLE
4. soft, finely furrowed bark with diamond-shaped pattern; tree usually grows on dry sites; leaf scar is notched at top (horseshoe shaped); brown buds WHITE ASH
5. bark is papery and peels off the trunk easily (birches) (6)
6. chalky white bark; small dark buds PAPER BIRCH
7. bark is smooth, light greenish-gray or greenish-brown in color (aspens) (8)
8. bark is smooth, light greenish-gray; buds are 1/4 inch long, pointed, shiny and brown, laying flat against twigs QUAKING ASPEN
9. buds over 1/2 inch long, very sticky with a fragrant smell BALSAM POPLAR
10. terminal buds usually in a cluster; acorns present on ground or on branches; bark is dark and very firm NORTHERN RED OAK
11. tree trunks in groups or stump sprouts present; fruits have a narrow leaf with hard pea-like seeds; buds are large, round and red AMERICAN BASSWOOD
12. terminal buds are single (11)
13. bark is dark and smooth with light colored dots (young trees) or looks like burnt potato chips (older trees); twigs taste and smell like bitter almond; buds are brown and pointy BLACK CHERRY

SPECIES INCLUDED IN THIS KEY:
Sugar Maple (Acer saccharum)  Quaking Aspen (Populus tremuloides)
Red Maple (Acer rubrum)  Balsam Poplar (Populus balsamifera)
White Ash (Fraxinus americana)  Bigtooth Aspen (Populus grandidentata)
Black Ash (Fraxinus nigra)  Northern Red Oak (Quercus rubra)
Paper Birch (Betula papyrifera)  American Basswood (Tilia americana)
Yellow Birch (Betula alleghaniensis)  Black Cherry (Prunus serotina)

Developed for use at Trees For Tomorrow Natural Resources Education Center  Revised 11/17/99
# Deciduous (Hardwood) Winter Key Identification Characteristics

<table>
<thead>
<tr>
<th>Trait</th>
<th>Image Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternate Branching</td>
<td><img src="image1" alt="Alternate Branching" /></td>
</tr>
<tr>
<td>Opposite Branching</td>
<td><img src="image2" alt="Opposite Branching" /></td>
</tr>
<tr>
<td>Leaf and Bud Scar</td>
<td><img src="image3" alt="Leaf and Bud Scar" /></td>
</tr>
<tr>
<td>Stout Twigs Big Leaf Scars</td>
<td><img src="image4" alt="Stout Twigs Big Leaf Scars" /></td>
</tr>
<tr>
<td>Sharp Pointed Buds</td>
<td><img src="image5" alt="Sharp Pointed Buds" /></td>
</tr>
<tr>
<td>Rounded Buds</td>
<td><img src="image6" alt="Rounded Buds" /></td>
</tr>
<tr>
<td>Sticky Sharp Buds</td>
<td><img src="image7" alt="Sticky Sharp Buds" /></td>
</tr>
<tr>
<td>Terminal Clustered Buds</td>
<td><img src="image8" alt="Terminal Clustered Buds" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Inches</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
</table>

---

123
CONIFER OR SOFTWOOD KEY

1. leaves are scales, foliage has a flattened, fan-like orientation; stringy reddish-brown or gray bark; cones less than 1/2 inch long **NORTHERN WHITE CEDAR**

1. leaves are distinct needles, either flat, squarish or rounded (2)

2. two or more needles in a bundle (6)

2. single needles attached to twigs (3)

3. needles are flat, they do not roll between the fingers (4)

3. needles are squarish, they roll easily between the fingers (5)

4. needle is under 1/2 inch long and has a short stem, "hemlock has a stemlock"; thin papery cones less than 1 inch long are often present; tip of tree gracefully bends over **EASTERN HEMLOCK**

4. needle is usually over 1/2 inch long and has no stem, it is attached directly to the twig; cones often not present; tip of tree sharply pointed **BALSAM FIR**

5. needles are 1/3 to 3/4 inch long; light brown papery cones about the size of your thumb; tree usually grows on a dry site **WHITE SPRUCE**

5. needles are shorter than white spruce, 1/4 to 1/3 inch long; small brittle cones about 1 inch long; tree usually grows on a wet site **BLACK SPRUCE**

6. many more than five very soft needles appear to be in a bundle, the "bundle" grows from a small spur branch on the twig; loses its needles each fall; spur branches give bare winter twigs a "warty" appearance; tree usually grows on a wet site **TAMARACK**

6. two to five needles per bundle (7)

7. five needles per bundle, foliage is feathery in appearance; bark is dark; cones are 4 to 6 inches long, gently curved and pitchy **EASTERN WHITE PINE**

7. two needles per bundle (8)

8. needles are 4 to 7 inches long, appearing stiff, bristly and bushy on branches; bark consists of pinkish-gray scales; cones, if present, about 2 inches long, woody and oval **RED PINE**

8. needles are 1 to 1 1/2 inches long; tree has a scrubby appearance; cones usually present and point outward toward the end of the branch **JACK PINE**

SPECIES INCLUDED IN THIS KEY:

Northern White Cedar (Thuja occidentalis)  
Black Spruce (Picea mariana)  
White Spruce (Picea glauca)  
Eastern Hemlock (Tsuga canadensis)  
Balsam Fir (Abies balsamea)  
Tamarack (Larix laricina)  
Eastern White Pine (Pinus strobus)  
Red Pine (Pinus resinosa)  
Jack Pine (Pinus banksiana)

Developed for use at Trees For Tomorrow Natural Resources Education Center, Eagle River, WI  
Revised 11/17/99
Identification Characteristics

Leaves are scales

Needles singly attached without a stem

Square needles

Needles in a bundle

Needles singly attached with a stem

Flat needles

Inches
TERMINAL BUD
Most twigs have a terminal bud or a cluster of buds. From this terminal bud will come the new growth that will lengthen the stem.

LEAF SCAR
Where the stem of a leaf was attached last year.

BUD SCALE SCAR
Where the little bud scales protecting last year's terminal bud were located.

LENTICELS
These little dots are actually openings which allow the twig to take in carbon dioxide and release oxygen.
1. **Red Pine**

**Look for:** 2 long needles in a bundle, pinkish-gray bark  
**Uses:** Lumber, utility poles, cabin logs, pulpwood

2. **White Spruce**

**Look for:** Sharp, square needles, papery cones  
**Uses:** Windbreaks, musical instruments, songbird nests

3. **Paper Birch**

**Look for:** White papery bark, dark twigs  
**Uses:** Toothpicks, popsicle sticks, bark for canoes

4. **Quaking Aspen**

**Look for:** Sharp, shiny buds flat on twig, whitish-gray bark  
**Uses:** Pulpwood, wildlife habitat, pallets and crates

5. **Balsam Poplar**

**Look for:** Long, sticky, fragrant buds  
**Uses:** Cough medicine, boxes, crates, erosion control

6. **American Basswood**

**Look for:** Multiple trunks, big red buds  
**Uses:** Carving, merry-go-round horses, honey bees

7. **Eastern White Pine**

**Look for:** 5 soft needles in a bundle, 4-6 inch long cones  
**Uses:** Matches, lumber, eagle nests, window frames

8. **Sugar Maple**

**Look for:** Brown, pointed buds, slender branching  
**Uses:** Maple syrup, bowling pins, hardwood floors

9. **Yellow Birch**

**Look for:** Yellow papery bark, inner bark has wintergreen odor  
**Uses:** Furniture, cabinets, flooring, winter songbird food

10. **Black Ash**

**Look for:** Thick twigs, soft corky bark, fuzzy dark buds  
**Uses:** Basket making, cabinets, erosion control

11. **Eastern Hemlock**

**Look for:** Short, flat needles with a stem, small cones  
**Uses:** Winter deer habitat, railroad ties, tannin

12. **Red Maple**

**Look for:** Red, round buds, slender branching  
**Uses:** Furniture, gun stocks, firewood, fall colors

13. **Northern Red Oak**

**Look for:** Clustered terminal buds, acorns often present  
**Uses:** Wildlife food (acorns), furniture, firewood, trim

14. **Balsam Fir**

**Look for:** Flat needles without a stem, resin blisters on trunk  
**Uses:** Christmas trees and wreaths, visual barriers

15. **Northern White Cedar**

**Look for:** Scale-like leaves, stringy bark, small cones  
**Uses:** Utility poles, fence posts, shingles, deer food
<table>
<thead>
<tr>
<th></th>
<th>Tree Identification Summer Answer Key</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td><strong>Red Pine</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Look for:</strong> 2 long needles in a bundle, pinkish-gray bark</td>
</tr>
<tr>
<td></td>
<td><strong>Uses:</strong> Lumber, utility poles, cabin logs, pulpwood</td>
</tr>
<tr>
<td>2.</td>
<td><strong>White Spruce</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Look for:</strong> Sharp, square needles, papery cones</td>
</tr>
<tr>
<td></td>
<td><strong>Uses:</strong> Windbreaks, musical instruments, songbird nests</td>
</tr>
<tr>
<td>3.</td>
<td><strong>Paper Birch</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Look for:</strong> White papery bark</td>
</tr>
<tr>
<td></td>
<td><strong>Uses:</strong> Toothpicks, popsicle sticks, bark for canoes and baskets</td>
</tr>
<tr>
<td>4.</td>
<td><strong>Quaking Aspen</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Look for:</strong> Flat leaf stem, small teeth on leaf edge</td>
</tr>
<tr>
<td></td>
<td><strong>Uses:</strong> Pulpwood, wildlife habitat, pallets and crates</td>
</tr>
<tr>
<td>5.</td>
<td><strong>Balsam Poplar</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Look for:</strong> Round leaf stem, pointed leaf tip</td>
</tr>
<tr>
<td></td>
<td><strong>Uses:</strong> Cough medicine, boxes, crates, erosion control</td>
</tr>
<tr>
<td>6.</td>
<td><strong>American Basswood</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Look for:</strong> Multiple trunks, pea-like fruits, heart shaped leaves</td>
</tr>
<tr>
<td></td>
<td><strong>Uses:</strong> Carving, merry-go-round horses, honey bees</td>
</tr>
<tr>
<td>7.</td>
<td><strong>Eastern White Pine</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Look for:</strong> 5 soft needles in a bundle, 4-6 inch long cones</td>
</tr>
<tr>
<td></td>
<td><strong>Uses:</strong> Matches, lumber, eagle nests, window frames</td>
</tr>
<tr>
<td>8.</td>
<td><strong>Sugar Maple</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Look for:</strong> Palmate leaf, smooth edges, fruits in fall</td>
</tr>
<tr>
<td></td>
<td><strong>Uses:</strong> Maple syrup, bowling pins, hardwood floors</td>
</tr>
<tr>
<td>9.</td>
<td><strong>Yellow Birch</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Look for:</strong> Yellow papery bark, inner bark has wintergreen odor</td>
</tr>
<tr>
<td></td>
<td><strong>Uses:</strong> Furniture, cabinets, flooring, winter songbird food</td>
</tr>
<tr>
<td>10.</td>
<td><strong>Black Ash</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Look for:</strong> Soft corky bark, 7-13 leaflets, no stems</td>
</tr>
<tr>
<td></td>
<td><strong>Uses:</strong> Basket making, cabinets, erosion control</td>
</tr>
<tr>
<td>11.</td>
<td><strong>Eastern Hemlock</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Look for:</strong> Short flat needles with a stem, small cones</td>
</tr>
<tr>
<td></td>
<td><strong>Uses:</strong> Winter deer habitat, railroad ties, tannin</td>
</tr>
<tr>
<td>12.</td>
<td><strong>Red Maple</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Look for:</strong> Palmate leaf, toothed edges, fruits in spring</td>
</tr>
<tr>
<td></td>
<td><strong>Uses:</strong> Winter deer habitat, railroad ties, tannin</td>
</tr>
<tr>
<td>13.</td>
<td><strong>Northern Red Oak</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Look for:</strong> Leaf with 7-9 pointed lobes, acorns often present</td>
</tr>
<tr>
<td></td>
<td><strong>Uses:</strong> Wildlife food (acorns), furniture, firewood, trim</td>
</tr>
<tr>
<td>14.</td>
<td><strong>Balsam Fir</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Look for:</strong> Flat needles without a stem, resin blisters on trunk</td>
</tr>
<tr>
<td></td>
<td><strong>Uses:</strong> Christmas trees and wreaths, visual barriers</td>
</tr>
<tr>
<td>15.</td>
<td><strong>Northern White Cedar</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Look for:</strong> Scale-like leaves, stringy bark, small cones</td>
</tr>
<tr>
<td></td>
<td><strong>Uses:</strong> Utility poles, fence posts, shingles, deer food</td>
</tr>
</tbody>
</table>
A. QUESTIONING AND ANALYSIS

Content Standards
Students in Wisconsin will use credible research methods to investigate environmental questions, revise their personal understanding to accommodate new knowledge and perspectives, and be able to communicate this understanding to others.

By the end of Grade 8 students will:

Click on standard codes below to view entire text above

Bag-A-Leaf
Beautiful - Ugly Hike
Camouflage
Color Hike
Drawing with Natural Materials
Forest Measurements
Hark Who Grows There?
HOMG
Most Unusual Hike
Nature Pictures Hike
No Touch Scavenger Hunt
Numbers and Sounds Hike
Observation Cards
Plot Study
Shape Hike
Size, Weight, and Strength Hike
Smell Hike
Soil Habitat Walk/Survey
Sound Mapping
Theme Exploration Hike
Touch Hike
Tree Identification

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Designed by GreenComma Web Designs, LLC

http://www.schoolforest.com/eighta.php
## B. KNOWLEDGE OF ENVIRONMENTAL PROCESSES AND SYSTEMS

### Content Standards

Students in Wisconsin will demonstrate an understanding of the natural environment and the interrelationships among natural systems.

- **Directly addresses**: Alphabet Hike
- **Click on standard codes below to view entire text above**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
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<th>5</th>
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<th>11</th>
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<td>B</td>
</tr>
</tbody>
</table>

**Activities**

- Alphabet Hike
- Animal Homes Relay Race
- Bag-A-Leaf
- Barefoot Walking
- Beautiful - Ugly Hike
- Camouflage
- Color Hike
- Drawing with Natural Materials
- Hark Who Grows There
- HOMG
- Most Unusual Hike
- Nature Pictures Hike
- No Touch Scavenger Hunt
- Numbers and Sounds Hike
- Observation Cards
- Plot Study
- Remember When
- Shape Hike
- Size, Weight, and Strength Hike
- Smell Hike
- Soil Habitat Walk/Survey
- Solo Walk
- Sound Mapping
- Theme Exploration Hike
- Touch Hike
- Tree Spree
- Where's My Tree
- Wisconsin's Millennium Tree

By the end of Grade 12 students will:

D. DECISION AND ACTION SKILLS

Content Standards

Students in Wisconsin will use findings from environmental issue investigations to develop decision-making skills, and to gain experience in citizen action skills.

Click on standard codes below to view entire text above

Forest Measurements
Plot Study
Shape Hike
Touch Hike
Tree Identification
Appendix S

www.schoolforest.com Matrix Page with Sample EE Standard
A. QUESTIONING AND ANALYSIS

Content Standards

Students in Wisconsin will use credible research methods to investigate environmental questions, revise their personal understanding to accommodate new knowledge and perspectives, and be able to communicate this understanding to others.

By the end of Grade 4 students will:

A.4.4 Communicate their understanding to others in simple terms

Click on standard codes below to view entire text above

Directly addresses

A A A A
4 4 4 4
1 2 3 4

Alphabet Hike
Animal Homes Relay Race
Bag-A-Leaf
Barefoot Walking
Beautiful - Ugly Hike
Camouflage
Color Hike
Drawing with Natural Materials
Hark Who Grows There
HOMG
Most Unusual Hike
Nature Pictures Hike
No Touch Scavenger Hunt
Numbers and Sounds Hike
Observation Cards
Plot Study
Remember When
Shape Hike
Size, Weight, and Strength Hike
Smell Hike
Soil Habitat Walk/Survey
Solo Walk
Sound Mapping
Theme Exploration Hike
Touch Hike
Tree Spree
Where's My Tree
Wisconsin's Millennium Tree

http://www.schoolforest.com/foura.php

1/12/2003
Appendix T

www.schoolforest.com Student Interactive Activity
Interactive Activities

Introduction:
You, as students, are the future stewards of the forest as you become consumers, landowners, producers, and decision-makers. By doing this activity you will learn about choices that we all make to help maintain the sustain-ability of our natural forest resource.

We hope you find this activity challenging, interesting and fun! You can begin by learning the basics of sustainable forestry as you do Forest-opoly.

1. Sustainable forestry means getting as many logs out of the forest as possible without getting hurt.
   If you answer Yes, go to number 4.
   If you answer No, go to number 6.

Forest-opoly

(Reprinted with permission from the Wisconsin Department of Natural Resources, Sustaining our Forest Resources - Pub-FR-11797)
Appendix U

www.schoolforest.com School Forest Activity Submittal Form
School Forest Activity Submittal Form

Name

Address

City

State

Email

Phone

School

Please give detailed description of the activity

Grade Level of Activity  
- Elementary  
- Middle School  
- High School

Find your file  
Browse...
Appendix V

www.schoolforest.com Gallery Link Page
Choose a Gallery

Submit your photos

Trees For Tomorrow's 2001 School Forest Workshop

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Appendix W

www.schoolforest.com  School Forest Website Survey
School Forest Website Survey

1. What grade level do you teach? K-5
2. What subjects do you teach?
3. Do you have a school forest? Yes No
4. Do you have an outdoor teaching site? Yes No
5. Within the last year, how many times have you used your school forest or outdoor site? none <5 5-10 >10
6. How comfortable are you using your school forest or outdoor site? Very Fairly Comfortable Not very comfortable

<table>
<thead>
<tr>
<th>Website Content and Design</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Overall website design is interesting to look at</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Educational purpose is clear</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>3. Activities and content well written</td>
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<tr>
<td>4. Gallery section is useful and important</td>
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<td>5. Website is user-friendly</td>
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<tr>
<td>6. Links are connected to active, relevant sites</td>
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<tr>
<td>7. Website uses good, objective information/science</td>
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<tr>
<td>8. After visiting this website, do you feel you will be</td>
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<tr>
<td>better able to utilize your school forest or outdoor site?</td>
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<tr>
<td>9. After using activities and resources from this website,</td>
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<td></td>
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</tr>
<tr>
<td>do you feel you will be better able to utilize your school</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>forest or outdoor site?</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>10. I have used this website's activities and resources</td>
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<tr>
<td>and found them helpful</td>
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<tr>
<td>11. I haven't used this website's activities and resources</td>
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<tr>
<td>but plan to in the future.</td>
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</tr>
</tbody>
</table>

Most Valuable Aspects of Website:

http://www.schoolforest.com/survey.php

1/12/2003
Least Valuable Aspects of Website:

Suggestions For Additions to Website:

Optional Information

Name:

School District:

Email:

Click here to submit

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Appendix X

www.schoolforest.com School Forest Message Board
To help us find out if the use of your school forest is increasing due to this website, could you please take a moment to fill out the following School Forest Survey

## School Forest Message Board

<table>
<thead>
<tr>
<th>Name</th>
<th>Larry Mancl</th>
</tr>
</thead>
<tbody>
<tr>
<td>email</td>
<td><a href="mailto:ljmancl@coredcs.com">ljmancl@coredcs.com</a></td>
</tr>
<tr>
<td>City</td>
<td>Stevens Point</td>
</tr>
<tr>
<td>State</td>
<td>WI</td>
</tr>
</tbody>
</table>

Joe, What a great web site. It is obvious you have devoted a great deal of time, effort and energy to your masters project. I am anxious to spread the word at school about the site and hope to submit a few activities... and photos of what we do at Tri-County. Say hello to everyone at Trees for me.

---

<table>
<thead>
<tr>
<th>Name</th>
<th>Steve Gustafson</th>
</tr>
</thead>
<tbody>
<tr>
<td>email</td>
<td><a href="mailto:sgustafson@glidden.k12.wi.us">sgustafson@glidden.k12.wi.us</a></td>
</tr>
<tr>
<td>City</td>
<td>Glidden</td>
</tr>
<tr>
<td>State</td>
<td>WI</td>
</tr>
</tbody>
</table>

Joe, I don't know if this is the place, but I was going to ask you a question down at the WSST convention and you were away from your display. When I took the forest flora class from you and Harriet, we received a small fern book that I found to be the best I've seen. Somehow, it walked away from me and I can't find it in any catalog. Can you help me out? Just email me if you can. Steve PS Like the site though I haven't had time to check it all out yet.
Appendix Y

www.schoolforest.com Website Links Page
Links

Environmental Education
- Forestry
- Water
- Wildlife

Environmental Education Web Sites

Amazon Interactive Ecotourism Game
http://www.eduweb.com/ecotourism/eco1.html
excellent informational online game

BLM Environmental Education Teacher Resources
http://www.blm.gov/education/00_resources/index.html
wide variety of activities, click on ‘for the classroom’ for detailed lesson plans

Dragonfly Magazine
http://www.muhio.edu/dragonfly
excellent nature site geared towards kids with online activities

EEK!
http://www.dnr.state.wi.us/eek
excellent environmental education site for kids and teachers

Eisenhower National Clearinghouse (ENC)
http://www.enc.org
excellent K-12 science curriculum resources

Educational Resources Information Center (ERIC)
http://www.ericse.org
environmental education resources site including lesson plans

EE Link
http://www.eelink.net
excellent student and classroom environmental education resources

Energy Efficiency & Renewable Energy Network
http://www.eren.doe.gov
information on energy efficiency and renewable energy techniques

E Magazine
http://www.emagazine.com
environmental magazine, site includes sample articles and subscription information

EPA's Environmental Education Center
http://www.epa.gov/teachers/index.html

Appendix Z

School Forest Website Survey Results
**School Forest Website Survey Results**

**Background Information**

1. What grade level do you teach? (5) K-5 (2) 6-8 (10) 9-12

2. What subjects do you teach? (3) Elementary – all subjects; (1) Library skills; (13) High school science

3. Do you have a school forest? (10) yes (7) no

4. Do you have an outdoor teaching site? (14) yes (3) no

5. Within the last year, how many times have you used your school forest or outdoor site? (7) none (5) <5 (3) 5-10 (2) >10

6. How comfortable are you using your school forest or outdoor site? (7) very comfortable (6) fairly comfortable (1) not very comfortable

<table>
<thead>
<tr>
<th>Website Content and Design</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Overall website design is interesting to look at</td>
<td>56%</td>
<td>31%</td>
<td>13%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Educational purpose is clear</td>
<td>56%</td>
<td>44%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Activities and content well written</td>
<td>69%</td>
<td>25%</td>
<td>6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Gallery section is useful and important</td>
<td>27%</td>
<td>47%</td>
<td>20%</td>
<td>6%</td>
<td></td>
</tr>
<tr>
<td>5. Website is user-friendly</td>
<td>56%</td>
<td>31%</td>
<td>13%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Links are connected to active, relevant sites</td>
<td>69%</td>
<td>31%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Website uses good, objective information/science</td>
<td>69%</td>
<td>31%</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>8. After visiting this website, do you feel you will be better able to utilize your school forest or outdoor site?</td>
<td>33%</td>
<td>40%</td>
<td>27%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. After using activities and resources from this website, do you feel you will be better able to utilize your school forest or outdoor site?</td>
<td>27%</td>
<td>47%</td>
<td>27%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. I have used this website's activities and resources and found them helpful</td>
<td>14%</td>
<td>21%</td>
<td>64%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. I haven't used this website's activities and resources but plan to in the future.</td>
<td>43%</td>
<td>50%</td>
<td>7%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Most Valuable Aspects of Website:
- The links were impressive and most helpful
- The website was easy to maneuver through
- The activities were very helpful and I like the integration of other subjects
- Relating the activities to standards is good
- Good information and pleasant graphics
- The intent of the website is clearly spelled out
- The matrix chart with activity standards was well done
- Having the ability to contribute photos and activities is a good way for the site to evolve in a positive way
- Dam good job, Joe
- Engaging activities were clearly explained
- Networking
- Interactive link for students
- Wide range of available information is excellent

Least Valuable Aspects of Website:
- I don't understand the gallery
- I went to the WFREA site and couldn’t get back
- I didn’t find anything that wasn’t valuable
- Unable to access the school forest hikes and trail activities
- As much as I like pictures, the gallery
- More activities by grades to reduce different grades using the same trail activities
- I had a difficult time using the site, it wouldn’t let me pull up anything

Suggestions For Additions to Website:
- Add more activities – for all grade levels and subject areas
- Keep adding activities – don’t let the website fade
- In the gallery section, you may want to add pictures of plants and animals for teachers to download
- Link to grants, current events, or articles related to Wisconsin and land forest management
- List all activities on one page so I can peruse them and decide if I’ll be able to adapt them for my grade level
- Add themes, training ideas and helpful hints for a successful trip
- Link directly to each activity from the standards matrix page

Optional Information
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--- | --- | ---
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