This booklet presents educators with practical ways to put the Internet to work in the classroom. An introduction provides resources for getting connected to and exploring the Internet. The next section on using the Web in the classroom discusses a student-created Web survey; cooperative challenge; social action; community connection; simulation; Web publishing; and multimedia. The following five sections present teacher-tested Internet-based projects for different grade levels ranging from kindergarten through grade 12. Each lesson plan (project) identifies the subject, grade level, activity type, activity level, time frame, partners, materials needed, objectives, procedure, timeline, extension activities, and helpful tip. The five lesson plans are: Project 1, "Mighty M&M Math" (students compare the proportion of M&M candies by color to percentages worldwide; project 2, "The Animal Project" (students around the world record and compare the animals seen during a given week; project 3, "Spring Fling" (students record and compare signs of spring across the United States); project 4, "Origami Outing" (students collaborate with Japanese students to learn the art of origami); and project 5, "Groundhog Watch" (students in different locations around the globe measure and compare their shadow's length). (AEF)
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Introduction

WELCOME TO NET LESSONS: EDUCATION WORLD'S INTERNET PRIMER

If you are an educator looking for ways to engage your students creatively, connect with other like-minded professionals, or advance your career, *Net Lessons: Education World's Internet Primer for Teachers* is for you. Here you will learn practical ways to put the Internet to work in your classroom immediately.

This booklet has been created by Education World (www.education-world.com), a free educator's resource on the Internet that we invite you to make your starting point whenever you go on line. Education World helps educators explore the Internet faster and more effectively, putting at your fingertips the resources you need to serve your students, your community, and the profession.

Education World has received invaluable assistance from Songline Studios, Inc., and O'Reilly & Associates, Inc., publishers of *Net Lessons: Web-Based Projects for Your Classroom*, by Laura Parker Roerden, in producing this primer. The book contains more than 100 classroom-tested Internet lesson plans and ideas for K-12, like those you will find here.

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Gary Hopkins is editor-in-chief of the Education World Web site. He is responsible for developing the original content on the Web site, including lesson plans and education updates. Previously, Gary worked as managing editor of Weekly Reader's 3rd and 4th grade editions and taught third grade for six years. Gary works from his home (a renovated high school) in Middletown, Connecticut.
**GETTING STARTED ON THE INTERNET**

If you haven't already connected to the Internet, there is no better time than today. All it takes is a personal computer with a modem, a telephone line, Internet browser software, and an Internet user account.

Sounds simple enough, but we all know that most classrooms don't have telephones and most don't have the latest sophisticated PCs. Here are two great books to show you how to overcome these and other technology hurdles:


- *The Internet for Teachers*, by Bard Williams (IDG Books, 1996)
Once you've made the connection to the Internet, you enter an exciting, but intimidating, new world. The limitless possibilities available to you are also the biggest restrictions you will face. After all, who has time to look at all that "stuff"?

There are several ways to start exploring without becoming overwhelmed. You can type www.education-world.com into your browser software and it will connect you to the Education World site.

Education World is a free site designed especially for educators that gives you fast access to more than 50,000 relevant education sites. You can use Education World's search engine to retrieve information quickly rather than plowing through the millions of Web sites available through broad-based search engines such as Yahoo or Lycos. When you don't have much free time to spend surfing the Internet, Education World makes the search easy.

Education World is also a home page with valuable information for you. Education World gives you monthly reviews of the Internet's top education Web sites, forums where you and your colleagues can share ideas, links to state and federal education resources, plus articles written by the country's top education experts. At a glance, you can catch up on current events with a link to USA Today, review nationwide employment listings, check local library listings, and review sample lesson plans.
I'M CONNECTED. NOW WHAT?

Education World also can be used as a tool in the classroom. From Education World, students can explore careers, find homework and study guides, play educational games, and visit other students' home pages. Education World also offers schools the chance to be recognized nationally for their own Internet Web sites in the "Cool School of the Week" contest. School Web sites are judged on visual appeal, creativity, student participation, and educational information presented.

Here are other resources to help you explore the Internet:

- Among the excellent online tours of the Internet for beginners are Global Village's Internet Tour (http://www.globalvillage.com/gcweb/tour.html) and the Newbie.net CyberCourse (http://www.newbie.net/CyberCourse/).

*by Gary Hopkins*
*Editor-in-Chief*
*Education World*
Using the Web in the Classroom

LET'S GET GOING!

Creating a curriculum that uses the Web well requires planning. What are my goals? What tools and strategies can I employ? How can I do it all in the time allotted (and still remain sane)? These are the questions that we teachers ask ourselves daily. The Web is just one more tool to consider when we reach into our magic bag of tricks.

THE BIG TWELVE: WEB ACTIVITY TYPES TO TRY

Most good homegrown Web projects fit into one of the strategies described in the following section. To begin, familiarize yourself with each activity type. Which strategy seems likely to help you accomplish your goals? What would each strategy look like employed in your classroom? Like all good pedagogy, different educational goals require different instructional strategies.
KEYPALS
This is one of the simplest activity types available to anyone with access to email. Students communicate with another person—perhaps a student, a senior citizen, or a professional in a field of interest—in a spinoff on the old penpal activity.

WEB MENTOR
Students are paired via email with experts or knowledgeable folks in the field they are studying. Pairing a child with a senior, an older student, or a person with a special interest in the field can be as effective as drawing on experts.

WEB RESOURCE
This activity type takes advantage of the Web's potential as a research tool. In addition to such traditional library resources as books and periodicals, Web sites feature resources not normally available in schools (such as interactive simulations, sophisticated databases, etc.).

WEB COLLABORATION
Students at several schools exchange email or meet virtually at a Web site to execute a project. Some projects work best with only two schools, with each child in the class paired. Others involve many schools sharing resources, information, and responsibility for the project.
USING THE WEB IN THE CLASSROOM

WEB SURVEY
Students create and post a survey publicly (either through a web site or a mailing list) to find out information for a project.

COOPERATIVE CHALLENGE
Students work together to meet a challenge or solve a problem. Students can work via email, meet virtually in a chat room, or gather in groups in your classroom. The challenge can range from solving a difficult math problem set (the Problem of the Week genre) to resolving a real conflict between two people or completing a virtual obstacle course.

SOCIAL ACTION
Students identify a problem and address it through a service learning project. Students may work with other students from other schools. They use email or the Web to research their topic and gather support.

COMMUNITY CONNECTION
Students use the Web to create a stronger sense of community in their school or town. Projects could include a web site profile of Vietnam veterans in your area as part of a Veterans Day celebration; an online collaborative magazine for girls and their mothers; or a web site profile on careers for students, featuring interviews with community members.
**SIMULATION**

Students use their imaginations to recreate an event or a process. For example, groups of students can represent different viewpoints (environmental groups, local government, and labor unions) on a hot topic such as building a dam, or they could represent parts of the body to illustrate how the body fights disease. Working with others via email and the use of interactive sites available on the Web (featuring simulations of frog dissections, archaeological digs, etc.) are the most popular uses of the Net for simulation activities.

**WEB PUBLISHING**

Students create a Web site and publish their original material on it. Material may be solely created by your classroom, collected through a collaborative project with other classrooms, or downloaded from the Web.

**MULTIMEDIA**

Students use multimedia tools available through the Web for hands-on interactive activities involving graphics, music, video, photographs, and text. Some activities of this type involve creating an interactive, multimedia Web site.
THE WEB MEETS THE REAL WORLD—LESSON PLANS

STUDENT-CREATED PROJECTS

What could be more student-centered than student-created projects? Encourage your students to come up with their own ideas for projects that utilize the unique resources available through the Web.

Here are five Internet-based projects that you can use immediately with your students. These are all teacher-tested lesson plans that are part of Net Lessons: Web-Based Projects for Your Classroom, by Laura Parker Roerden.
Mighty M&M Math

Project 1
MIGHTY M&M MATH

Subject: Mathematics, Language Arts, Geography
Grade level: Grades 4-8
Activity type: Web Survey
Activity level: Beginner
Time frame: 8 weeks
Partners: Unlimited

Materials Needed
- One computer with email access (Web access is optional)
- Spreadsheet software program
- One M&Ms package for each pair of students
- Calculator
- Large world map (optional)

Students compare the proportion of M&M candies by color to percentages worldwide.

OBJECTIVES
- Students acquire basic skills such as predicting, collecting, averaging, comparing, contrasting, classifying, analyzing, problem solving, graphing, and decision making.
- Students learn geography through locating participants' cities on a map.
- Students use cooperation and communication skills.

PREREQUISITES
None

PROCEDURE
1. Working in pairs, participating classrooms around the world predict:
   - The total number of M&Ms in each bag
   - The most and least common colors
   Be sure that all participants use the same size bag of plain M&Ms.
2. Have students determine and record:
   - The actual total and number of each color in each bag
   - The ratio and percentage of each color
3. Classrooms then compile their class average percentage for each color and post their data to the project coordinator via email.
4. Help students in cooperative pairs enter all data into spreadsheets (scheduling time for them at the computer in 10-minute intervals). Note: Not all countries have the same colors of M&Ms available. How many color sets are there? Why? It may be necessary to keep different spreadsheets to track the different color sets.

5. Student pairs complete a data table, comparing and analyzing their individual results to the international percentages. If you have Web access, have students compare their data to that on the Mars Company home page (http://www.m-ms.com/bakery/index.html). There you will find valuable background information such as details about the candy's manufacturing process and their own percentage targets for each color.

6. Have students present their findings by drawing a graph and writing a report on what they learned.

7. On the final day, hold a "Celebration of the M." Have students write alliterations with the letter "M," create crossword puzzles with all "M" words, and write an "M" rap. Students can also decorate the room with stuffed paper M&Ms, post a full-wall spreadsheet of their data, and display all of their empty M&Ms packages.

8. Optional: Create a Web site and publish the results. See The Macintosh Internet Server Cookbook (http://web66.coled.umn.edu/Cookbook/MacContents.html) for tools and complete instructions for creating your site.
MIGHTY M&M MATH

TIMELINE

Week 1  Post Call for Collaborators soliciting participants.

Weeks 2-3  Email procedures to all registered schools.

Weeks 4-6  Classrooms compute M&M color percentages and post to project coordinator.

Weeks 7-8  Students complete data table, graph, and report.

GEOGRAPHY EXTENSION

Integrate this project with geography by including a map-skills lesson. Have students find and locate all participants on a world map. Tack empty M&M bags on a large wall map marking all the locations.

TIP

Teach averages, percentages, and spreadsheets before beginning this project. Then help students master the concept by duplicating this activity many times. Every day for one week, count, average, and compute percentages using different flavors and bags each time. There is nothing more motivating than edible work! 😋
The Animal Project

Project 2

Education World
THE ANIMAL PROJECT

Students around the world record and compare the animals seen during a given week.

OBJECTIVES

- Students learn about animals and their habitats.
- Students learn about the location of different states and countries, and develop basic map-reading skills.
- Younger students acquire basic math skills such as adding and interpreting. Older students predict, graph, and analyze data.
- Students draw animals.

PREREQUISITES

None

PROCEDURE

1. Post Call for Collaborators soliciting partner schools around the world.
2. Students from participating classrooms around the world record animals sighted every day during a given week on a “Seen Daily” list.
3. Classrooms compile and post their data to the project coordinator via email. The project coordinator shares all data with participating classrooms via email.
4. Have students:
   - Collect and organize the data. (For younger students, design and post a chart on which students can write their findings daily. Older students can work in small groups to design their own charts to present the information.)
   - Locate and mark partner schools on a map.

Linda Little and Sharon Hayes
5. Working in pairs, have students interpret the data through a cooperative challenge.

Have younger students address:

- How many different animals, birds, insects, etc. were seen
- Which animal was the most popular (i.e., seen in the most places)
- Which place saw the most and least animals
- How many states and countries participated
- How many states and countries they can find on the map

Have older students address:

- Which state had the least percentage sightings of a given animal
- Compute the average number of sightings per animal
- Compute the median number of sightings per animal
- Identify and group the animals into the following categories: reptiles, mammals, birds, insects, etc.

6. Have students draw pictures of all animals sighted or download pictures from the Web. (See “A Word About Copyright Law and Fair Use,” Chapter 3, Net Lessons.)

7. With the students, create a bulletin board in a central place in your school, featuring the data, interesting observations, and pictures.
THE ANIMAL PROJECT

TIMELINE

Week 1  Post Call for Collaborators soliciting partners.

Week 2  Email procedures and introductions of students to all registered schools.

Week 3  Record animal sightings daily.

Week 4  Share data with all participants.

Week 5  Analyze results.

Week 6  Create bulletin board.

LITERATURE EXTENSION

Have children choose an animal from the sightings to research its place in literature. Help younger children locate a picture book that features that animal. How does the animal behave in the book? How much is that like the real animal? Older children can be charged with finding and reading a book, poem, essay, etc., that features their animal. (Hint: Searching books on Web sites by keywords may be of help.) Have students write a response to their selections in their journals. What characteristics has the author chosen to highlight? Why?

TIP

This project generates lots of mail. It's best to be prepared with form letters and a database for tracking the project's progress. Remember, if the response is overwhelming, limiting the number of classrooms to a manageable size is an option.
Spring Fling

Project 3

Education World
SPRING FLING

Subject: Science, Art, English
Grade level: Grades K-8
Activity type: Web Collaboration
Activity level: Beginner
Time frame: 6 weeks
Participants: Unlimited

Materials Needed
- One computer with email access (Web access is optional)

Students record and compare signs of spring across the United States.

OBJECTIVES
- Students identify signs of spring.
- Students compare signs of spring and dates seen across the U.S. (or worldwide)

PREREQUISITES
None

PROCEDURE
Note: This project is best done between February and May.

1. Post Call for Collaborators soliciting partner classrooms. Look for partners from different latitudes.
2. Working in pairs, have students go outside to take notes on signs of spring once a week for four weeks. Ask: What do you see this week that you didn’t see last week? Have students record their observations in their “field note-books.” (Have younger students note one new observation to report to you. Record all observations in a class field notebook.)
3. Have classrooms compile and post their data to the project coordinator via email. The project coordinator then shares all data with participating classrooms.
4. For younger students: Using a wall map, help students locate partner classrooms. Review the observations, noting similarities and differences across latitudes.
   For older students: Have students create a summary of each classroom’s observations with dates. Cut and tack onto a wall map.
5. Help students interpret the data. Ask: What differences do you notice between northern and southern schools? How are the signs similar between sites? How do the signs move south to north?

6. Classrooms share their analysis via email.

**FOR OLDER STUDENTS**

If you have web access, students can post and compare data about common sightings, such as the American robin or monarch butterflies, at Journey North (http://www.ties.k12.mn.us/%7Ejnorth).

**TIMELINE**

- **Week 1**  Post Call for Collaborators soliciting participants.
- **Weeks 2-5**  Make observations and share data with all participants.
- **Week 6**  Analyze and share results.

**ART AND LITERATURE EXTENSION**

Have students create an illustrated nature diary. In blank books, students can draw and notate the signs of spring. Include poetry and quotes from literature (or have students write their own). Students will have a wonderful record of the project and the unfolding of spring. *The Nature Notes of an Edwardian Lady*, by naturalist Edith Holden, is a beautiful example that you could share with students.

Have plenty of field guides available for students to identify plants and animals from your area. ☕️

---

**SPRING FLING**

---
Students collaborate with Japanese students to learn the art of origami.

**OBJECTIVES**

- U.S. students learn the art of origami.
- Japanese students practice English.
- Students practice cooperation and communication skills across cultures.

**PREREQUISITES**

None

**PROCEDURE**

1. Solicit one class of ESL Japanese students (secondary school age) by posting a Call for Collaborators on an international project center such as I*EARN at http://www.iearn.org/iearn/. (Note: Japanese partners will benefit by practicing English with a native speaker.)

2. Pair students or groups of students with Japanese student mentors.

3. Introduce students to the art of origami by showing a few pictures or bringing in a sample.

4. Have students in small groups brainstorm questions about origami for their Japanese mentors. Give examples of possible questions: When did people begin practicing origami in Japan? How has origami evolved? How do people in Japan learn origami?

5. Schedule computer time for students to research the significance of origami in the Japanese culture with their mentors via email.
6. Ask Japanese partners to develop and send via email or postal service written instructions on the art of origami, including diagrams developed in a graphics/paint program or hand-drawn. (If sending via electronic mail, partners will need to save or convert their graphic files to GIF or JPEG and email files to project coordinator. See the graphics format page at http://VTGinc.com/ebennett/xplat.graph.html for conversion tools.)

7. Children create origami. (Younger children will need your assistance.)

8. Photograph the children and their work. Have students create a collage with the photos, including their names. Via mail, exchange collages with partner classrooms.

9. Discuss with students: Was it difficult to communicate with your partner? Why? What differences came up between you and your partner? How did you handle those differences? What would you do differently next time?

10. Optional: Create a class mobile featuring the students' origami. Send the mobile to the Japanese partner classroom as a thank-you present.

**TIMELINE**

<table>
<thead>
<tr>
<th>Week 1</th>
<th>Post Call for Collaborators soliciting participants.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weeks 2-3</td>
<td>Partners email background and instructions on the art of origami.</td>
</tr>
<tr>
<td>Week 4</td>
<td>Classrooms photograph projects and mail to partner classroom.</td>
</tr>
</tbody>
</table>
LANGUAGE ARTS EXTENSION

Have students create booklets on the art of origami, complete with diagrams and illustrations. Have students solicit quotes and photos of their origami from Japanese students to include.

ORIGAMI OUTING

Joseph Wu's Origami Page (http://www.datt.co.jp/origami/) is an award-winning site featuring everything you'd ever want to know about origami. Creator Joseph Wu gives great background on the art, folding instructions, and links to other origami sites, and features photographs of awe-inspiring examples of this art form.
Groundhog Watch

Project 5

Education WORLD
GROUNDHOG WATCH

Students in different locations around the globe measure and compare their shadow's length.

OBJECTIVES
- Students explore the global relationship between the sun's position in the sky (or shadow length) and latitude.
- Students acquire basic skills such as predicting, collecting, graphing, and analyzing data.
- Students practice metric conversion.
- Students learn basic world geography.

PREREQUISITES
None

PROCEDURE
1. Bring paired students outside at two different times during a sunny day (morning and afternoon) to trace their shadows with chalk and measure them. How has the shadow changed from morning to afternoon?
2. Ask students to explore together what affects their shadows' length.
3. For younger students: Once they have established that a shadow's length has something to do with the position of the sun's light, conduct the following demonstration:
   Cover a table or desk with drawing paper. Place a standing object on the table or desk and slowly arch a lit lamp over the object to simulate a rising and setting sun. Stop at regular intervals along the arch and let students take turns drawing the outline of the shadow cast by the object, as shown below.

Subject: Science, Mathematics, Art
Grade level: Grades 3-12
Activity type: Web Collaboration
Activity level: Intermediate
Time frame: 4 weeks
Participants: Unlimited

Materials Needed
- One computer with email access
- Large laminated world map
- Rubber balls (one per student pair)
- Several lamps (one per student pair is ideal)
- Push pins
- Standing objects (one per student pair)
- Chalk
- Tape measure(s)
For older students: Give student pairs push-pins, a lamp, and a rubber ball to explore and hypothesize how latitude generally affects a shadow's length. Would there be a difference between a person's shadow length in North America versus someone's shadow length in South America at the same time?

Using the rubber ball as a globe, with push pins representing people in different hemispheres and a lamp held representing the sun, students can hold the ball in a single place and turn it on its axis. Record their hypotheses on chart paper.

4. Post a Call for Collaborators soliciting partner schools around the world (northern and southern hemispheres).

5. Have students from participating classrooms around the world measure their shadows at a designated time (adjusted for their time zone) every day over the course of a week. Explain that students working in pairs can outline their partner's shadow with chalk and then measure its length at the greatest distance.

6. Have classrooms compile and post their data to the project coordinator via email. Share data with participating classrooms.

7. Assign students in pairs to plot one classroom's data showing daily shadow lengths. How does shadow length change day to day? Have students compute average shadow length for their assigned school.

Note: Older students can create their own metric conversion chart for easy reference. Convert data for younger children.

8. Locate all participating classrooms on a large laminated wall map and note average shadow lengths with an erasable marker.
9. Have students test their original hypothesis by organizing the data by latitude and analyzing the results. Ask: What trends do you notice?

10. Have participating classrooms share their analyses via email.

**TIMELINE**

<table>
<thead>
<tr>
<th>Week 1</th>
<th>Solicit partners and begin inquiry into topic.</th>
</tr>
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<tbody>
<tr>
<td>Week 2</td>
<td>Email procedures and introductions of students to all registered schools.</td>
</tr>
<tr>
<td>Week 3</td>
<td>Take measurements and share data with all participants.</td>
</tr>
<tr>
<td>Week 4</td>
<td>Analyze and share results.</td>
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</table>

**ART EXTENSION**

Using colored chalk, have younger students create a self-portrait from their shadow’s outline. Older students can use large format chart paper, trace their shadows, and then paint or color their self-portrait.

Schedule this activity for Groundhog Day. Then compute the percentage of students who saw their shadow versus those who did not. What is your groundhog’s prediction? Ask partner schools to track their spring weather and report back. Then compare to national weather statistics. How accurate was your groundhog? 🍃
Conclusion

This is just a sampling of what the Internet and Education World offer you and your fellow educators. Take advantage of this free Internet resource by visiting www.education-world.com. For thousands of educators, Education World is their home on the Internet. See you there!

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PREVIOUS VERSIONS OF THIS FORM ARE OBSOLETE.