School: Del Prado Elementary School
Teacher(s) & Grade(s) involved in garden program:
S. Liberati, V. Root, N. Halimeh, M. Stuart, G. Yodowitz, L. Paul, L. Paquette, M. Ruckow; Grades K through 5
Contact Person: Lydia Liberati
Time contact person can be reached: 8:00 A.M. to 3:00 P.M.
Phone: (561) 338-1490 Fax: (561) 338-1496
Address (please include city and zip code): Del Prado Elementary School
7900 Del Prado Circle
Boca Raton, Florida 33481
Email address: Liberati.L@palmbeach.k12.fl.us

CATEGORY (Please mark only one):
_____ SINGLE CLASS GARDEN (Garden used by one class only)
Number of students in class: __________
_____ MULTIPLE CLASS GARDEN (Garden used by more than one class or grade, but not by the entire school)
Number of students involved in the garden: __________
_____ ENTIRE SCHOOL GARDEN (Garden that is used by all grade levels at the school)
Nature trail and pond
Number of students involved in the garden: 200

TYPE of school garden that you use with your students. (Please mark only one)
_____ Vegetable
_____ Flower
_____ Combination vegetable/flower
_____ Other, please specify:
Rare fruit trees, Native aquatic vegetation, Native trees and plants, butterfly plants
1. Please indicate the number of hours a week, on average, your students spend in the garden. \textit{Varies depending on activity and special event.}

2. Please mark all the activities that your students participate in \textit{prior to gardening.}

- Planning the garden
- Preparing the garden
- Designing the garden
- Choosing plants
- Other, ________

3. Please mark all the activities that your students participate in \textit{while in the garden.}

- Planting
- Watering
- Observing
- Recording
- Playing
- Sitting
- Experimenting
- Other, ________

4. Please indicate the percentage of time, on average, that you used the garden as an instructional tool in your classroom. \textit{n/a}

5. Please mark the subject area(s) into which you have incorporated school gardening. Check all that apply.

- Math
- Science
- History
- Health/Nutrition
- Music
- Physical Ed.
- Ethics (responsibility and nurturing)
- Other, please specify

6. Please indicate the number of years that a school garden has been part of your curriculum. \textit{since 1992}

7. Please indicate the types of volunteers that have helped you and your students with the garden.

- Master Gardeners
- Senior citizens
- Parents
- University students
- Garden club members
- 4-H members
- High school students
- Older students at your school
- FFA
- Other, please specify: \textit{Dr. Paulson, Arthur R. Marshall Foundation, Mrs. Evelyn Sommerville, Boca Raton Garden Club.}
8. Please indicate the source(s) of information used to assist in the incorporation of school gardening into your school’s curriculum. Check all that apply.

- County Extension service
- Teacher in-service training
- Personal knowledge
- Educational journals/publications
- National Gardening Association’s Growlab/Growing ideas newsletter
- Other, please specify: Arthur R. Marshall Foundation, Dr. Paulson, Boca Raton Garden Club, Mrs. Evelyn Sennemerville

9. Please indicate the types of educational material(s) used in the classroom to support the use of school gardening in the curriculum.

- Library books
- Internet
- Filmstrips
- Textbooks
- Trade books
- Newspapers
- Other, please specify

- Computer software
- Videos
- Personal books
- Experiments
- Gardening magazines and catalogs

***Please read and sign below***

By submitting the same you acknowledge and agree that the University of Florida (and Walt Disney World Co.) may reproduce the same, and all materials may be displayed (in part or in whole) at the 2007 Epcot® International Flower and Garden Festival and for other promotional materials. Such presentation materials (and School Garden packets) will NOT be returned to you (they will become the property of the University of Florida and Walt Disney World Co.) Finally, you acknowledge and agree that should your school be selected as a winner under the competition, then to the extent any of the photographs or materials submitted contain the names of likeness of students, teachers and/or others, you will be required to have adult individuals sign (and the parents/guardians of such students) sign consent/release forms provided by us so that we can display those photographs or materials concerning your winning garden. Such requirement would be a condition of your accepting the award.

I have read and understand the above.

Lydia Liberati
Signature

3/20/08
Date
Del Prado Elementary School Nature Trail and Pond

EDUCATIONAL RELEVANCE
Interdisciplinary Learning and Subjects address
The educational relevance of the nature trail encompasses five areas which promote interdisciplinary learning:
1. To promote environmental awareness and education through direct, hands-on experiences for the students. This shifts the learning from a traditional classroom to the outdoors.
2. To increase student understanding of the interrelationships between the environment and quality of life.
3. To increase student knowledge and appreciation for Florida’s ecosystems.
4. To encourage creative and critical thinking skills by using environmental experiences as a vehicle to integrate other curriculum areas and to solve real-life problems.
5. To promote community and school cooperation in development of an environmental program of mutual benefit to all.

Research done by the Field Studies Council (FSC) and several partner organizations commissioned the National Foundation for Educational Research (NFER) to undertake a review of research on outdoor learning. The key findings of the study include the following

The impact of fieldwork and visits
- Substantial evidence exists to indicate that fieldwork, properly conceived, adequately planned, well taught and effectively followed up, offers learners opportunities to develop their knowledge and skills in ways that add value to their everyday experiences in the classroom.
- Specifically, fieldwork can have a positive impact on long-term memory due to the memorable nature of the fieldwork setting. Effective fieldwork and residential experience, in particular, can lead to individual growth and improvements in social skills. More importantly, there can be reinforcement between the affective and the cognitive, with each influencing the other and providing a bridge to higher order learning.

The Sunshine State Standards that are addressed in the Nature Trail and pond include many subject areas in all grade levels from K to 5.

All grade levels participate in the “ready to use “Science “back-pack kits” which provide activities that have been tailored for each grade level. A demonstration by a representative of the Nature Trail was presented to teachers at each grade level team.
The “back- pack kits” include all materials, SSS lesson plans, and corresponding worksheets. Two examples of worksheets and lesson are provide in this report. In addition, all nine of third grade classes held their Science Expo at the restored pond-an outdoor classroom with hand-on experiments.

Besides the Science SSS, the nature trail and pond incorporated Math as student used measurement in their scientific experiments.

Meeting the writing Sunshine State Standards were demonstrated when students wrote about the pond restoration. One student’s writing was accepted and published in Kidsposts.

Aside from the above activities the Nature Trail can be used in multiple ways. There is a bench for students to sit and sketch drawings of the natural habitat. Students can enjoy silent reading outdoors or teacher can teach a lesson outside for a diversion from everyday in the classroom.

Pine Jog used the Nature trail to teach students during their visit and lesson.

Resources used to facilitate garden learning

Some of our most important resources are the master gardeners that provide their time, energy, and commitment to the students. The PTA and several community resources have donated funds and plants and tree to the Nature Trail. Academic resources are also available at the Del Prado media center for students who want to explore their learning further.

Sunshine State Standards

Process of Life The student describes patterns and function of living things.
SC.F.12.1 to SC.F.12.4

How Living Things Interact with their environment
The student understands the competitive cyclic nature of living things in the environment
SC. G.1.2.1 to SC.G.1.2.7

The Nature of Science The student uses the scientific process and habits of mind to solve problems.
S.C.H.1.2.1 to S.C.H 1.2.5

Social Studies The student understands the interactions of people and the physical environment.SS.B.2.2.3

Measurement The student measures quantities in the real world and uses measures to solve problems
MA.B.1.2.1 to MA.B.1.2.2

Writing The student uses writing processes effectively. L.A.B.1.2.1. to L.A.B.1.2.3
LEVEL OF INVOLVEMENT
Student Leadership
The 5th graders provide guided tours of the Nature Trail. The South Florida Water Management District developed the curriculum the students have been using to prepare for the guided tours. These students have also learned the importance of water conservation through “water wise” landscaping.
Partnerships with garden-related organizations.
We are very fortunate to have strong support for our Nature Trail and Pond. These included the following:
Dr. Tom Poulson, Senior Scientist of Arthur R. Marshall Foundation
Mrs. Evelyn Somerville, The Boca Raton Garden Club
Excalibur Nursery
Zimmerman Tree Service
James Bryan, horticulturist
School Support
The PTA has funded over $1000 to be used solely for the Nature trail and pond.
In addition, funds have been proved to supply 800 plants to restore the pond with aquatic plants and natural vegetation including butterfly plants along the pond
Community Support
The South Florida Water Management District
Parents, teachers and local businesses have volunteered their time.
Over 200 volunteers attended the pond restoration
All the local newspapers have published information to the community
These include Sun-Sentinel, Palm Beach Post, and Boca Raton News.
GARDEN QUALITY
How/by whom was the garden designed?
A coalition of committed parents, school administrators, teachers, students and community representatives initially create a nature trail which began in the 1991/92 school year. However, what brings the natural trail and pond in the forefront this year is the revitalization and restoration that took place. Activity in these areas had been dormant for years. Backpack kits were sitting in the closet not being utilized until now. A huge increase in new plants and rare fruit trees has renewed everyone’s interest.
What qualities make this garden unique?
The Nature Trail and pond provide an outdoor laboratory featuring nine distinct ecosystems. Designed primarily to enhance hands-on science education, and promote environmental awareness, teachers and students also use the trail experience for creative writing, mathematics, art and thinking skills.
How is the garden cared for and maintained?
A horticulturist sprayed invasive vines prior to school-wide clean up day which made it easier when parents, students help remove them from growing on trees. Over 200 volunteers including parents and students raked algae and planted several hundred plants around the pond.
How were the plants selected and used?
The Nature Trail committee composed of 8 teachers who make decisions on the type of plants and trees selected.
Environmental focus
The environmental focus is to make the pond healthy. The smaller animals can escape to the newly planted areas when threatened by predators. The nature trail and pond are a living classroom created to increase students’ knowledge and appreciation for Florida’s ecosystems and the interrelationships between the environment and quality of life.
Del Prado’s third grade student’s writing about the pond clean-up is accepted and published in Kidspost Newspaper, which is a division of Palm Beach Post “News in Education.”

A New Pond is Born

By LIAM GRAF
3rd Grade, Del Prado Elementary School

On Oct. 20, a large crowd of people gathered around Del Prado’s school pond. They said that they were going to have a clean-up. They also needed to help the animals in the pond. They said the poor pond had been neglected for many years. The event’s organizer was Mrs. Paquette and her third-grade class.

They planted over 188 native plants. There were butterfly and aquatic plants planted. The aquatic plants will help the pond’s ecosystem by giving hiding places to frogs, tadpoles and small fish. They also give more oxygen to the pond’s water. The butterfly plants will attract butterflies and other insects to help with pollination.

Over 200 students, staff and community volunteers came to help the clean-up. To encourage people to come, a pizza lunch and bottled water were provided. Every student that helped for one hour got a “goodie bag” and prize baskets were raffled off. Everyone did a part in creating this masterpiece for the community and the animals to enjoy.

Student and volunteers worked to restore a pond on the campus of Del Prado Elementary School on Oct. 20, clearing the bottom of debris and algae and planting new aquatic plants as well as plants on the pond’s bank. Here, 10-year-old Ryan Robertson, a 5th grader at Del Prado, hands his father Jeff Robertson a Fire Flag plant.
POND BILL OF HEALTH

1. What kinds of water organisms (bacteria, plants, or animals) have the greatest range of temperature preference?
2. What kinds of water organisms (bacteria, plants, or animals) have the narrowest range of temperature preference?
3. Based on this information, which kinds of water organisms (bacteria, plants, or animals) do you think are more sensitive to temperature changes?
4. Why do more fish die when pond water becomes too warm?

1. What kinds of water organisms (bacteria, plants, or animals) have the greatest range of pH tolerance?

**TABLE 1: PREFERRED TEMPERATURE RANGES OF AQUATIC ORGANISMS**

<table>
<thead>
<tr>
<th>BACTERIA</th>
<th>All temperatures</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALGAE AND OTHER GREEN WATER PLANTS</td>
<td>Moderate to warm temperatures (above 50°F or 12.8°C)</td>
</tr>
<tr>
<td>MOST AQUATIC ANIMALS, INCLUDING INSECTS</td>
<td>Warm to hot temperatures (above 68°F or 20°C)</td>
</tr>
<tr>
<td>ORGANISMS CAUSING FISH DISEASE</td>
<td>Moderate to warm temperatures (above 50°F or 12.8°C)</td>
</tr>
</tbody>
</table>

**TABLE 2: PREFERRED pH RANGES OF AQUATIC ORGANISMS**

<table>
<thead>
<tr>
<th>ACID</th>
<th>NEUTRAL</th>
<th>ALKALINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1.0 to 13.0</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>6.5 to 13.0</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>7.0 to 9.0</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>6.5 to 7.5</td>
<td></td>
</tr>
</tbody>
</table>

**POND BILL OF HEALTH**

Unhealthy Pond

Healthy Pond

**Key Question**

What are the characteristics of a healthy pond?

**Behavioral Objectives**

As part of this activity, students will:
- (C) 1. Identify the basic physical and chemical indicators used to determine the health of a freshwater ecosystem.
- (C) 2. Conduct and analyze results of basic physical and chemical pond water tests.
- (C) 3. Use test kits to determine the "health" or environmental quality of a pond.
- (C) 4. Explain how human activities can improve or reduce the environmental quality of ponds and lakes.

**Materials**

**ESSENTIAL (per group of 3-4 students):**
- "Pond Bill of Health" worksheet (Parts 1 and 2)
- Clipboard or other hard writing surface
- Submersible thermometer attached to a one foot string
- Clear sampling jar for measuring turbidity (duodulces)

**SEQUENCE OF EVENTS:**

1. Prior to this activity, teacher reviews characteristics of a healthy pond with students.
2. Conduct the pond bill of health activity.
3. Rinse and dry clear jars and thermometers before returning them to the backpack.
4. Please return teacher directions and any unused student worksheets to this folder.
5. If there are not at least 25 student worksheets (both parts 1 and 2) please use an overhead marker to place a check mark on the materials list so they can be replenished.
6. Return backpack to the media center.
Life Cycle Of A Mosquito (cont.)

In a week, the wriggler changes into a pupa which floats just under the water.

In a few days the pupa's skin splits down the back. A winged adult mosquito comes out.

First, the female mosquito drops her eggs in water.

A wriggler hatches from each egg. It eats tiny animals in the water.

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**Skeeter Wriggler Tag**

**Materials:**
- Items checked need to be repurified

- Teacher directions laminated
- Blue mosquito background page 25 copies
- 3 name badges water beetle, dragonfly, mosquito fish
- Roll of orange flagging tape
- 8 wooden stakes
- Student life cycle of a mosquito worksheet 25 per class
- Plastic drop cloth for class discussions

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**Skeeter Wriggler Tag**

**Subjects:** Science, Physical Education
**Duration:** 45 Minutes
**Location:** Outdoor
**Key Vocabulary:** Mosquito Larvae

**Objectives:** The student will be able to: a) show the general lifecycle of the mosquito, b) demonstrate an understanding of the survival problems of a mosquito, c) summarize the importance of the mosquito and the role it plays in a natural system and predict what the consequences could be if mosquitoes were removed from the natural environment.

**Method:** Students will be shown boundaries of a make-believe pond in which they will demonstrate the life of a mosquito.

**Background:** There are 77 species of mosquitoes in the southeastern United States and all ten of these are found in Florida. In the Everglades, mosquitoes are extremely abundant during the summer months. Most think of mosquitoes as a very aggravating nuisance; however, they play an important environmental role by providing food for fish, birds, and other insects. Refer to Appendix A for detailed information about the mosquito.

**Suggested Procedure:**

1. Discuss the value of the mosquito in the food chain.
2. The teacher will mark off a large area which will represent a pond. Part of the pond area should represent the pond surface, while the other should represent deep water. The flying zone is permitted in both areas of the pond.
3. Appoint one student to be the water beetle living on the pond surface. Tell the students the beetle likes to eat mosquito wriggles (mosquito larvae). The wriggles must occasionally come up to the surface to breath.
4. Designate another student to be a dragonfly that flies over the pond waiting for the wriggles to hatch. Dragonflies eat adult mosquitoes. When the dragonfly flies over the pond, the wriggles must retreat to the deep water area. Choose one student to represent the mosquito fish, which lives in deep water. They also eat wriggles.
5. All of the remaining students are wriggles.
Attention All Nature Lovers!

Did you know Del Prado’s pond is home to many animals? Our pond habitat is a valuable and exciting resource for hands-on learning, but it has been neglected for much too long... until now!

Please Help Us...

Let’s restore Del Prado’s pond and give the animals a more balanced habitat. We need many volunteers on October 22nd, from 9:00 to 1:00 to help replant native vegetation along the banks and around the perimeter fence.

Referrals provided by
Loving hand 
Train a child in a skill
Then you will have no need for labor
In the old saying from the Orient is

The Hard Work is Over!
The pond restoration project in October was a complete success due to the hard work of dedicated parent volunteers and teachers. On January 12th, come learn the names of the native plants along our Nature Trail and enjoy what our beautiful campus has to offer! Student-guided tours will be available anytime between the hours of 9:00 a.m. and 1:00 p.m.

Plant Donations Welcomed
Zimmerman’s Tree Farm will be donating trees for planting. If you’d like to help plant please bring along a shovel and gardening gloves.

Extras
*Pizza and drinks will be provided by our PTA.
*Signs in sheets will be posted as teachers will be giving extra credit to students who attend.
*You might even get lucky and see some of the unique creatures that call the nature trail home, like hawks, turtles and burrowing owls.
*Any questions please call our Nature Trail Committee Chairperson, Virginia Root at 338-1490.

In Celebration of Arbor Day we will be planting five fruit trees.
Read the news article. Then, fill in the bubbles for the correct answers below:

Who would want to go to school on a Saturday? These kids in Florida did! They volunteered to clean up a pond in their school yard. The pond had not been taken care of for many years.

Kids, teachers, and parents worked together to clean up the pond. They planted new pond plants and picked up litter. The kids are waiting for butterflies, birds, and frogs to find a new home in the clean pond. "We love being able to help the environment," said a teacher.

1. What is the main idea of the article?
   - The kids saw many animals at the pond.
   - Kids, teachers, and parents cleaned the pond.
   - The kids went on a field trip.

2. A detail that tells more about the main idea is:
   - The kids cleaned up the whole school.
   - The pond had not been taken care of for many years.
   - The kids didn't want to go to school on Saturday.

3. The best title for this article is:
   - "Kids Clean a Pond!"
   - "Ducks at the Pond"
   - "Pond Animals"
Del Prado students, staff, volunteers clean up pond

A small, quiet herd of bikes passed near Del Prado Elementary School in Boca Raton recently. A group of students, staff, neighbors and other volunteers joined in to clean up the pond.

In the end, they left the water cleaner and the pond more inviting for all — from kindergarten through grade 6. Parents and staff also joined in.

\[1\] Del Prado School third graders Brittany Furrer, left, and Giana Piacente.

\[2\] Parent Valenta Hackett holds her son out of the water near the school.

\[3\] A group of students and parents work at the edge of the pond.

\[4\] Photo credit: Del Prado School.

\[5\] Volunteers include, from left, third-grade teacher Lisa Piacente, Del Prado Principal Sandra Manley, and Valenta Hackett.

\[6\] Del Prado School principal Sandy Manley, center, and volunteer Volunteers.

\[7\] The pond was cleaned up.

\[8\] Second-grader Isabelle Bowser.
Jan. 12 was a busy Saturday at Del Prado Elementary School in Boca Raton. Fifth grade teacher Virginia Root arranged for tours of the nature trail with students as guide.

Participants also removed non-native plants and planting native foliage on the trail. She said the kids also broke ground for a new rare fruit tree orchard. Two professional horticulturists from this area volunteer to help.

The trees were donated by Excalibur Nursery and by Zimmerman Tree Service. The school requested the free trees through Leaf Year 2008, a campaign by Zimmerman Tree Service and the Arthur R. Marshall Foundation to give away 1,000 free trees to local schools and nonprofit organizations.

"Zimmerman Tree Service is proud to partner with the Marshall Foundation on this campaign to give away and plant a thousand new trees throughout Palm Beach County," said Michael Zimmerman. "At a time when the greening of the world is more important..."
Science teachers shift classrooms to great outdoors

The hands-on experience benefits their students in a way a textbook cannot, several say.

By DON JORDAN
Palm Beach Post Staff Writer

Amid the gumbo limbo trees, red maples and cocoa plum plants, Hannah McEachern's arm reaches high and straight like a slash pine.

Fifteen feet above her and her classmates, the tentacle-like branches of a strangler fig have wrapped around the trunk of a tall cabbage palm.

And the fifth-grader at Del Prado Elementary west of Boca Raton knows how it got there.

Birds that rest in the palm also like to eat fig berries, Hannah says. And once those seed-filled berries are eaten, the birds, well...

"They poop them out," she explains. Her classmates giggle.

This morning's hike along the school's nature trail is just one of the ways that fifth-grade teacher Virginia Root is trying to shift her students from the traditional classroom setting to the outdoors. Aside from cataloging the native plants along the trail, students will soon install a small orchard with rare fruit trees, including jujube and loquat. Root has also applied for a grant to fund a school butterfly garden.

When it comes to science—a subject in which Florida students lag far behind their peers across the country and the globe—workbooks just don't cut it anymore, Root said.

"Children live in a society now where everything is flashy," she said. "Teachers have to compete with that."

But while a handful of Palm Beach County teachers like Root are opting for the outdoors, the demands of standardized test preparation, time constraints and increasing liability concerns are keeping more and more students inside, education experts say.

While slashed art and music classes are the result of school systems focused on meeting FCAT challenges, outdoor education can be a casualty not nearly as visible, said Tom Medcalf, an elementary science research teacher who works on professional development programs for district teachers in the school district.

"A lot of the outdoor education has been discontinued," Medcalf said. "Kids have been sort of locked up in the classroom."

The school district pays for students to take one field trip each year to county parks with education components, such as the Pine Jog Environmental Center, Gumbo Limbo Environmental Complex and Arthur R. Marshall Loxahatchee National Wildlife Refuge. For many students, that's the only outdoor educational experience all year.

Few studies have been done evaluating the benefits of outdoor education, but anecdotal evidence abounds among local teachers.

Janice Kerber, a Greenacres Elementary science coach, said hands-on experiences are the best way to break through the language barrier she has with many of her Spanish-speaking students.

"When I show them a book, they have no reference points," she said.

Kerber, who once served as camp director of the Everglades Youth Camp in the JW. Corbett Wildlife Management Area, takes her fourth-grade students on an overnight trip to the camp each year. The study birds, work with ma