

Big Cypress Watershed Project: Learning in Florida's Environment

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PROJECT SUMMARY

The Big Cypress Watershed Project: Learning in Florida's Environment project (the Project) is a partnership between the Florida Department of Environmental Protection and the Collier County School District with funding from a Bay Watershed Education and Training Grant from the National Oceanographic and Atmospheric Administration. The purpose of the project is to increase student achievement in science among underserved and underrepresented populations at three middle schools by engaging teachers and students in meaningful watershed experiences on public conservation lands. This report covers the period from April 2010 to September 2010 or the second half of the first year of this three-year project.

ACTIVITIES COMPLETED

In this reporting period the following activities were completed:

1. Over 450 students completed the third of three field experiences at the Rookery Bay National Estuarine Research Reserve (RBNERR).
2. Representatives from the key project partners participated in a project launch event to reaffirm their commitment to the project.
3. Partnership teachers participated in a four day teacher professional development workshop to review project results, refine project activities and materials, develop new materials and partnerships, and plan for the second year of the project.
4. Each of the three schools completed their service learning projects.
5. Students participated in a Watershed Overview Presentation.
6. Students and Teachers completed an online survey of attitudes and behaviors toward the project, science, and the environment.
7. Partnership teachers participated in a professional development workshop on August 18th, 2010 to prepare for the second year of the project and test-run labs at the three new project sites.

The completion of these activities represents the completion of all planned activities outlined in the project proposal.

FIELD EXPERIENCE III (APRIL 12-23, 2010) AT ROOKERY BAY NERR

In April, 440 students and 11 teachers joined the LIFE Program for the last of three field experiences for the year at the RBNERR Environmental Learning Center. In this third field experience, students completed a series of three field labs in the coastal/estuarine setting in the Big Cypress Watershed. Students completed the following labs during their field experience:

1. **Crab Adaptations Lab:** Students examine morphological differences of five species of crabs and use them to determine which habitat they are best suited (see attached lab).
2. **Plankton Lab:** Students compare plankton collected from two distinct locations (see attached lab)
3. **Estuary Scavenger Hunt:** Students explore the new estuary trail conduct a scavenger hunt of flora and fauna as they on a one mile hike (see attached lab)

FIGURE 1: STUDENTS COLLECT A PLANKTON SAMPLE

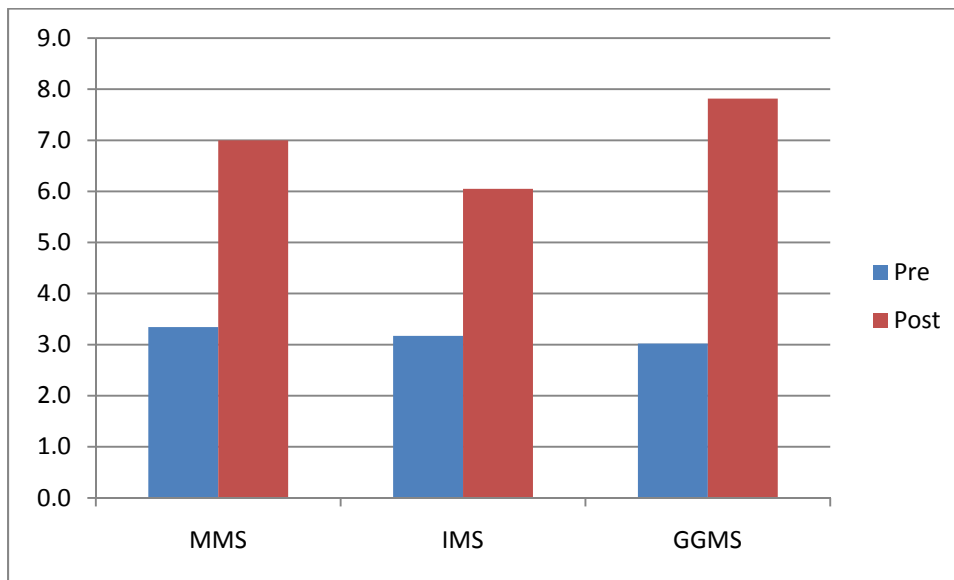


Results from the pre-post assessment administered for the third field experience show significant learning gains for each of the three schools. The table below outlines the results by school. Immokalee Middle School had the least amount of time at the field site due to their long travel distance. This may have affected their scores although they still performed well overall.

TABLE 1: PRE-POST ASSESSMENT RESULTS FOR FIELD EXPERIENCE III

Site and Field Experience	Date	Significant difference (p<0.05)	n	Avg Pre	Avg Post	Difference (avg. Post – avg Pre)	% Change (avg post – avg pre)/avg pre x 100	% of students scoring ≥ 80% on post-test
RBNERR (FE III) Golden Gate	4/22-24/10	Yes	141	3.02	7.82	4.80	158.94	61.70
RBNERR Immokalee (FE III)	4/16-21/10	Yes	141	3.17	6.05	2.88	90.85	24.11
RBNERR (FE III) Manatee	4/12-15/10	Yes	93	3.34	7.00	3.66	109.58	54.84

FIGURE 2: AVERAGE PRE AND POSTTEST SCORES BY SCHOOL (FIELD EXPERIENCE III AT ROOKERY BAY NERR)



SERVICE LEARNING PROJECTS

Students from each school conducted a service learning project that allowed students to continue to learn about a topic of their choice while giving back to their school/community. One group of students from Golden Gate Middle School had the opportunity to present their service learning project and an abbreviated version of the crab adaptations lab to students and teachers from Collier County Schools at the annual Dive into Oceans Day at Rookery Bay in April 2010. The following is a summary of the service learning projects for each school:

1. **Golden Gate Middle School: Water Quality in Local Canals.** After completing a canal clean-up and conducting water quality testing, students created brochures to educate canal-front homeowners about the importance of water quality in local canals and disposing of trash properly.
2. **Immokalee Middle School: Effects of Motor Oil on Ground Water.** Students teamed up with local auto parts stores and created a poster project to raise awareness about the effect of waste motor oil on the local environment.

3. **Manatee Middle School: Energy Conservation and its Impact on Climate Change.** Students conducted a school energy audit and educated other science classes about the importance of conserving energy, both at school and at home.

Students were given an opportunity to reflect on their service learning projects through an in class writing exercise. Students from each school were given a prompt related to their service learning project. Students used the prompt to write an essay about the significance of their service learning projects. Selected quotes from these reflective essays are included in the service learning project summaries. For more detailed information regarding service learning projects, please refer to the attached service learning summaries for each school.

PROGRAM LAUNCH AND PARTNERSHIP AGREEMENT (23 APRIL 2010)

Representatives from the key project partners participated in a project launch event to reaffirm their commitment to the project. The event was held during the final field experience at Rookery Bay National Estuarine Research Reserve, which allowed the partners to observe the students in action as they completed their third field experience. The event gave partners an opportunity to discuss their role in the project and culminated in the signing of a partnership agreement outlining the participation of each partner in the project.

FIGURE 3: CURT WITTHOFF (COLLIER COUNTY SCHOOL DISTRICT SCIENCE COORDINATOR); GREG IRA (DEP OFFICE OF ENVIRONMENTAL EDUCATION); BEN NOTTINGHAM (FLORIDA PANTHER NWR) AND RANDY MCORMICK (RBNERR) SIGN THE PROJECT PARTNERSHIP AGREEMENT



PROJECT EVALUATION AND PLANNING WORKSHOP (JUNE 22 – 25, 2010)

An end of the year workshop was completed with 8 teachers from Collier County Schools along with project partners to review the first year and plan for the second year. For the second year of the project, each of the three schools is teamed up with a local conservation area to expand the service learning project and provide students with a field experience outside of the school. Therefore, the school grounds experience will be replaced with a field experience unique to each of the three schools. Immokalee Middle School will work with CREW Land and Water Trust, Golden Gate Middle School with Collier County's Freedom Park, and Manatee Middle School with Picayune Strand State Forest. Along with a new field experience, each school outlined a service learning project specific to each school's unique partner site. This advancement will allow the service learning project to reach a larger community and create new partnerships. Along with revising and creating new labs and a new service learning

project, teachers engaged in field labs, explored the estuary on a boat trip, contacted and visited new partner sites, and engaged in general review and planning for the project.



STUDENT AND TEACHER ONLINE ASSESSMENT

Completed in May 2010, 430 students and 6 teachers from the three schools took the online assessment. This end-of-year assessment tool provides critical information on the influence of the program on student and teacher behaviors, attitudes and motivation toward the environment, science, and stewardship. The following significant findings were observed:

For the students:

- 80.2% Agree or Strongly Agree that field activities improved understanding of things learned in the classroom.
- 57.2% Agree or Strongly Agree that the field experiences have made them more interested in science.
- 59.7% are more comfortable in natural areas after participating in the LIFE program.

For the teachers:

- 100% of teachers Agree or Strongly Agree that their existing curriculum has been enriched as a result of the LIFE program.
- 100% of teachers believe participation in the program has increased achievement among their students.
- 66.7% Agree or Strongly Agree that the program has increased their ability to teach science.

WATERSHED CONNECTIONS: A CLASSROOM PRESENTATION (MAY 12-19, 2010)

In order to put each of the three field experiences into the context of the Big Cypress Watershed, a final presentation was completed in the classroom to reinforce the relative locations of each field experience, the overall flow of water through the watershed, and some key concepts. During the classroom visits, students were reoriented to the watershed by identifying school and field site locations within the watershed, direction of water flow, ways in which water flows over/through the watershed, and the final destination of water making its way through the Big Cypress Watershed. Students also engaged in a classroom discussion and completed a written reflection about their service learning projects. A pre-post test was given for this activity, with a significant difference seen for each school.



FIGURE 4: AVERAGE PRE AND POSTTEST SCORES FOR WATERSHED ASSESSMENT

Watershed Assessment Site	Significant difference (p<0.05)	n	Avg Pre	Avg Post	Difference (avg. Post – avg Pre)	% Change (avg post – avg pre)/avg pre x 100	% of students scoring ≥ 80% on post-test	% of students that raised score (pre to post)
Immokalee	Yes	124	2.91	5.35	2.44	83.85	18.40	87.20
Golden Gate	Yes	139	4.91	7.23	2.32	47.25	47.48	89.21
Manatee	Yes	183	3.16	5.23	2.07	65.51	13.66	86.34

PROJECT PLANNING WORKSHOP (AUGUST 18, 2010)

For the second year of the project, each school has teamed up with a local partner site to complete a service learning project. This site will also serve as a field site for the first field experience in lieu of the school grounds field experience. Manatee Middle School will be working with Collier-Seminole State Park, Golden Gate Middle School will be working with Freedom Park, and Immokalee Middle School will be working with CREW (Corkscrew Regional Ecosystem Watershed). To prepare for the new field experience, program teachers and site partners met on August 18th to review and test-run labs for the second year. In the morning, teachers met with Sandy Mickey from FPNWR to review changes for the second field experience at FPNWR. In the afternoon, program teachers traveled to their respective field sites to test-run the new labs and to meet with the new partner site staff.

ATTACHMENTS

- 1) Crab Adaptations Lab (RBNERR)
- 2) Plankton Lab (RBNERR)
- 3) Scavenger Hunt Lab (RBNERR)
- 4) Pre-Post Test for RBNERR
- 5) Partnership Agreement
- 6) Pre/Post Watershed Assessment
- 7) Golden Gate Middle School Service Learning Reflection
- 8) Golden Gate Middle School Service Learning Summary
- 9) Immokalee Middle School Service Learning Reflection
- 10) Immokalee Middle School Service Learning Summary
- 11) Manatee Middle School Service Learning Reflection
- 12) Manatee Middle School Service Learning Summary