



The Fairchild Challenge

2008-2009

Annual Report

for Middle and High School Programs



FAIRCHILD TROPICAL BOTANIC GARDEN



Annual Program Report Fairchild Challenge 2008-2009

THE FAIRCHILD CHALLENGE

FOSTERS INTEREST IN THE ENVIRONMENT
BY ENCOURAGING STUDENTS TO:

APPRECIATE the beauty and value of nature

DEVELOP critical thinking skills

UNDERSTAND the need for biodiversity and conservation

TAP community resources

BECOME actively engaged citizens and

RECOGNIZE that individuals do indeed make a difference.

**THE FAIRCHILD CHALLENGE PROVIDES OPPORTUNITIES FOR STUDENTS TO
RESEARCH ▪ DEBATE ▪ COMPOSE ▪ REFLECT ▪ DESIGN ▪ EXPLORE ▪
ENGAGE ▪ MOTIVATE ▪ BALANCE ▪ DISCOVER ▪ INVENT**

**A PROGRAM OF FAIRCHILD TROPICAL BOTANIC GARDEN,
THE FAIRCHILD CHALLENGE
NOW REACHES MORE THAN 45,000 SOUTH FLORIDA STUDENTS ANNUALLY,
THANKS TO GENEROUS SUPPORT FROM**

The Batchelor Foundation, Assurant, Bank of America, Leslie A. Bowe, Tom and Sylvia Collins, Gordon and Brucha Dickinson, Fairchild Palms, The Fargo Foundation, Inc., Bernard and Marilyn Horowitz, Kendel Kennedy and The Ethel & W. George Kennedy Family Foundation, Inc., Lynn Leverett, The McIntosh Foundation, Miami-Dade County Department of Environmental Resources Management (DERM), Edward S. Moore Family Foundation, Inc., National Environmental Education Foundation, Peacock Foundation, Inc., Roar Media, David M. Rogero, Michael and Diane Rosenberg Family Foundation, Inc., Royal Caribbean Cruises Ltd., Leslie Saiontz, Shepard Broad Foundation, Inc., Sue and Alan Steinberg, Target, Trikaya Creative Group, U.S. Department of Education's Magnet Schools Assistance Program, Angela W. Whitman, Whole Foods Market, Robyn Wolf, and anonymous donors, among others.

INTRODUCTION

Representing a record 112 South Florida middle and high schools, more than 45,000 students competed in the 2009 Fairchild Challenge, Fairchild Tropical Botanic Garden's (Fairchild's) dynamic outreach program for grades 6 to 8 and 9 to 12 that has become a model for interdisciplinary environmental education, with satellite partners worldwide [Attachment 1].

The Fairchild Challenge provides an annual menu of diverse competitions [Attachment 2] that encourage students to appreciate the beauty and value of nature, to learn about environmental issues, to research possible solutions and evaluate them critically, and to modify their own behavior and become actively engaged citizens. Students respond to the Fairchild Challenge with enthusiasm, creativity and intellectual curiosity. Challenge options are evaluated by panels of professionals recruited from the staff, volunteers, board members, partners, funders, sponsors and Friends of Fairchild, institutions of higher learning; and organizations throughout South Florida.

In 2009, the Fairchild Challenge offered 19 diverse options for middle and high schools, awarding top-scoring schools a total of \$12,500 in cash prizes for their environmental activities [Attachment 3]. All students and teachers who participated actively in the Fairchild Challenge received a Challenge T-shirt or drawstring back-sack and four-person family admission pass to Fairchild, an \$80 value.

RESOURCES AND WORKSHOPS

Fairchild Tropical Botanic Garden is committed to making this outreach program accessible to all interested schools, teachers and students in the region, regardless of their schools' resources. This year, the Fairchild Challenge supported our community's under-resourced schools with such incentives as modest grants for gardens at schools, oak saplings, specialized workshops, professional development seminars, transportation subsidies, books and DVD's, and additional resources for such options as research projects, opinion papers, Environmental Immersion Day and art. To promote civic engagement, voter registration was offered at all high school Challenge events.

PROFESSIONAL DEVELOPMENT

Each year, the Fairchild Tropical Botanic Garden offers Professional Development workshops in conjunction with Miami-Dade County Public Schools. These workshops are offered to all Fairchild Challenge teachers free of charge who wish to further their background knowledge in the environmental field and earn TEC credit. The following Professional Development workshops were offered: *School Garden Workshop*, *South Florida Plants and Ecosystem*, *Ethnobotany*, *Basic Botany and Tropical Botany*. Workshops were taught through a combination of lecture, labs, outdoor instruction and hands on activities, with an emphasis on both pedagogy and standards-based learning. Teachers received a wealth of resources during the workshop including printed materials, plant material, curriculum ideas and lesson plans, laboratory specimens and activity samples, a CD of electronic resources, and other applicable materials for their classroom. Time for evaluation and reflection were built into each workshop. All workshops were pre-approved by M-DCPS Curriculum and Instruction staff. This past year 129 teachers participated in our Professional Development workshops.

Art Workshop: Plants and their Pollinators

The free, annual art workshop is an example of success attained through community outreach and partnerships, as young people connect with nature through their own creativity. Eight students from each participating school were invited to the workshop to help them compete in this year's art option on the theme of Plants and their Pollinators; more than 239 middle and high school students from 33 schools registered. Students were treated to a presentation by Florida International University professor Dr. Suzanne Koptur on the symbiosis between plants and their pollinators. They then divided into small groups and worked with professional artists (25) who volunteered to mentor the students as they sketched, painted, and took photographs at Fairchild. The students thoroughly enjoyed the combination of science and art; the instructors were delighted by the attentiveness and enthusiasm of the students. Many

of these students rarely travel beyond the confines of their neighborhoods and, through this experience, were able to expand their horizons while developing new skills.

Environmental Immersion Day

One of the most popular Fairchild Challenge options for high schools, each year Environmental Immersion Day (EID) places students at environmental sites, scientific laboratories, college science departments and other locations throughout the region to provide “authentic experiences”. The goal of EID is to give students a close-up view of environmental professionals at work, to inspire students who may never have considered entering such a profession to think, “I could do that.” Students worked with worked with EID partners on a variety of projects, for example: they studied and removed exotic plant species from mangrove and pine rockland ecosystems, restored native plant habitats by planting native species, collected and identified aquatic specimens using field guides, learned to graft trees and propagate fruit trees for their homes, participated as stakeholders’ (i.e. FPL, SFWMD, etc.) in a round table discussion regarding water uses, described soil layers and analyzed their properties; and much more. Many students had not previously had access to such experiences. This year the Fairchild Challenge facilitated 29 work/study programs at sites ranging from John Pennekamp Coral Reef State Park in Monroe County to The Kids Ecology Corps in Broward County. This year, over 250 students from 30 high schools went to 28 different partner sites for an intense day of working with mentors [Attachment 4].

COMMUNITY OUTREACH

Fairchild Challenge staff shares information and updates about the program through frequent e-mail exchanges and updates on Fairchild’s website. This year, in addition to two luncheon events at Fairchild exclusively for teachers, there were seven other Fairchild Challenge events open to the public. The high school events included: the “What a Waste” Eco-skit performances, the Environmental Debates, Research Projects Showcase, and Awards Ceremony. The Fairchild Challenge middle schools consisted of: the “What a Waste” Eco-skit performances, Green Treasures Intergenerational Interviews about Ethnobotany, and the end of the year Awards Ceremony.

Fairchild Challenge staff devote significant energy during the academic year to providing presentations at schools. Particular attention is given to Title I schools [schools in which more than 50 percent of students receive subsidized school lunches]. Fairchild Challenge staff participated in various community outreach efforts, including state and national conferences, science fairs, and events in under-resourced neighborhoods (e.g., the Tacolcy Center in Liberty City). The Challenge team cultivates positive relationships with many other individuals and organizations willing to host Environmental Immersion Day or otherwise donate their energy and expertise – and occasionally goods in kind – to the program. This year, these have included a presentation by nationally acclaimed poet Jonathan Walton, and hosting a display of electric vehicles. In addition, notable scientists, such as Fairchild’s Drs. Carl Lewis and Joyce Maschinski, as well as Florida International University’s Drs. Suzanne Koptur and Steve Oberbauer, have become involved in Fairchild Challenge outreach efforts.

HIGHLIGHTED FAIRCHILD CHALLENGE OPTIONS

School Gardens:

Each year the Fairchild Challenge provides an option for middle and high school students to create/restore a school garden. Additional funding was provided to schools through mini-grants, totaling over \$8,000 to 44 schools. This year, 60 schools participated in this option, creating school gardens that incorporated sustainable concepts such as xeriscaping, edible and healing plants, creating butterfly habitat and native habitats such as pine rocklands.

Debate:

High school students convene at Fairchild Tropical Botanic Garden for a day of debates in Student Congress chambers. Participating students tackle current local and global environmental issues through this debate forum. These students dive into controversial environmental issues, weighing accurate science against economic issues and political reality. This year 120 students from 23 schools participated in the debates. Topics included: introducing a bill to promote biofuel technologies using agricultural and forestry resources other than corn or soybean oil; a bill to limit federal funding for countries that do not

have population control agendas; and a bill to institute a tax credit for waste-to-energy facilities throughout the state of Florida.

Green Treasures:

The Fairchild Challenge matches up middle school students with local senior centers for a day of inter-generational interviews, discussing traditional and cultural uses of plants. The Fairchild Challenge provides live plant specimens such as basil and rosemary to use as a prompt and the students conduct a qualitative interview in Creole or Spanish, with the seniors they are working with. This past year over 300 students and 60 seniors participated in this option.

Environmental Action:

Students participate in environmental action through individual and group involvement in raising environmental awareness within their school, home and community. These are incredibly heartening reports on schools' initiatives in water and energy audits, tree canopy measurements, and home and community initiatives taken by individuals and groups. Students this coming year will present their environmental action reports to a panel of expert judges.

PROGRAM EVALUATION RESULTS

The success of the program is continuously monitored and evaluated through the use of teacher and student surveys, teacher discussion forums, interviews, e-mail communications, direct observations of the program at various school sites, and the quality of student entries. Evaluations focused on four key aspects: content, administration, communication, and effectiveness. Implementation of these evaluative strategies allows analysis of student and teacher feedback to the following questions: What effect do we have on students' environmental awareness, scholarship, and stewardship? How many students, teachers and schools are we reaching, and to what extent?

End-of-year Surveys

At the end of the school year, student and teacher surveys were distributed to ascertain how effectively the program reached students [Tables 1-4]. The survey addressed the benefits gained through participation: increased environmental awareness, community involvement, empowerment to effect change, and environmentally minded behavior. Background information, such as length of participation in the program, options completed, and student demographics, was also requested.

Student Survey Results

**Table 1: End-of-year Surveys
(high school students)**

Number of high school student respondents = 930 students from 21 schools			
Survey questions	agree or strongly agree	Not sure	disagree or strongly disagree
The Fairchild Challenge gave me new ideas by seeing what others had done	70%	21%	9%
I can now state ways in which plants are important	83%	14%	3%
The Fairchild Challenge gave me a chance to use what I learned in my classes	69%	23%	8%
I can now convince others to take action to help the environment.	75%	20%	5%
I would like to participate again next year	Yes = 71%	No = 29%	

**Table 2: End-of-year Surveys
(middle school students)**

Number of middle school student respondents = 1360 students from 30 schools			
Survey questions	agree or strongly agree	Not sure	disagree or strongly disagree
The Fairchild Challenge gave me new ideas by seeing what others had done	61%	26%	13%
I can now state ways in which plants are important	83%	14%	3%
The Fairchild Challenge gave me a chance to use what I learned in my classes	58%	28%	14%
I can now convince others to take action to help the environment.	76%	19%	5%
I would like to participate again next year	Yes = 79%	No = 21%	

Teacher Survey Results
Table 3: End-of-year Surveys
(high school teachers)

Number of teacher respondents = 75 high school teachers from 33 schools			
Survey questions	agree or strongly agree	Not sure	disagree or strongly disagree
The Fairchild Challenge was a worthwhile use of time for my class	96%	4%	0%
My students are more aware of environmental challenges/issues	99%	1%	0%
I have seen an increase in students' environmentally-friendly behaviors	84%	16%	0%
My knowledge of the environment and environmental issues has increased	96%	1%	3%
I intend to participate again in the Fairchild Challenge	Yes = 100%	No = 0%	

Table 4: End-of-year Surveys
(middle school teachers)

Number of teacher respondents = 132 middle school teachers from 34 schools			
Survey questions	agree or strongly agree	Not sure	disagree or strongly disagree
The Fairchild Challenge was a worthwhile use of time for my class	95%	3%	2%
My students are more aware of environmental challenges/issues	98%	2%	0%
I have seen an increase in students' environmentally-friendly behaviors	90%	9%	1%
My knowledge of the environment and environmental issues has increased	91%	3%	6%
I intend to participate again in the Fairchild Challenge	Yes = 99%	No = 1%	

Event Surveys

In addition to the end of the year evaluation; teachers, students, and community members were given surveys at the end of each performance/event relating to the content and administration of the respective event [Tables 5-8]. Along with answering several questions about the event, they were also asked to provide suggestions and written feedback. Event surveys were administered at the "What a Waste!" performances [Table 5], Plants and their Pollinators art workshop [Table 6], Green Treasures intergenerational interviews [Table 7], Environmental Debates, Environmental Immersion Day, and the Research Projects Showcase [Table 8].

Table 5: Summary of 2009 “What a Waste!” Eco-skit performances (middle and high schools)							
Number of student respondents		My interest in the environment is...			My understanding of how humans affect the environment is...		
		A little or much greater than before	About the same as before	A little or much less than before	A little or much greater than before	About the same as before	A little or much less than before
middle schools	131	87%	11%	2%	90%	8%	2%
high schools	121	77%	20%	3%	79%	21%	0%

Table 6: Summary of 2009 Plant and their Pollinators art workshop (middle and high schools)							
Number of student respondents		My interest in the environment is...			My appreciation of the environment is...		
		A little or much greater than before	About the same as before	A little or much less than before	A little or much greater than before	About the same as before	A little or much less than before
middle schools	73	90%	10%	0%	86%	12%	2%
high schools	75	72%	25%	3%	67%	31%	2%

Table 7: Summary of 2009 Green Treasures intergenerational interviews (middle schools)							
Number of middle school student respondents		My interest in the environment is...			My appreciation of the environment is...		
		A little or much greater than before	About the same as before	A little or much less than before	A little or much greater than before	About the same as before	A little or much less than before
In Creole	115	60%	34%	6%	74%	21%	5%
In Spanish	110	74%	22%	4%	77%	20%	3%

Table 8: Summary of 2009 Debates, Environmental Immersion Day, and Research Projects (high schools)							
Number of high school student respondents		My interest in the environment is...			My interest in a career in an environmental sciences field is...		
		A little or much greater than before	About the same as before	A little or much less than before	A little or much greater than before	About the same as before	A little or much less than before
Environmental Debates	102	78%	18%	4%	54%	41%	5%
Environmental Immersion Day	200	86%	13%	1%	57%	37%	6%
Research Projects	85	79%	19%	2%	72%	26%	2%

SUMMARY

The survey results indicate that 72% of high school students and 76% of middle school students became more interested in the environment following their participation in the Fairchild Challenge. Furthermore, 79% of middle and high school students found that their knowledge of the environment increased since participating in at least one Fairchild Challenge option. In addition, 41% of middle and high school students that participated in the Fairchild Challenge indicated an increased interest in pursuing a career in environmental science. This year, the Fairchild Challenge has initiated **an alumni movement**, to keep in contact with student alumni through social networks such as Facebook, in an effort to track the long term college and career decisions and how the Fairchild Challenge impacted those decisions.

The surveys executed at the end of the program reported that 83% of middle and high school students could state ways in which plants are important. Of the student participants, 76% stated that they could persuade others to take environmental actions as a result of their education from their participation in the Fairchild Challenge. Moreover, 65% of middle and high school students reported that the Fairchild Challenge gave them new ideas by seeing how others have worked in the environmental field. Sixty-three percent of middle and high school students agree that the Fairchild Challenge provides them with an opportunity to apply what they learned to their coursework. In all, 76% (an increase of 8% from the previous year) of middle and high school students surveyed would like to compete in the Fairchild Challenge next year.

Even the teachers surveyed noticed a **change in student environmental attitudes**. Of the 207 middle and high school teachers surveyed, 95% noticed an increase in student interest in the environment, and 88% (up from 74% in 2008) of the teachers noted an increase in student environmentally-friendly behaviors following their participation in the Fairchild Challenge. Teachers also learned from this program; 93% of the teachers surveyed stated that their knowledge of the environment and environmental issues had increased; and 99% of them intend to participate in the Fairchild Challenge in the coming school year. The teachers were also satisfied with the program's curriculum integration to the state curriculum standards; **95% of the teachers surveyed (an increase of 86% from 2008) agreed that the Challenge was a worthwhile use of class time**. All (100%) of the teachers surveyed would recommend the Fairchild Challenge to their colleagues.

FEEDBACK

Comments from educators and partners:

You have a great program there that we were able to tell more people in the community about. I oversee all of our Going Green stories and The Fairchild Challenge is one of the most worthwhile and educational we have done. To see young people involved with environmental issues in the formats you provide is thrilling --- and it is clearly inspiring them to take an interest in one of the critical concerns of our lifetimes.
~Stu Jacobs, Executive Producer, Consumer Investigative Unit, NBC6, WTVJ

We have several teachers in our department working on the [Fairchild] Challenge this year and we have recruited students from other disciplines as well. We are very excited to have the opportunity to be involved and are learning a lot as we go along. We started showing "Kilowatt Ours" to the entire school this week to promote energy conservation. We had numerous students hunting for the proper subjects for the art project.

~Tyler Kapela, zoology teacher, Pembroke Pines Charter High School

I have to tell you: Saturday's awards ceremony was so heartening. To see so many young people, from so many backgrounds, coming together to celebrate the accomplishments of their peers in the area of environmental preservation was just extraordinary. Bravo! And thank you. Please know as well that your staff is just the greatest group of people—they represent you and Fairchild so very well.

~ Margaret Haun, MAST Academy

TEACHERS' FEEDBACK

When asked what they appreciated most about the Fairchild Challenge, teachers responded:

- Engaging students in an environmental discussion with their peers, truly makes them feel they have a duty to be responsible and stay informed.
- Develops a love of the environment, and a desire to contribute to your community.
- It helps teachers unite for one cause. Most teachers don't collaborate; this program encourages teachers to work together, plan, encourage students, and create environmentally aware activities.
- The joy of witnessing my students appreciate the connections between the class and the field experience. They were able to work with professionals in the field and the academic requirements they had to meet.
- Teachers are able to connect with their students and encourage them to learn OUTSIDE of the classroom.
- It broadened their awareness of environmental issues and showed them that art and science can be combined.
- The most valuable outcome is that the students are proud of the work they have accomplished.
- Competition options designed for creative expression and recognition of student's unique talents.
- Watching my students grow – watching them become environmental stewards – watching them decide to pursue a career in environmental science.

STUDENTS' FEEDBACK

When asked what they learned from the Fairchild Challenge, students responded:

- I have learned kids my age can do things to help the environment.
- Becoming an environmentalist has many advantages and is a great field to look into.
- I learn that healthy food can taste good.
- Even kids can use science as a powerful tool.
- I have become aware of my surroundings. I learned that recycling plastics is very important. It takes years to make plastic and thousands of years for it to decompose.
- I learned that I will have to respect all my elders because they have a lot of knowledge to give.
- A competition like this spreads ideas faster and better.
- I learned that plants are used for many reasons and ethnobotanists study the interactions between plants and humans.
- I have realized that we release an enormous amount of CO₂....and how, without knowledge, people can destroy the environment.
- The importance of environmental education.
- I have learned that invasive species are harmful to the environment.
- Gardens make the environment much healthier.
- How easy it is to help the environment and how beneficial that help is. Did you know how much energy could be saved if all of the newspapers in the world were recycled weekly?

Attachments on Pages 10-19

Attachment 1 - Fairchild Challenge Satellite Partners

As of February 2009, representatives from these 46 organizations have received initial training to launch the Fairchild Challenge at their sites:

American Horticultural Society (Virginia)
Bartlett Arboretum and Gardens (Connecticut)
Betty Ford Alpine Gardens (Colorado)
Blank Park Zoo (Iowa)
Bok Tower Gardens (Florida)
Botanic Gardens Conservation International (U.S., Canada, and U.K.)
Cape Fear Botanical Garden (North Carolina)
Centro Jardin Botanico de Merida (VENEZUELA)
Cherry Lake Tree Farm (Florida)
Chicago Botanic Garden (Illinois)
Chicago Park District (Illinois)
Cornell Garden-Based Learning Program (New York)
Cornell University – Cornell Plantations (New York)
Cox Arboretum (Ohio)
Desert Botanical Garden (Arizona)
Durban Botanic Garden (SOUTH AFRICA)
Ellett Landscape Services (Maryland)
Fort Ticonderoga - The King's Garden (New York)
Hermitage Foundation Museum (Virginia)
Huntington Botanical Gardens (California)
La Selva Biological Station (COSTA RICA)
Lewis Ginter Botanical Garden (Virginia)
Longwood Gardens (Pennsylvania)
Michigan State University - 4-H Children's Gardens (Michigan)
Minnesota Landscape Arboretum (Minnesota)
Missouri Botanical Garden (Missouri)
National Botanic Gardens (IRELAND)
Paul J. Ciener Botanical Garden (North Carolina)
Phipps Conservatory and Botanical Gardens (Pennsylvania)
Reeves-Reed Arboretum (New Jersey)
Reiman Gardens - Iowa State University (Iowa)
Silverglen Medicinal Plant Nursery (SOUTH AFRICA)
Sao Paulo City Hall (BRAZIL)
Singapore Environment Council (SINGAPORE)
Smithsonian Institution (Washington, D.C.)
Taltree Arboretum and Gardens (Indiana)
Thanksgiving Point (Utah)
University of California Davis Arboretum (California)
University of Delaware / Longwood (Delaware)
University of Florida/IFAS Pinellas County Extension - Florida Botanical Gardens (Florida)
University of Wisconsin - Madison Arboretum (Wisconsin)
U.S. Botanic Garden (Washington, D.C.)
Wonderland Gardens (Georgia)
Woodland Dunes Nature Center (Wisconsin)

Sites that have launched the Fairchild Challenge:

Bartlett Arboretum and Gardens (Connecticut)
Centro Jardin Botanico de Merida (VENEZUELA)
Cherry Lake Tree Farm (Florida)
Chicago Botanic Garden (Illinois)
Desert Botanical Garden (Arizona)
La Selva Biological Station (COSTA RICA)
Phipps Conservatory and Botanical Gardens (Pennsylvania)
Thanksgiving Point (Utah)
U.S. Botanic Garden (Washington, D.C.)

Sites expecting to launch in the near future:

Betty Ford Alpine Gardens (Colorado)
Blank Park Zoo (Iowa)
Bok Tower Gardens (Florida)
Huntington Botanical Gardens (California)
Longwood Gardens (Pennsylvania)
Michigan State University - 4-H Children's Gardens (Michigan)
Sao Paulo City Hall (BRAZIL)
Wonderland Gardens (Georgia)

Attachment 2: Fairchild Challenge Options at a Glance

FAIRCHILD CHALLENGE 2008-2009 OPTIONS AT A GLANCE: HIGH SCHOOLS

Fairchild Challenge Options	Max points
1 Eco-skit: "What a Waste!"	100
2A Fairchild Challenge design	100
2B Baynanza T-shirt design	100
3 Opinion Papers	300
4 Art: Plants and their pollinators	200
5 Environmental debate	250
6 Environmental Immersion Day	300
7 Research Projects	400
8 Environmental action	400
9 School garden / habitat restoration	400
10 Fairchild Challenge newsletter in two languages	100

Awards and Prizes

- All high schools that earn more than 900 points is presented with the **2009 Fairchild Challenge Award** at our awards ceremony on **Saturday, May 9, 2009**.
- The **sixteen top-scoring schools are awarded cash prizes** of \$1,000 (one), \$500 (five) or \$250 (ten) to support their environmental programs.
- One student and one teacher are nominated from each participating school as this year's **Environmental Role Model** or ERMie. ERMies are celebrated at the awards ceremony.
- Schools receive **four-person family passes to Fairchild, Fairchild Challenge drawstring backpacks**, and **T-shirts** to distribute to students and teachers who actively participate in the Fairchild Challenge.
- All schools earning the Fairchild Challenge Award for five consecutive years are inducted as **Fairchild Challenge schools of Excellence**, and receive a school banner.

Summary of requirements given to students and teachers

1 Eco-skit: “What a Waste”

Create a piece – spoken, acted or sung; comic or serious – about waste (e.g., toxic, electronic, municipal solid, excess packaging, wasteful waste or any other type of waste). You may incorporate rhythmic or musical backup into your performance; acoustic accompaniment only. Relevant costumes are encouraged. Twenty-five (25) additional points will be allocated if a teacher or school administrator joins the performance.

2A & 2B Fairchild Challenge Design & Baynanza T-shirt Designs

Design an image that represents the Fairchild Challenge 2009 and/or design an image that represents Baynanza Biscayne Bay Cleanup Day to be printed on a backpack or T-shirt.

3 Opinion Papers Based on Research

Research one of the following topics and complete a 1,500 word paper.

A. Write a letter to an elected official about a local, state, or national environmental issue of importance to you. In an attachment, include a more complete explanation and presentation of the situation.

B. Would you recommend the film “Kilowatt Ours” to your peers? Why or why not? Defend your viewpoint and include a brief synopsis of the film.

C. Select and utilize any two carbon footprint calculators from a list provided and compare the drawbacks and benefits of each. In your opinion, is one more effective than the other? Suggest additional features that would enhance the effectiveness of these models in inspiring change in consumer behavior.

4 Art: Plants and their Pollinators, in watercolor and photography

Study a plant-pollinator pairing found locally in South Florida. After ensuring through observation that this is an actual pairing of pollinator and plant, depict both the plant and the pollinator in a painting and/or photograph.

5 Environmental Debate

High school students participate in Student Congress debates at Fairchild to tackle pressing local and global environmental issues. Students are given a set of debate questions covering topics as diverse as biofuel technology, population control, recycling and urban sprawl. Debate questions are framed as bills and resolutions, and students, using parliamentary protocol, speak to the issue and vote on whether or not to pass the bill.

6 Environmental Immersion Day

Students spend a day doing comprehensive, hands-on environmental work/study in small groups and benefit from authentic experiences with environmentalists, biologists, botanists and researchers in laboratories and/or natural areas at sites throughout Miami-Dade County.

7 Research Projects

Select one research project topic from the list below. Projects must be presented by students for judging at the Research Projects Showcase at Fairchild. Students must be prepared to give a three-minute presentation and respond to judges’ questions.

A. Inner-City Sanctuary: Design a 3-dimensional model and blueprint of a pocket park, rooftop garden, or green alley with areas for play, rest, contemplation, and other similar uses that individuals of all ages can enjoy in a cement-weary inner city.

B. Green Cuisine: Take one fast food menu item and consider the impacts of this food choice on other countries/cultures by evaluating its characteristics. Based on your findings, prepare a low-impact vegetarian main course dish.

C. Solar Inventions: Design and construct a functional solar invention that may be useful in a developing nation.

D. Field Phenology: Choose one or more plants of a single species that you can observe on a regular basis. For at least two full months – record quantitative data on which you observe phenological events.

8 Environmental Action

Schools must submit 20 page reports outlining environmental initiatives taken to improve home, school and community. These initiatives should vary considerably and include several of the following: tree canopy measurements, water and energy audits, initiating recycling programs, working with community centers etc.

9 School Garden or Habitat Restoration

Establish, expand, maintain and/or restore a garden at your school on a specific theme. Interpret some aspect of your garden or habitat so that others at your school also benefit from your project. Interpretation could include creating and installing one or more interpretive signs, designing a booklet or brochure, creating a guided nature trail or writing the text for a guided tour of the garden or habitat.

10 Newsletter in Two Languages

Keep a record of the Challenge options your school participated in this year. Create a newsletter that details what your school has done or is doing to compete in the Fairchild Challenge 2009. The newsletter should summarize all of the Challenge options your school entered.

**FAIRCHILD CHALLENGE 2008-2009
OPTIONS AT A GLANCE: MIDDLE SCHOOLS**

Fairchild Challenge Options	Max points
1 Eco-skit: "What a Waste!"	100
2A Fairchild Challenge design	100
2B Pine rockland postcard	100
3 Environmental cartoon with letter	300
4 Research poster: carbon-cycling in the rainforest	200
5 Art: Plants and their pollinators	200
6 Green Treasures: intergenerational interviews	300
7 Environmental action	400
8 School garden / habitat restoration	400
9 Fairchild Challenge newsletter in two languages	100

Summary of requirements given to students and teachers

1 Eco-skit: "What a Waste"

Create a piece – spoken, acted or sung; comic or serious – about waste (e.g., toxic, electronic, municipal solid, excess packaging, wasteful waste or any other type of waste). You may incorporate rhythmic or musical backup into your performance; acoustic accompaniment only. Relevant costumes are encouraged. Twenty-five (25) additional points will be allocated if a teacher or school administrator joins the performance.

2A & 2B Fairchild Challenge and Pine Rockland Postcard Designs

Design an image that represents the Fairchild Challenge 2009 and/or design a postcard that brings recognition to the plants, animals, and insects living in South Florida's pine rocklands. Postcard designs should include the species' scientific and common names. Write a short note to a county commissioner explaining why you chose your subject and why it is an important part of the pine rockland ecosystem of South Florida. Encourage the county commissioner to help conserve pine rockland areas.

3 Environmental Cartoon with Letter

Create an environmental cartoon of up to four panels about climate change. Students may illustrate a case study topic discussed in the Botanic Gardens Conservation International report: "Plants and Climate Change: which future?" Accompany the cartoon with a 200-word letter to an editor of a newspaper. In the letter, explain your cartoon and describe how it informs or educates others about the environmental problem(s) you illustrated.

4 Research Poster: Carbon-Cycling in the Rainforest

Use the computer model provided to simulate the effects of rainforest deforestation and agriculture (planting pasture crops) on the amount of CO₂ in the atmosphere. Report your findings on a stand-alone, 36" x 48' tri-fold science board on the theme of rainforests and climate change.

5 Art: Plants and their Pollinators, in watercolor and drawing

Study a plant-pollinator pairing found locally in South Florida. After ensuring through observation that this is an actual pairing of pollinator and plant, depict both the plant and the pollinator in a watercolor painting and/or drawing.

6 Green Treasures: Traditional Uses of Plants

Intergenerational interviews provide a wealth of information about little-known uses and possible healing abilities of plants. Interview an older person about interesting ways that he or she uses or has used plants. Conduct further research on an interesting, useful plant identified by the person you interviewed. Describe your research, about both the plant and the person you interviewed, in a two-page summary.

7 Environmental Action

Schools must submit 20 page reports outlining environmental initiatives taken to improve home, school and community. These initiatives should vary considerably and include several of the following: tree canopy measurements, water and energy audits, initiating recycling programs, working with community centers etc.

8 School Garden or Habitat Restoration

Establish, expand, maintain and/or restore a theme garden at your school. Interpret some aspect of your garden or habitat so that others at your school also benefit from your project. Interpretation could include creating and installing one or more interpretive signs, designing a booklet or brochure, creating a guided nature trail or writing the text for a guided tour of the garden or habitat.

9 Newsletter in Two Languages

Keep a record of the Fairchild Challenge options your school participated in this year. Create a newsletter that details what your school has done or is doing to compete in the Fairchild Challenge 2009. The newsletter should summarize all of the Challenge options your school entered.

Attachment 3: Fairchild Challenge 2009 Awards

FAIRCHILD TROPICAL BOTANIC GARDEN

Fairchild Challenge 2009 High School Awards

Congratulations to the almost 18,500 students who participated in the Fairchild Challenge 2009 at 52 South Florida high schools

FAIRCHILD CHALLENGE AWARDS

By earning more than 900 points, 23 high schools received the Fairchild Challenge Award

Archbishop Coleman Carroll	Mater Academy Charter	Miami Springs
Carrollton School	Miami Central	Our Lady of Lourdes
Coral Reef	Miami Country Day	Ronald Reagan/Doral
G. Holmes Braddock	Miami Jackson	Somerset Academy Silver Palms
Gulliver Preparatory	Miami Killian	South Plantation
Hialeah-Miami Lakes	Miami Palmetto	Westland Hialeah
John A. Ferguson	Miami Senior	Young Men's Prep Academy
MAST Academy	Miami Southridge	

FAIRCHILD CHALLENGE HIGHEST HONORS

Cash prizes for environmental initiatives awarded to the 16 top-scoring high schools

\$1,000

Miami Killian South Plantation

\$500

Carrollton School Miami Palmetto
MAST Academy Our Lady of Lourdes

\$250

G. Holmes Braddock	Mater Academy Charter	Miami Springs
Gulliver Preparatory	Miami Country Day	Ronald Reagan/Doral
Hialeah-Miami Lakes	Miami Jackson	Young Men's Prep Academy
	Miami Southridge	

FAIRCHILD CHALLENGE "SCHOOLS OF EXCELLENCE"

Banners are awarded to schools that earn the Fairchild Challenge Award for five consecutive years

Inducted 2009

G. Holmes Braddock Gulliver Preparatory Hialeah-Miami Lakes

Inducted 2008

MAST Academy Miami Killian Miami Southridge South Miami

Inducted 2007

Coral Reef Miami Palmetto Our Lady of Lourdes

**FAIRCHILD TROPICAL BOTANIC GARDEN
Fairchild Challenge 2009 Middle School Awards**

Congratulations to the more than 26,500 students who participated in the
Fairchild Challenge 2009 at 64 South Florida middle schools

FAIRCHILD CHALLENGE AWARDS

By earning more than 700 points, 33 middle schools received
the Fairchild Challenge Award

Arvida	Herbert A. Ammons	Redland
Aventura City of Excellence	Jose de Diego	Renaissance Charter
Carrollton School	José Martí	Richmond Heights
Centennial	Key Biscayne K-8	Ruben Dario
Coral Way K-8	Kinloch Park	Shenandoah
Devon Aire K-8	Miami Country Day	Somerset Academy Silver Palms
Doctors Charter School	Miami Lakes K-8	South Miami K-8
Eugenia B. Thomas K-8	Miami Springs	South Miami Middle
Frank C. Martin K-8	Norland	St. Andrew Catholic
G.W. Carver	Palmetto	St. Kevin Catholic
Glades	Ponce de Leon	West Miami

FAIRCHILD CHALLENGE HIGHEST HONORS

Cash prizes for environmental initiatives awarded to
the 16 top-scoring middle schools

\$1,000

Shenandoah Middle School Museums Magnet

\$500

Aventura City of Excellence	George W. Carver
Carrollton School	Redland
West Miami	

\$250

Coral Way K-8	José Martí	Ruben Dario
Devon Aire K-8	Miami Springs	South Miami K-8
Glades Middle	Norland Middle	South Miami Middle
	Ponce de Leon	

FAIRCHILD CHALLENGE "SCHOOLS OF EXCELLENCE"

Banners are awarded to schools that earn the Fairchild Challenge Award
for five consecutive years

Inducted 2009

Centennial	Glades
Kinloch Park	South Miami Middle

Inducted 2008

George W. Carver	José Martí
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Attachment 4: Environmental Immersion Day Sites, 2009

A.D. Barnes Park
Biscayne Bay Aquatic Preserve
Biscayne Nature Center
Castellow Hammock
Deering Estate
Dumond Conservancy
Everglades National Park
Fruit and Spice Park
Greynolds Park
John Pennekamp State Park
The Kampong
Kids Ecology Corps
Miami-Dade College, Kendall
Miami-Dade College, North
Montgomery Botanical Center
NOAA National Marine Fisheries
NOAA AOML
National Park Service
Officer Snook, Youth Environmental Programs
Oleta River State Park
South Florida Water Management District
Shake-a-Leg Miami
Tropical Audubon Society, Miami
University of Miami Rosenstiel School of Marine and Atmospheric Science
United States Department of Agriculture
Virginia Key Beach Park Trust

Attachment 5: Fairchild Challenge School Gardens 2008-2009

Middle Schools

1. Arvida Middle School
2. Aventura City of Excellence School
3. C.O.P.E. North
4. Carrollton School of Sacred Heart
5. Centennial Middle School
6. Coral Way K-8
7. Devon Aire K-8
8. Doctor's Charter School
9. G.W. Carver Middle
10. Glades Middle
11. Herbert A. Ammons Middle
12. Jose de Diego Middle School
13. Jose Marti Middle
14. M.A. Milam K-8 Center
15. Mater Academy East Middle
16. Miami Lakes K-8
17. Miami Springs Middle
18. Norland Middle
19. Palmetto Middle
20. Ponce de Leon
21. Redland Middle
22. Renaissance Middle Charter School
23. Ruben Dario Middle
24. Ruth Owens Kruse Educational Center
25. Shenandoah Middle Museums Magnet
26. Somerset Academy Silver Palms
27. South Miami K-8
28. South Miami Middle
29. Southwood Middle School
30. St. Andrew Catholic School
31. West Miami Middle School

High Schools

1. Archbishop Coleman F. Carroll High
2. Carrollton School of the Sacred Heart
3. Coral Reef Senior High
4. D.A. Dorsey Educational Center
5. Doctor's Charter School of Miami Shores
6. Forest Hill High School
7. G. Holmes Braddock Senior High
8. Hialeah-Miami Lakes Senior High
9. MAST Academy
10. Mater Academy Charter High
11. Miami Central Senior High
12. Miami Country Day School
13. Miami Jackson Senior High
14. Miami Killian Senior High
15. Miami Northwestern Senior High
16. Miami Palmetto Senior High
17. Miami Springs Senior High
18. North Miami Senior High
19. Our Lady of Lourdes Academy
20. PanZOu Project
21. Pembroke Pines Charter High
22. Project Bridge
23. Robert Renick Education Center
24. Ronald Reagan/Doral Senior High
25. Ruth Owens Kruse Educational Center
26. Somerset Academy Charter High
27. South Miami Senior High
28. South Plantation High
29. Young Men's Preparatory Academy

We also trained **40 Fairchild Challenge Teachers** through our School Garden Workshop.