Energy Camps that are Energizing

Nina Stokes

FLATE @ Hillsborough Community College

Summer Energy Camps

- Hillsborough Community College's Summer Energy Camp
- Funded through FLATE and FESC (Florida Energy Systems Consortium
- Part of a network of energy-related camps offered simultaneously by the NSF-funded EST^2 (Creating an Energy Systems Technology Technician Workforce in Florida) Project Team at:

  Brevard Community College
  Florida State College at Jacksonville
  Hillsborough Community College
  Tallahassee Community College

About FLATE:

Florida Advanced Technological Education Center

National Science Foundation (NSF) Regional Center of Excellence

Created in 2004

One of 46 Advanced Technological Education (ATE) Centers of Excellence in the United States funded by the NSF Foundation .

ATE Centers are focused on improving STEM education and training to meet the technician workforce needs of American advanced technology industries.

Hillsborough Community College

2013
5 camps
93 students
58 % male
42% female

2012:
4 camps
62 students
35% female
79% African American/Hispanic

2011:
3 camps
34 students
41% female
94% African American/Hispanic

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Summer Energy Camps for Middle School Students

When: Summer 2011, 2012, 2013

Where: HCC SouthShore Campus, Ruskin, FL

Who: Students from Beth Shields Middle School in Ruskin, enrolled in Hillsborough County's AVID (Advancement Via Individual Determination) program

Why: To provide students with opportunities to learn about the many aspects of renewable energy. technologies

Camp Logistics

Site: **Hillsborough Community College SouthShore Campus**

School: Beth Shields Middle School, Ruskin

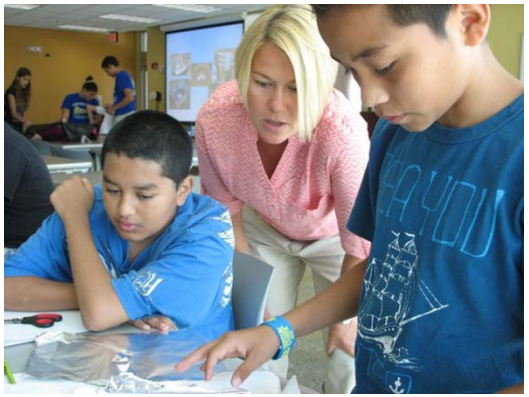
Cost: No cost to the students
School District cost: $70/student

Lunch: Delivered daily

Transport Issues: Camp hours/attendance

CAMP AGENDA – Day 1

- Welcome, Introductions, Campus directions, and Overview of Camp
- Energy Pre-test
- Importance of a college education, examples of success
- What is energy and why is it important to our society?
- How do we use energy now? (fossil fuels for electricity) *[Kilowatt Ours Video: 55 mins]*
- Fossil Fuel Lab



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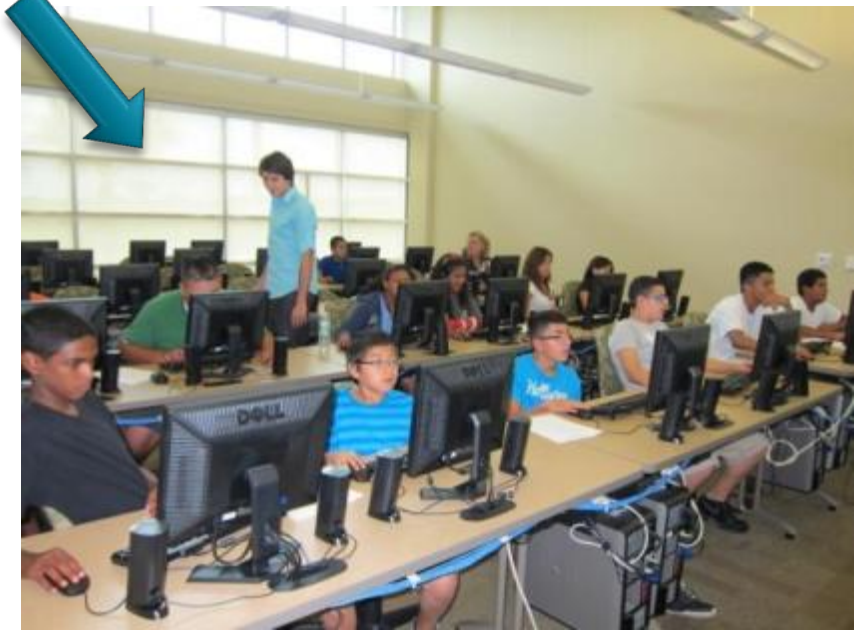
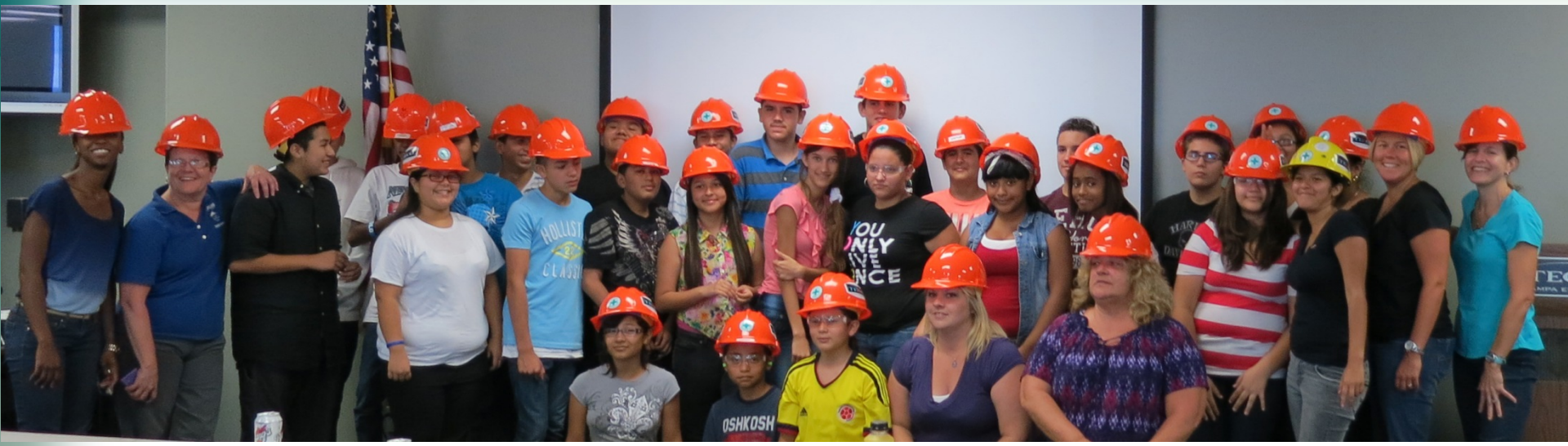
CAMP AGENDA – Day 1

Computer Lab: Simulations



Van de Graff Demonstration

CAMP AGENDA – Day 2
TECO Tour

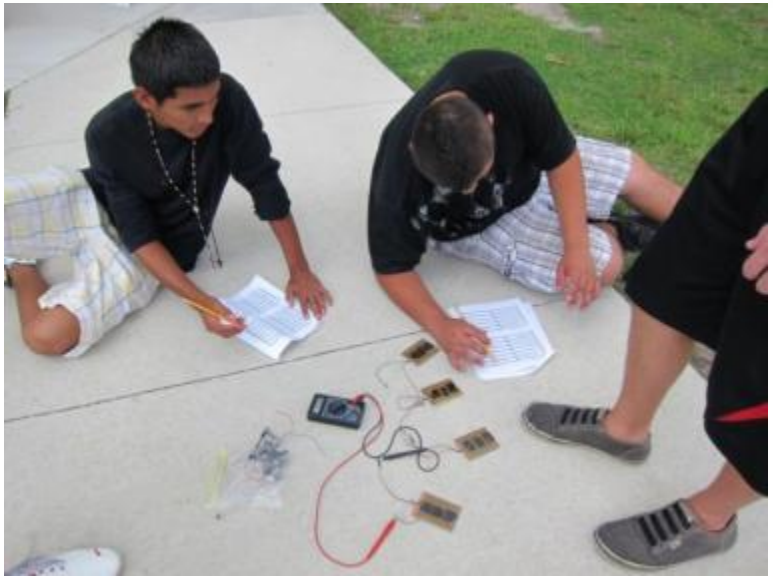


Students were treated to a short presentation, followed by a tour of the facility and a pizza lunch.

CAMP AGENDA – Day 2

Overview of new ways to make electricity:

- Wind
  - Photovoltaic
  - Solar thermal
  - Biomass fuels
  - Fuel cells
  - Ocean energy



Introduce the concept of photovoltaics for electricity generation.

CAMP AGENDA – Day 2
Solar Energy

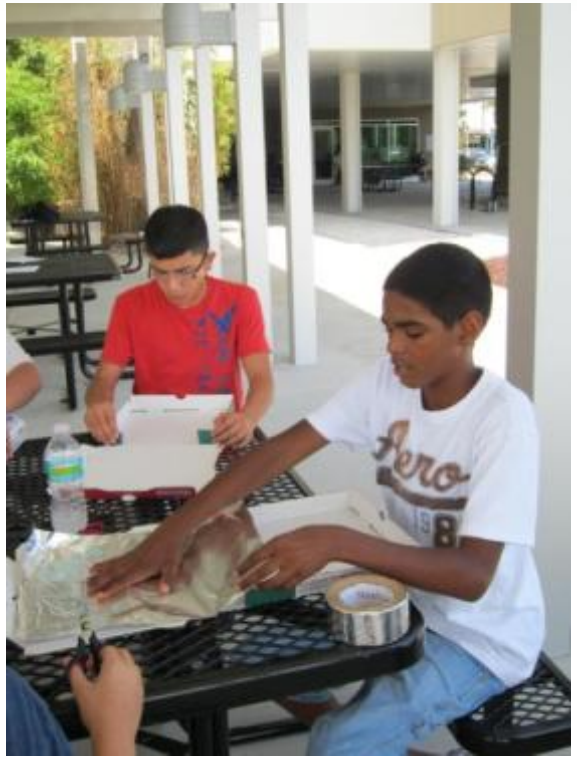
Introduce the concept of solar thermal for heating, electricity, cooking

(Lunch: enjoy sun-baked goodies)

Break up into two groups with two teams per group.

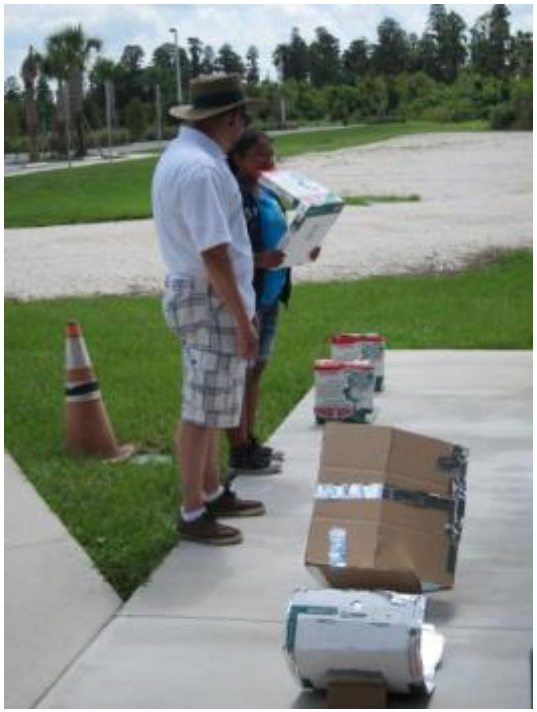
1. **Photovoltaic Station**
2. **Solar thermal Station**

After one hour, groups switch stations.



CAMP AGENDA – Day 2
Solar Energy

Constructing Solar Ovens



A local pizzeria donated pizza boxes for the solar ovens

CAMP AGENDA – Day 3
Wind Energy

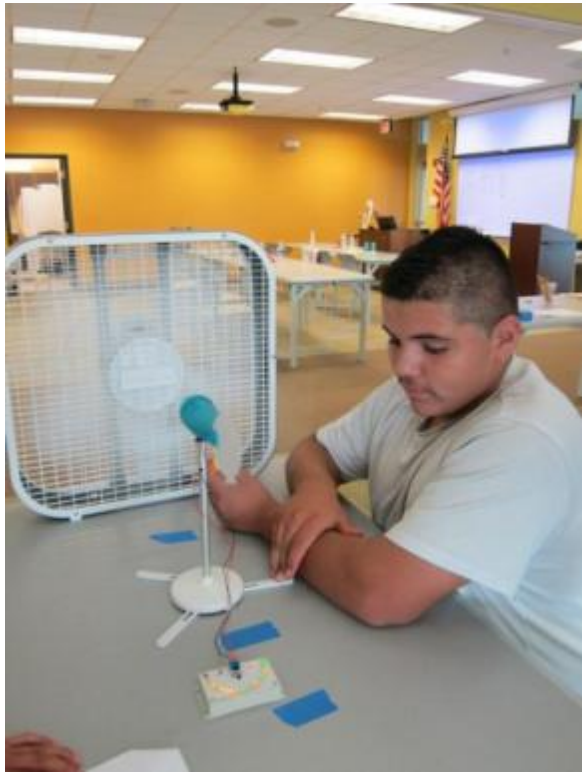
Introduction to Wind Turbines and Electricity

Construct a simple <u>Windmill Generator</u>

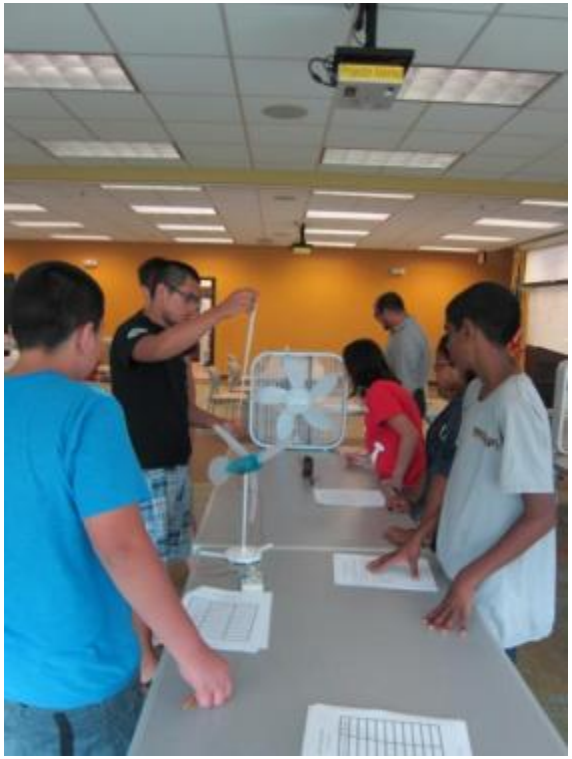
<u>Wind Turbine Stations</u>:

Break up into two groups with two teams per group.

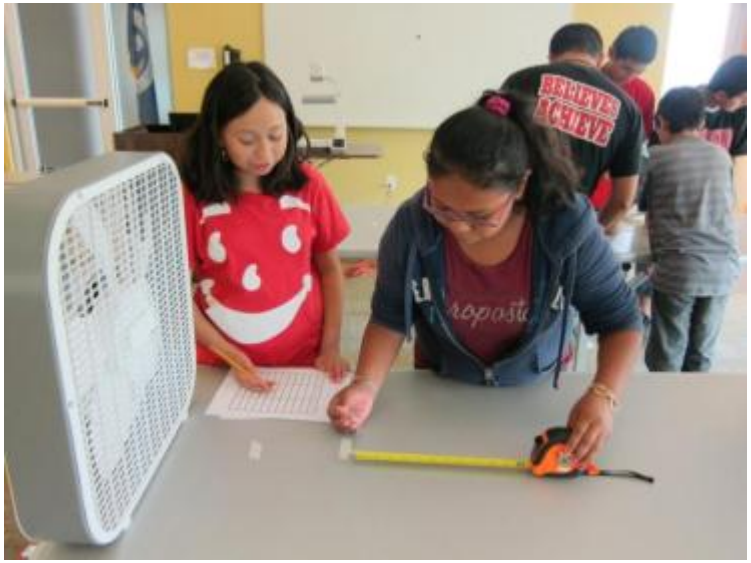
After one hour, groups switch stations.



CAMP AGENDA – Day 3
Wind Energy

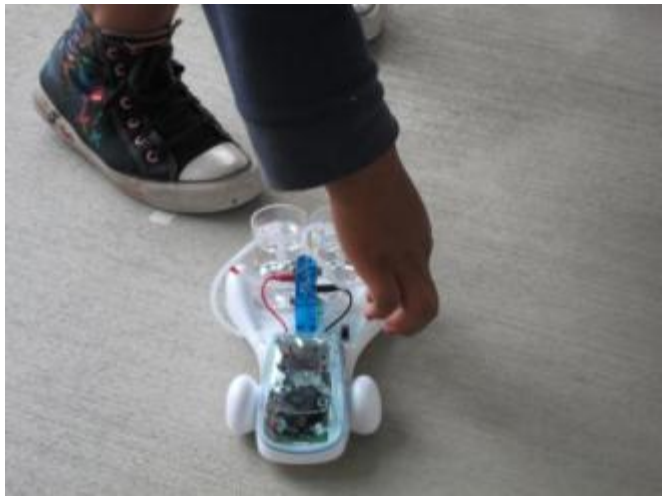


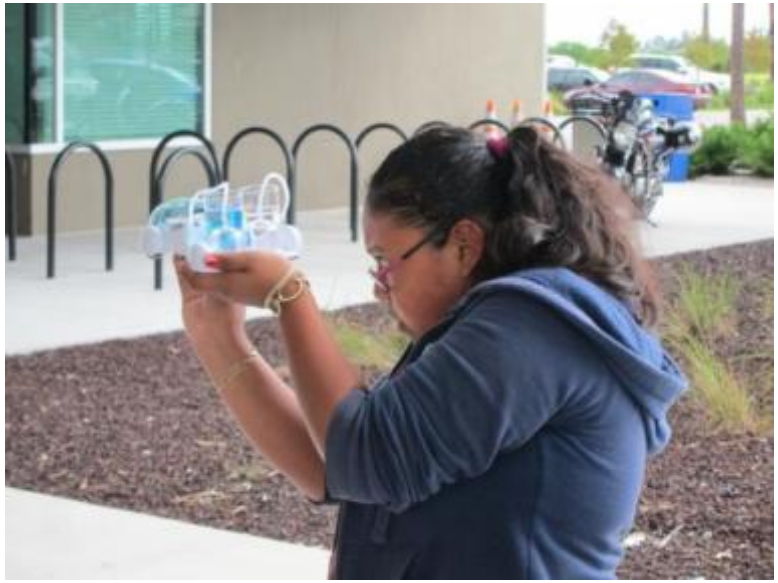
Calculating and plotting wind speed.



CAMP AGENDA – Day 4
Fuel Cells

Introduction to Fuel Cells and Fuel-Cell Cars





Hydro-Car Races

Final Day of Camp

Tour of HCC SouthShore LEED-certified campus

Energy Post-Test (Quiz!) 24% learning increase

Student Surveys:

Career Impact Survey:

100% of students said that they learned new things about energy and 95% stated that they felt the camp would help them making future career choices with over half saying that they would consider a career in clean energy

Student Feedback: Surveys

The thing I liked MOST about the camp was:

"the experiments we did were a magnificent experience for an 8th grader"
"That I got to do a lot of hands on activities"
"We got to be creative and at the same time learn something"
"The thing I like about energy is we do these awesome projects of energy"
"That I learned more about energy"
"Cool experiments"

The thing I liked LEAST about the camp was:

"watching the videos"
"The videos are too long"
"long videos"

Suggestions for improvement:
"More hands on activity"
"more experiments"

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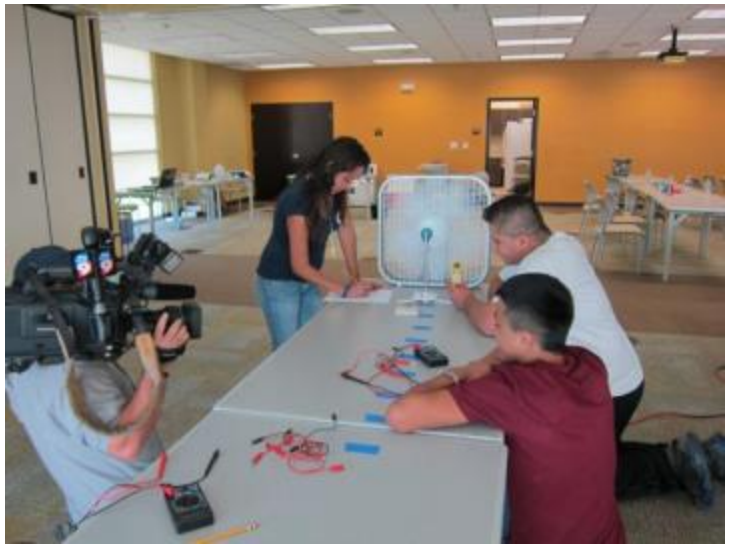
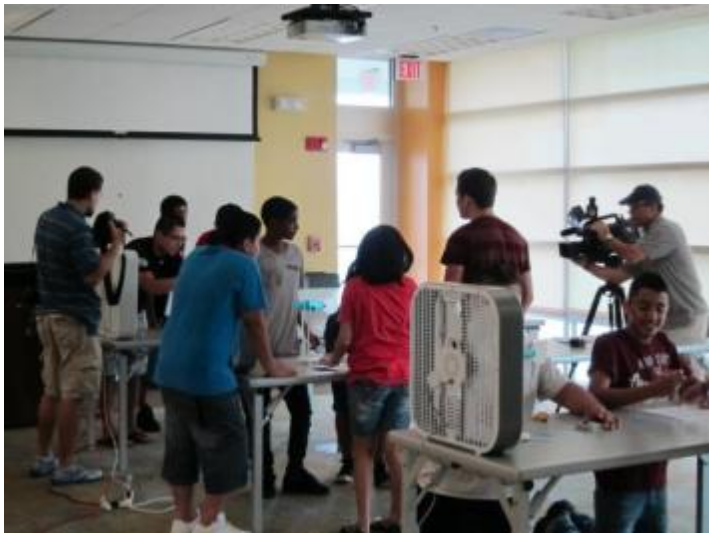
Press Coverage:



Bay News 9 and the Tampa Tribune covered the Camp



Energy Education for the Future

Camps likes the ones described here "hook" kids in to STEM subjects and get them excited about learning concepts that they might have once thought were "way too hard", as well as introducing them to the growing number of high tech energy-related careers available.

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Energy Camp-in-a-Box

ENERGY SUMMER CAMPS

Suggestions and Activities

- **Intended for Middle and High School Students**
- **Suggestions, activities, sample agendas and resources to help you put together a successful camp to get kids thinking about current and future energy generation and use!**

Resources: FLATE wiki

www.fl-ate.org

www.madeinflorida.org

http://flate.pbworks.com

- **Energy Camp-in-a-Box**
- **Made in Florida Lessons**

Contact Information

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