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Florida girl, 15, builds small generator out of recycled materials for \$12

By Medill News Service, adapted by Newsela staff 04.25.16



WASHINGTON, D.C. — Hannah Herbst is on a mission to build a small, affordable energy source. When the Florida high school student learned that her Ethiopian pen pal lived without electricity and running water, she knew she had to do something.

Hannah said she wants her energy source to help bring power to developing countries.

“Everything that I’m fortunate to take for granted every day, she doesn’t have access to,” she said.

Hannah recently presented the early model of her project, BEACON, at the annual White House Science Fair. The name stands for Bringing Electricity Access to Countries Through Ocean Energy. The fair is the sixth and final such event of President Barack Obama’s time in office. Excited young exhibitors demonstrated a wide variety of inventions. They ranged from a less expensive test for Ebola to a more fire-resistant suit for firefighters.

It Floats And It’s Inexpensive

BEACON uses a Pelton wheel system, or a water turbine, and connects to an electric engine. The ocean currents push the wheel, converting it to electricity. If made on a bigger scale, BEACON could power a pump to turn saltwater into fresh water or a 12-volt battery. For now, Hannah is focused on making many, smaller-scale units.

Hannah’s model is different from existing turbines, which are often huge, expensive and operate on the ocean floor. BEACON is cheap and floatable, so anybody can use it. She made one out of recyclable materials for only \$12.

Hannah is just 15 years old and a student at Florida Atlantic University High School. She has come a long way since she came up with the idea almost three

years ago. She presented her project at county and state science fairs. Last fall, Hannah entered and won Discovery Education and 3M’s Young Scientists Challenge, becoming “America’s top young scientist.”

It Started With A Young Girl Named Ruth

Hannah won \$25,000 and sent \$3,000 of her prize to Compassion International. It is the nonprofit organization that connected her with 9-year-old Ruth and her family in Dessie, Ethiopia. A couple of weeks ago, Hannah received pictures of the electric engine they bought with the money. The family also was able to pay some medical bills.

Hannah had not shown much interest in science in her early school years. Then her parents, Joel and Julie Herbst, switched her from theater to engineering summer camp in the seventh grade. As a newcomer to the field and the only girl there, she felt intimidated at first. She caught on quickly, though, and her team won the camp’s weeklong contest.

At the White House event, Obama discussed getting more underrepresented groups like women and people of color involved in science. “We’ve got to get more of our young women and minorities into science and technology, engineering and math, and computer science,” he said. “We’re not going to succeed if we got half the team on the bench.”

Urging Other Girls To Try Math, Science

Hannah has made it part of her mission to encourage other girls in science and math.

It is hard to be in such a male-dominated field. She spoke about being one of the only girls in science. “But once you realize that you can make a difference regardless of gender or any of those other stereotypes, then you’re fine.”

The young scientist is working to introduce elementary and middle school students to STEM subjects. The acronym stands for science, technology, engineering and mathematics. She wants to help them develop kits of her first model.

On Her Way To Powering The World

Recently, Hannah teamed up with 3M, a large company based in Minnesota. They want to figure out how to sell BEACON. She hopes one day to be able to provide BEACON to people like Ruth.

Over the summer, Hannah plans to work on her design to make it more powerful. In the fall, she starts full-time college classes at Florida Atlantic University. She wants to join the theater society as well.

“No matter how difficult things seem or how much you think that you can’t do it based off what other people say, you just have to keep going,” Hannah said.

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“Never give up, because something could really impact someone’s life in a way that you can’t even imagine.”

Directions: Answer the following questions on this worksheet.

1. Read the section "It Floats And It's Inexpensive." Select the paragraph that explains why Hannah's invention will be MORE useful than old generators and provide evidence from the text to support this

2. Which section highlights the idea that Hannah plans to improve and spread her technology?

- (A) It Floats And It's Inexpensive
- (B) It Started With A Young Girl Named Ruth
- (C) Urging Other Girls To Try Math, Science
- (D) On Her Way To Powering The World

3. What is the summary of the section "It Started With A Young Girl Named Ruth"?

- (A) Hannah won a \$25,000 prize for her invention, and a nonprofit connected her with a family in Ethiopia who needed some money.
- (B) Hannah sent some prize money to help a family buy a generator in Ethiopia, and now she hopes to inspire other girls to join STEM fields.
- (C) Hannah sent some prize money to help a family buy a generator in Ethiopia, and with it, they were able to pay some medical bills.
- (D) President Obama held an event at the White House to urge more young women to join STEM fields, and help them to develop their own inventions.

4. Which detail would be MOST important to include in a summary of the article?

- (A) Hannah is just 15 years old and a student at Florida Atlantic University High School.
- (B) Hannah was not originally interested in the STEM fields at a young age.
- (C) It is difficult for women to be in the STEM field with so many men.

(D) Hannah recently teamed up with 3M to expand her new invention and provide it to more people.

5. Write a short paragraph that explains the central idea of the article. Use at least two details from the article to support your response.
