

Warner Internship for Scientific Enrichment (WISE) - Activity Summary

Elena Tomasi, 07/07/2017

My WISE proposal

- ▶ Perform hands-on science experiences for K-12 students
- ▶ Focus on a specific under-represented group in atmospheric sciences: girls
- ▶ Get involved in projects developed for girls inclusion and to raise their awareness in science, technology, engineering, and mathematics (STEM) disciplines
- ▶ Introduce girls to atmospheric physics and make them appreciate the impact of atmospheric science on society

Framework of my WISE activities

- ▶ International science and education program
- ▶ NSF funded PBS Kids show that encourages girls in STEM



GLOBE/Scigirls workshops

- ▶ WHAT: 4 Saturday workshops from April 22 till May 13
- ▶ WHERE: Boulder Ridge Mobile Home Park (Lafayette)
- ▶ WHO: 6 to 14 years-old girls
- ▶ WORKSHOP TOPICS
 - ▶ OUR PLANET: Cloud Clues and Wetland Band
 - ▶ HEALTHY BODY: Working it out and Hearth to hearth
 - ▶ ENGINEERING AND DESIGN DAY: Blowin' in the Wind
 - ▶ ENGINEERING AND DESIGN DAY: Robots and aerodynamics

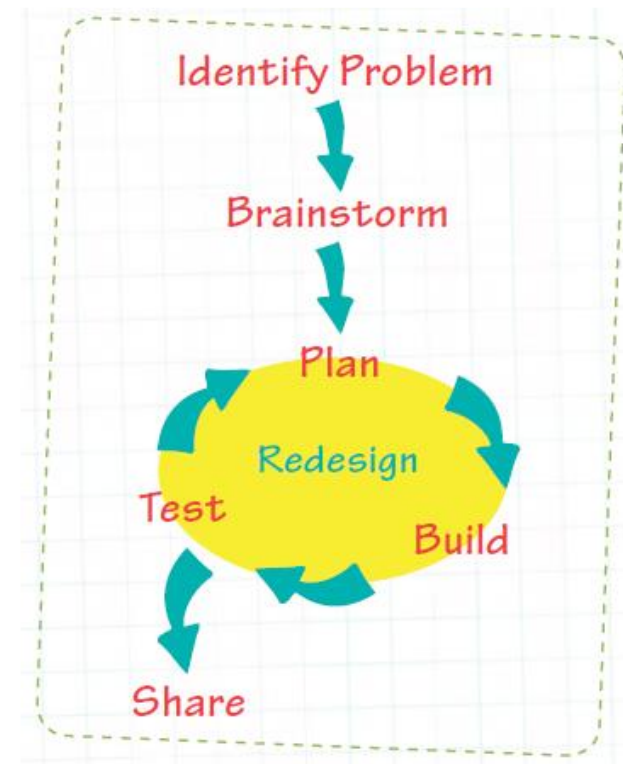
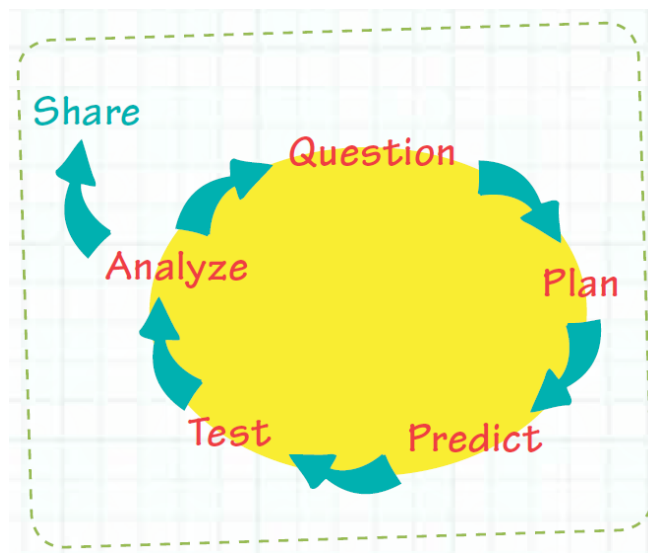


My research at RAL

- ▶ Working in the Weather Systems Assessment Program (WSAP) with Branko Kosovic and Pedro Jimenez
- ▶ High-resolution weather simulations over complex terrain
- ▶ Testing and evaluating a new WRF 3D PBL scheme developed in order to improve model forecast over complex terrain
- ▶ Many different applications:
 - ▶ ENERGY PRODUCTION FROM WIND POWER PLANTS
 - ▶ ACCURATE FORECAST OF POLLUTANT DISPERSION

Workshop on wind energy

1. Introducing the topic: Scigirls episode «Blowin' in the wind»
2. Discussing the topic
3. Hands-on activities using a science game
4. Hands-on activities: build your own windmill



Workshop on wind energy

2. Discussing the topic:

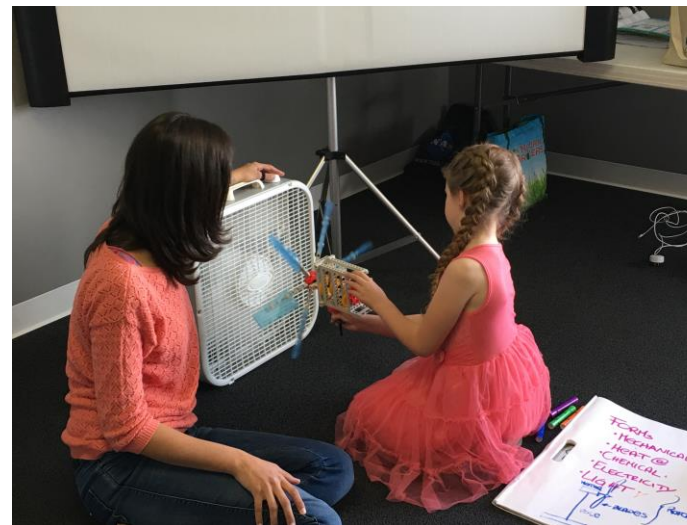
- ▶ What is energy?
- ▶ Which sources and forms of energy exist?
- ▶ Which energy is renewable? Which one is not?
- ▶ Can we transform energy?



Workshop on wind energy

3. Hands-on activities using a science game

- ▶ Which are the components of a wind turbine?
- ▶ Does the design of the blades matter?
- ▶ Can we transform the wind energy in something else?
 - Lift a weight!
 - Light an LED!
- ▶ Does the strength of the wind matter?



Workshop on wind energy

4. Hands-on activities: build your own windmill!

- ▶ Can we build a windmill that lights up an LED?
- ▶ What do we need?
- ▶ How can we proceed?
- ▶ Is it working?
- ▶ What else can we do to light the LED up?



What I learned from this experience

- ▶ When you teach kids STEM:
 - ▶ Change your vocabulary (drastically)
 - ▶ Increase their curiosity on the topic, let them understand how science is important to our society
 - ▶ Let them work in groups and learn from each other
 - ▶ Don't give them answers, give them questions!
 - ▶ Don't force them to get to your solution, let them experiment their own different (wrong?) ways

Further developments

- ▶ Continue to participate to the GLOBE program from Italy
 - ▶ Italy is an active member in the GLOBE program
- ▶ Propose the same workshop in my hometown, Trento
 - ▶ Does a different scholastic system influence kids attitude towards STEM disciplines?
- ▶ Introduce the workshop in the teaching program of the MUSE, the Science museum in Trento



THANK YOU

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