Global Learning using Solar Projects in China

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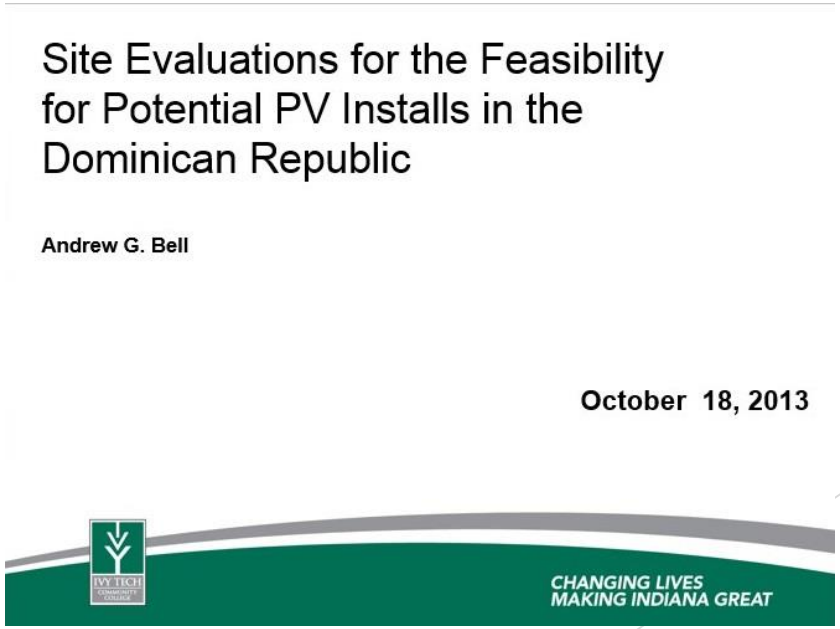
Introduction

- Participated in 1st cohort for GLAI (2013-2014)
- Participated in Renewable Energy trip to Costa Rica (2013)
- Completed training in PV installs (2013)
- Traveled to Dominican Republic for evaluation of candidate solar panel site s (2013)
- Traveled to Wuxi China as part of Faculty Exchange (2014)



Conclusion

- We need more global content in our courses
- Renewable energy is an important technical issue facing the world
- Solar technology is an important part of renewable energy
- Dominican Republic has severe electrical problems
- China could be a partner to develop global solution to solar technology

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The Plan & Goals

- Use solar technology to introduce students to “challenges facing global society”
- Introduce students to global concepts in ENGT 120 (an intro to engineering course)
- learning goals & objectives
- 1.) Learn that we are not alone on this planet.
- 2.) Engineering technology can be used to help improve the quality of life of other people.
- 3.) Other cultures can provide new insight into solving engineering problems through diversity.
- Globally we need renewable energy to reduce greenhouse gas emissions

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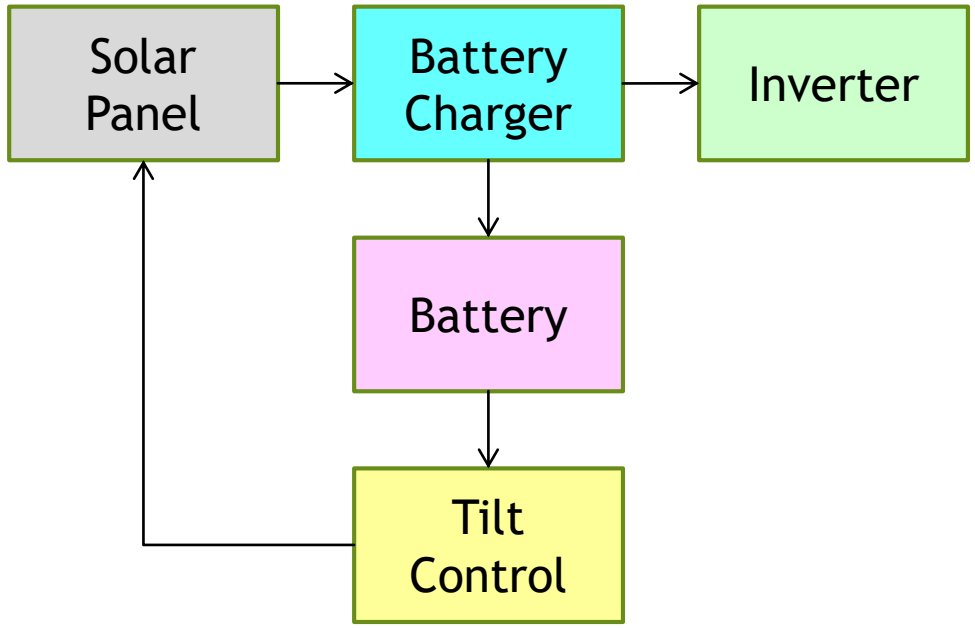
The Project

- Design, build and test a 100W Single Axis Solar Panel System



Converts sunlight to electrical energy

Controls charging of battery

Converts DC to AC voltage

DC power source (stores energy)

Controls the tilt angle of the solar panel

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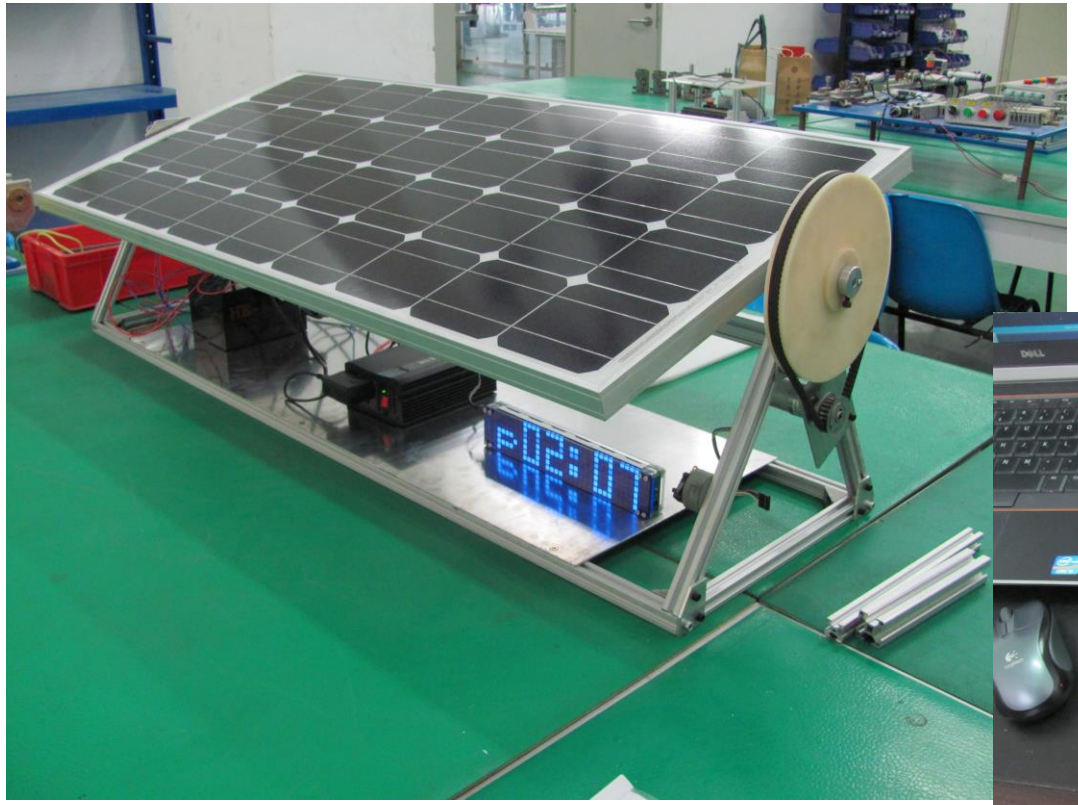

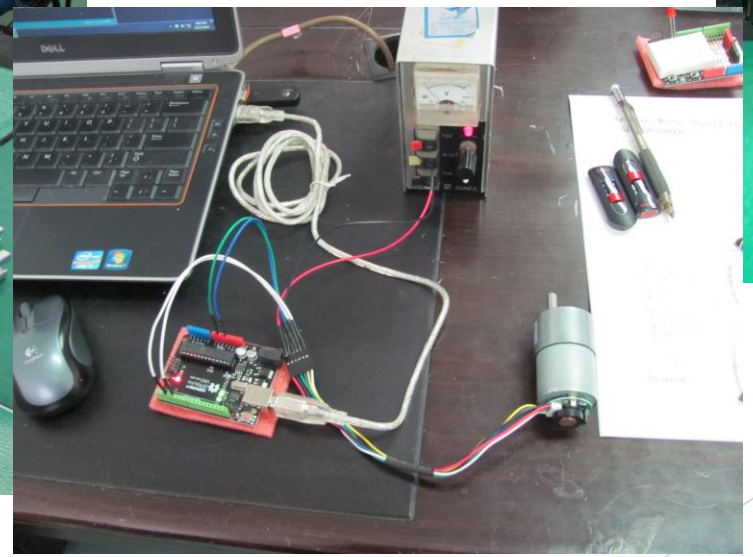

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The Purpose

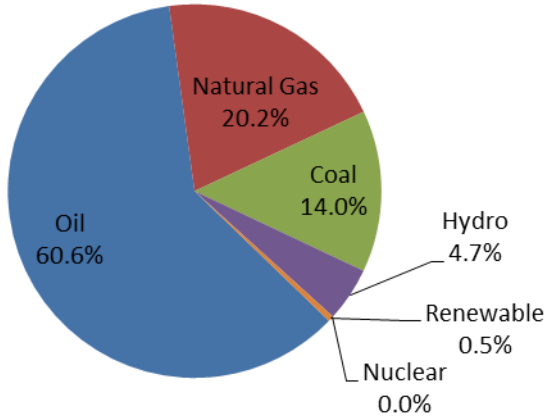
- Create added teaching resources for Wuxi Professional College of Science and Technology
- Investigate effectiveness of global teamwork for Ivy Tech Community College
- Develop global partners in education
- Explore potential for cross program thematic learning
- Build a renewable energy platform that can be used to teach global teamwork

Cultural Differences (compared to US)

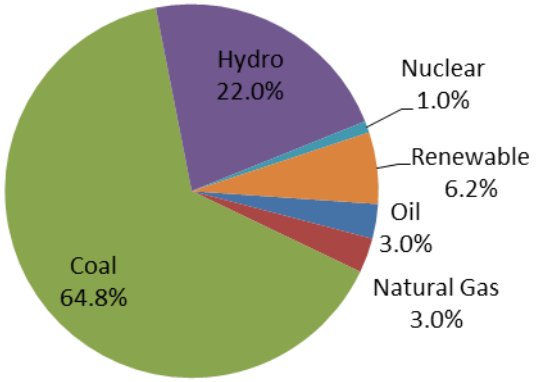
- Dominican Republic uses **89.61% less** electricity & makes **81.63% less** money
- China uses **67.79% less** electricity & makes **81.44% less** money

Electricity Generation by Energy Source

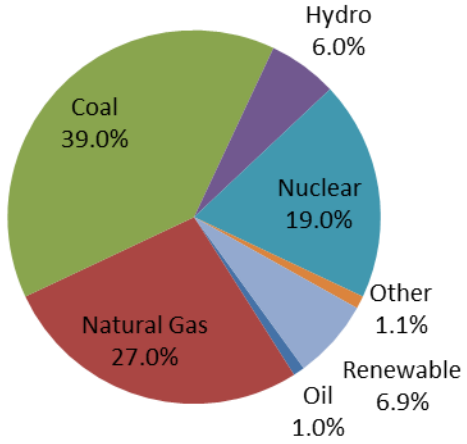
Dominican Republic



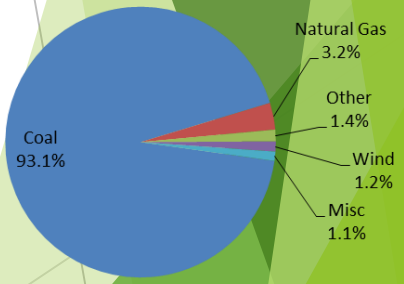
China



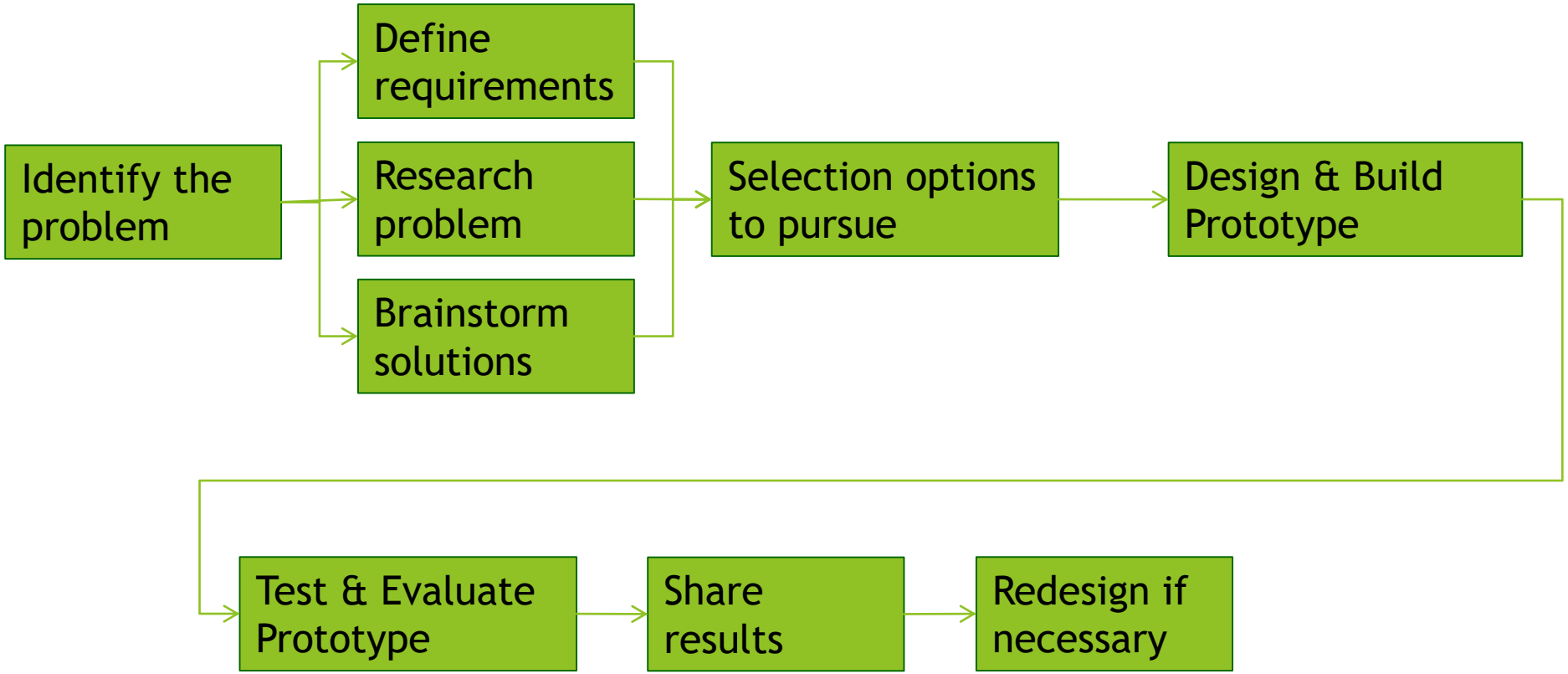
USA



Indiana



The Engineering Design Process

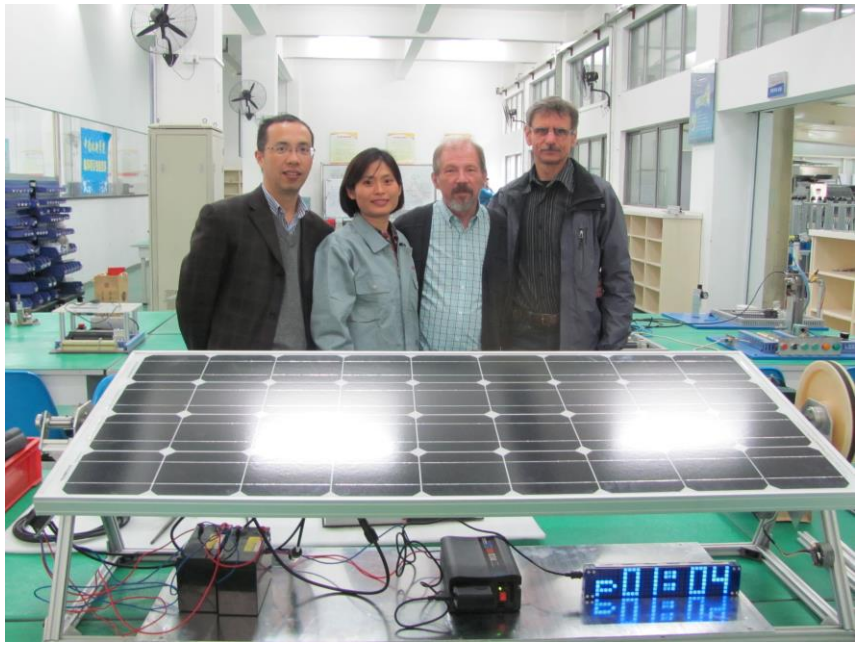


The Problem (DR)

- People in the Carebiean and Central America cannot afford electricity because it is so expensive to produce and the cost of living (GDP per person) is so low
- The high cost is partly tied to the lack of natural resources which can be used to produce electricity
- Fossil fuels use to produce electricity can have a negative impact on the generation of greenhouse gases.

The Solution (China)

- Solar energy can be used to generate electricity
- China is the primary solar panel manufacture in the world
- Cost of 100W Solar Panel System was 550 RMB = $100



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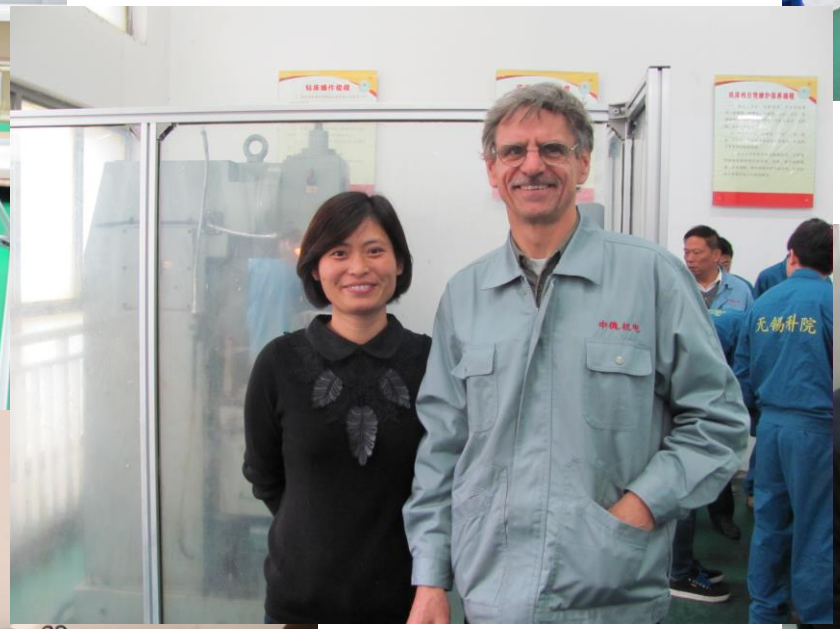
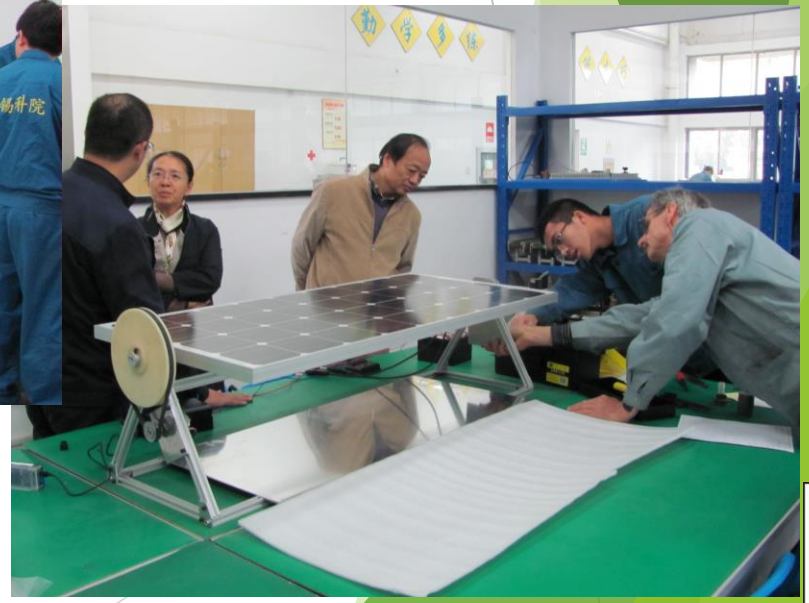
Global Teamwork





Cultural Observations

- What is cultural bias?
- What is charity?
- Red tape
- The cast system

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