IOWA STATE UNIVERSITY
Institute for Transportation

Using Transportation Focused Teen E-zine *Go!* to Develop and Share STEM Curriculum

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National Transportation Workforce Summit

April 24, 2012

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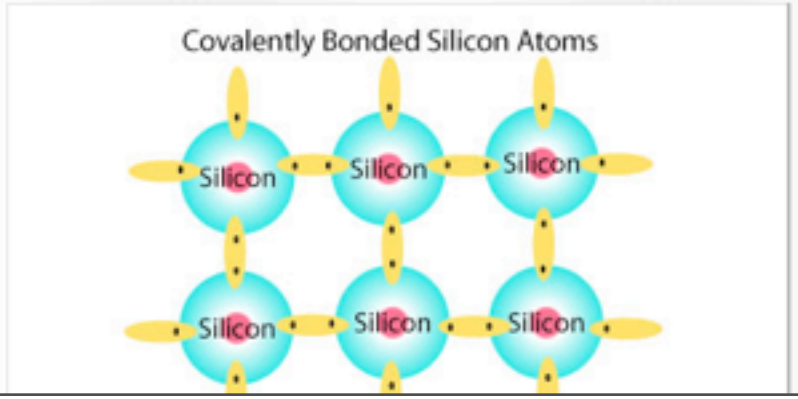
Solar Aviation Curriculum Connection

Posted on April 01, 2010

From the article: From the 1950s to now: A timeline of solar aviation

The solar cells that power solar aircraft are called photovoltaic (PV) cells. PV cells are made of materials that absorb light energy. The PV cells in most solar planes are made of silicon. Silicon is both lightweight and efficient, so it is the best choice for solar planes where the challenge is to create an aircraft light enough to fly but with enough power to get off the ground.

Though silicon's physical properties make it a good material for PV cells, its chemical properties make it a poor electricity conductor. To convert light energy into electricity, there must be electrons that can break free from their nuclei when hit by light energy. These electrons flow as a current and are converted into electricity.



Related Article

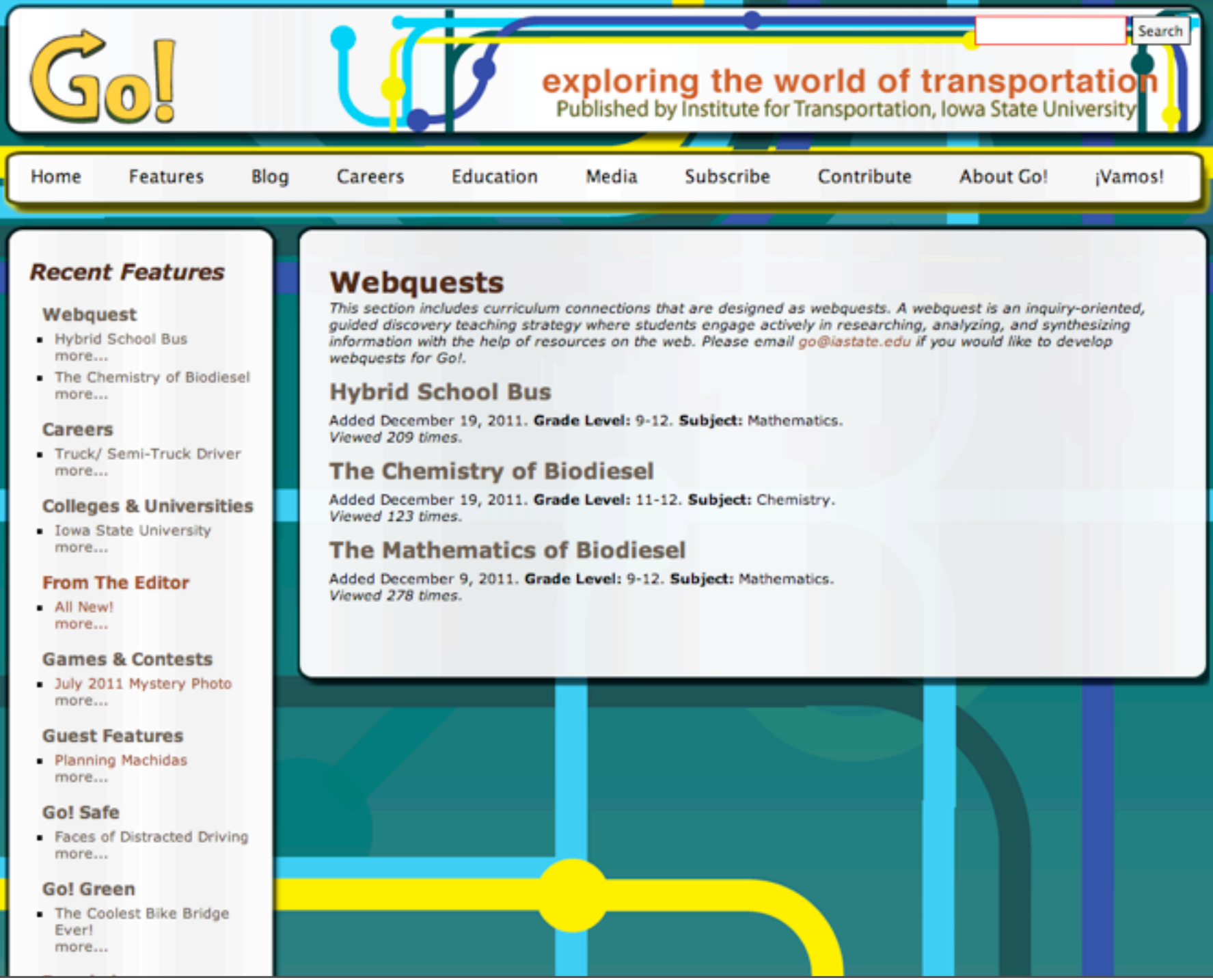
From the 1950s to now: A timeline of solar aviation

Follow the flight of solar airplanes from the invention of solar cells to transcontinental flights.
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Blog and media

The Go! Blog
- Beyond routes and rails: Mapping the world of public transit!
- Maps and metaphors: Transit takes an art form!
- Back from the challenge: A distracted driver tells all
- The Magic of Maglev
- Summertime blues: A road rules challenge for distracted drivers
- Bike lanes: Handy or hazardous?

Media
- Flight of Imagination
- Shifting Bicycle Gears With Your Brainwaves!
- The Future by Airbus
- An Introduction to Transportation Careers
- How to... Check your oil


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Webquests
This section includes curriculum connections that are designed as webquests. A webquest is an inquiry-oriented, guided discovery teaching strategy where students engage actively in researching, analyzing, and synthesizing information with the help of resources on the web. Please email go@iastate.edu if you would like to develop webquests for Go!.
Hybrid School Bus
Added December 19, 2011. Grade Level: 9-12. Subject: Mathematics.
Viewed 209 times.
The Chemistry of Biodiesel
Added December 19, 2011. Grade Level: 11-12. Subject: Chemistry.
Viewed 123 times.
The Mathematics of Biodiesel
Added December 9, 2011. Grade Level: 9-12. Subject: Mathematics.
Viewed 278 times.

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Hybrid School Bus

Added December 19, 2011. **Grade Level:** 9-12. **Subject:** Mathematics.

1. Introduction- The Hybrid School Bus
2. Task- What should we do?
3. Process- How should we conduct our investigation?
4. Background- The Facts about Hybrids
5. Problems- Figuring it Out!
6. Resources- A Good Place to Start
7. Evaluation- Doing Your Best Work
8. Teacher's Notes
9. Careers related to Hybrid School Bus

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Hybrid School Bus

Added December 19, 2011. **Grade Level:** 9-12. **Subject:** Mathematics.

1. Introduction- The Hybrid School Bus

How "good" is *green transportation*, really?



Welcome! You are about to participate in an online investigation that asks you the question, "How 'good' is green transportation, really?" You will answer this question with the help of actual data from a research project at Iowa State University on hybrid school buses. A featured interview on this project is also available as a podcast on Iowa Public Radio. Additional resources are available in the **Resources** section.

For the purpose of this webquest, we will use the following definitions:

Green Transportation: Transportation that has a low impact on the environment.

"Good" Transportation: The positive quality of green transportation, which involves the terms "fuel cost" and "fuel economy"(also called "fuel efficiency"). You will get a chance to understand these terms more thoroughly and formulate your own definition of "good."

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- Dr. Shauna Hallmark, Associate Professor, Civil Engineering, Iowa State University
- Dr. Rema Nilakanta, Program Coordinator Go! Magazine
- Dr. Shashi Nambisan, Professor, Department of Civil, Construction, & Environmental Engineering, ISU
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2. Task- What should we do?

3. Process- How should we conduct our investigation?

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There are many careers related to the hybrid school bus. Who drives the buses? Who transports the fuel to the bus warehouse? Who is conducting the research? Below are some links to information about different transportation careers on Go! website.



Careers

Civil Engineering: Civil engineering is a broad field and includes transportation as one of its specializations

Mechanical Engineering: Mechanical engineering is one of the broadest engineering disciplines.

Truck Driver: Truck drivers transport everything from automobiles to livestock to paper towels efficiently and quickly.

Transport Planner: Transport planners design routes to make sure people get to where they need to go on time.

Teacher Comments

- "This was very student-centered as they [students] did all of the inquiry and solving of the problems on their own that allowed me to just facilitate. My students exceeded my expectations." – Scott C.
- "The students enjoyed doing certain parts of the webquest. They especially got involved with figuring out the mpg for different makes and models of vehicles using the fuel efficiency website." – DeAnn S.
- "This Web Quest can be easily used as a student-centered activity because the directions are written clearly and the organization of the Web Quest is easily followed." – Melissa S.

Student Comments

- "I never knew that you could use left-over fat for fuel - that was so cool!"
- "The cars that are out now are not very good, but they are working on better cars, so by the time that they are ready to release more hybrid buses, it will probably be worth it."