



Newsletter of Electronic Resources
New York State Technology Education and Engineering
Educators Association

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Help youth cultivate creativity in new, exciting ways

Adobe Youth Voices Essentials offers a set of FREE multimedia curricula for educators that help facilitate creative expression while engaging young people in the classroom. Register now and start teaching any of the following curricula:

PHOTOGRAPHY

Teach youth to view the world through a camera lens and give them the tools to express their perspectives through photo essays and abstract images.

ANIMATION

Embark on a digital adventure with your class and help them use stop motion and cell drawing to explore the process of digital storytelling.

PRINT

Introduce kids to the many aspects of print media while demonstrating the tools needed to complete various projects from publishing a book to designing a logo.

VIDEO

Assist your class in understanding the essential elements of video production while also teaching them to use a video camera to visually express their views.

<http://essentials.youthvoices.adobe.com/?sdid=ayvemailedutopiaflshlearn>

Beyond Home Ec: Vocational Programs Are a Good Investment

The Occupy Wall Street protests have reintroduced a recurring character in our national economic drama: the struggling young college graduate. Every time the economy goes south, we hear from the Harvard-educated bartender, the taxi driver with a master's degree in art history, or the philosophy major who's moved back in with his parents, shipping out résumé after fruitless résumé. As Ezra Klein recounts in the Washington Post, many of the Occupy Wall Street protesters cite their college loans as a source of their grievances: "College debt represents a special sort of betrayal. We told you that the way to get ahead in America was to get educated. You did it. And now you find yourself in the same place, but buried under debt. You were lied to."

Lost in this rhetoric is any suggestion that it is the education system--the schools that charged all that money and then provided little by way of marketable skills in return--that let these young people down. There's plenty of criticism for corporations that aren't hiring and banks that are calling to collect their loans, but don't the institutions that failed to prepare students for the world of work deserve part of the blame? Some of these talented people would no doubt have been better served by an education more directly tied to the jobs they so desperately need.

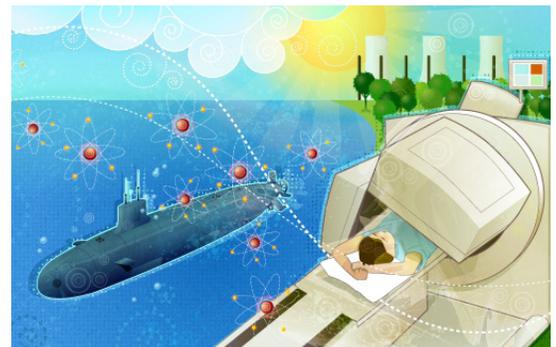
<http://www.aei.org/article/104299>

Nuclear-Powered Learning

Since its post-war debut, atomic energy has been an attractive power source for our crowded planet. While never "too cheap to meter," some 20 percent of America's electricity now comes from nuclear plants that emit no greenhouse gases. Nuclear engineers design propulsion systems for subs and ships as well as civilian and research plants. This week's lesson will fuel your atom smashers' interest. No meltdowns here!

For Navy-related student research opportunities, check out the Science and Engineering Apprenticeship Program (SEAP) and the Naval Research Enterprise Intern Program (NREIP).

Download our Teacher Guide for more ideas!



<http://campaign.r20.constantcontact.com/render?llr=5wqy5rcab&v=0011-h27AIIENgaM6ILVFdZ7I3LWrGCYp-T9y7U9vAVGvLFvAThW0kSOeONkDreQCRVZ0s-6auAV9mLZ4bNhZc4rd5e60dHA9eLxKe5n-4bVEw1HIMPsdLTPpM-BngZhLt9GX9fra9sU4Wk%3D>



Could U.S. Get 20% of Electricity from Solar under Power Lines?

What if the U.S. could get 20 percent of its power from solar, near transmission lines, and without covering virgin desert?

It could. Transmission right-of-way corridors, vast swaths of vegetation-free landscape to protect high-voltage power lines, could provide enough space for over 600,000 megawatts of solar PV. These arrays could provide enough electricity to meet 20% of the country's electric needs. (Note: there may not be good interconnection opportunities for solar under these huge towers, so this should be read as a land use discussion rather than technical analysis of interconnection to the grid).

http://cleantechnica.com/2011/10/17/could-u-s-get-20-of-electricity-from-solar-under-power-lines/?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+IM-cleantechnica+%28CleanTechnica%29

Nanotube Cables Hit a Milestone: As Good as Copper

For the first time, researchers have made carbon-nanotube electrical cables that can carry as much current as copper wires. These nanotube cables could help carry more renewable power farther in the electrical grid, provide lightweight wiring for more-fuel-efficient vehicles and planes, and make connections in low-power computer chips. Researchers at Rice University have now demonstrated carbon-nanotube cables in a practical system and are designing a manufacturing line for commercial production.

Making lightweight, efficient carbon nanotube wiring as conductive as copper has been a goal of nanotechnologists since the 1980s. Individual carbon nanotubes—hollow nanoscale tubes of pure carbon—are mechanically strong and an order of magnitude more conductive than copper. But unless carbon nanotubes are put together just so, larger structures made from them don't have the superlative properties of the individual tubes.

<http://www.technologyreview.com/energy/38615/?mod=chthumb>

Seeing Through Walls: New Radar Technology Provides Real-Time Video of What's Going On Behind Solid Walls

Much as humans and other animals see via waves of visible light that bounce off objects and then strike our eyes' retinas, radar "sees" by sending out radio waves that bounce off targets and return to the radar's receivers. But just as light can't pass through solid objects in quantities large enough for the eye to detect, it's hard to build radar that can penetrate walls well enough to show what's happening behind. Now, Lincoln Lab researchers have built a system that can see through walls from some distance away, giving an instantaneous picture of the activity on the other side.

<http://www.sciencedaily.com/releases/2011/10/111018102703.htm>

High Unemployment and Few Qualified Candidates?

It's a Teachable Moment

Bayer MaterialScience's efforts to promote STEM education are elementary

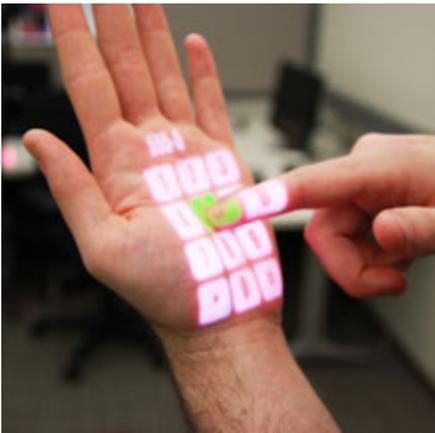
-- and much more.

It's a dilemma that confounds executive leadership to plant supervisors, human resource managers to team leaders: How can our job postings go unfilled yet the national unemployment rate is hovering around 9%? The culprit in manufacturing all too often is a pool of candidates who lack the right set of science, math and technical skills for the available work. You might say that lean manufacturing refers to both our processes and a lean head count. Bear in mind the impact that retiring baby boomers will have on our already-stretched labor pool: an estimated 2.7 million manufacturing employees in the United States are 55 or older.

The stakes are high to ensure that the gap between preparation and need doesn't widen further. What's at stake certainly affects individuals but also the ability of our workforce to keep pace with innovations and for our global competitiveness. Strong critical thinking and decision-making skills have increased in importance as technology and operations themselves have evolved.

http://www.industryweek.com/articles/high_unemployment_and_few_qualified_candidates_its_a_teachable_moment_25804.aspx?SectionID=2

Kinect Turns Any Surface Into a Touch Screen



A new prototype can transform a notebook into a notebook computer, a wall into an interactive display, and the palm of your hand into a smart phone display. In fact, researchers at Microsoft and Carnegie Mellon University say their new shoulder-mounted device, called OmniTouch, can turn any nearby surface into an ad hoc interactive touch screen.

OmniTouch works by bringing together a miniature projector and an infrared depth camera, similar to the kind used in Microsoft's Kinect game console, to create a shoulder-worn system designed to interface with mobile devices such as smart phones, says co-inventor Chris Harrison, a postgraduate researcher at Carnegie Mellon's Human-Computer Interaction Institute in Pittsburgh and a former intern at Microsoft Research. Instead of relying on screens, buttons, or keys, the system monitors the user's environment for any available surfaces and projects an interactive display onto one or more of them.

<http://www.technologyreview.com/computing/38933/?nlid=nlcomp&nld=2011-10-19>

STEM Heavily Featured in New 'No Child' Legislation

After months of prodding from President Obama and Secretary of Education Arne Duncan, it looks like Congress is finally getting around to reworking the Elementary and Secondary Education Act, more popularly known as No Child Left Behind, the much-maligned law that has governed K-12 education since it went into effect in early 2002.

For the past several months, Obama and Duncan have asked Congress to rework the law, which has been extended on a year-to-year basis since it expired in 2007. The administration has even granted waivers to states that exempt them from parts of the law. In March, Duncan told Congress that more than 80 percent of schools could miss testing benchmarks set by the law, and in June he called the law a “slow-motion train wreck.”

<http://www.usnews.com/news/blogs/stem-education/2011/10/13/stem-heavily-featured-in-new-no-child-legislation>

Stanford Partners With CUNY To Create New Science And Engineering School



Stanford University, the City University of New York and City College of New York announced Tuesday a technology and entrepreneurship joint venture dubbed Stanford@CCNY.

“CUNY welcomes the opportunity to partner with Stanford University, with City College as our lead institution,” CUNY Chancellor Matthew Goldstein said in a CUNY press release. “Our collective strengths will help pave the way towards the establishment of world-class science and engineering education opportunities. The two beneficiaries will be our students and the people of New York City.”

<http://www.citytowninfo.com/career-and-education-news/articles/stanford-partners-with-cuny-to-create-new-science-and-engineering-school-11101302>

Science Wednesday: EPA Scientists Supporting the STEM (Science, Technology, Engineering and Math) of Education

As a kid, science class was always a treasure trove of exciting experiments and new activities. Science activities, from blowing up balloons to learn about air to displacing water to learn about matter, were always a welcomed break from the usual lectures and reading assignments. As an impressionable young student, I was easily captivated and inspired in science class, mostly due to the efforts of my teachers to create interesting Robot creates other robots out of foam g and engaging science lessons.

http://blog.epa.gov/blog/2011/10/12/science-wednesday-epa-scientists-supporting-the-stem-science-technology-engineering-and-math-of-education/?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+Greenversations_main+%28U.S.+EPA%3A+Greenversations%29



Robot creates other robots out of foam

Appealing though general-purpose humanoid robots like C-3PO may be to many of us, real-life robots are usually most effective when they're designed for one specific purpose. In some situations, however, that purpose might not be known until the robot is in the field - at a disaster site, for instance, an autonomous robot might discover that it needs to squirm through debris, even though it wasn't designed to do so. One attempted solution to this problem has involved creating modular robots, that can take themselves apart and then reconfigure themselves as needed. Scientists from the University of Pennsylvania's Modular Robotics Laboratory, however, are taking a slightly different approach. They've created a robot that can build other purpose-specific robots, using electromechanical modules and self-hardening foam.

<http://www.gizmag.com/foamobot-builds-foam-robots/20234/>

Suction cups lift almost anything

Suction pads come in a vast range of sizes, shapes, and designs to safely handle most any product

Designing a vacuum-handling system involves many factors. On one hand, engineers must contend with the size, weight, and type of material to be handled, and how fast and precisely it must be moved. On the other, there's the size and type of vacuum generator, system operating pressure, as well as components such as valves, hoses, and connectors.

But it all comes together at the suction cup or pad. This seemingly simple device must firmly and safely support the load, resist gravitational and acceleration forces, minimize air consumption, and not mar or damage the workpiece. And, of course, it must resist fatigue and abrasion, withstand dirt, contaminants, and temperature extremes, and provide long, economical life with little or no maintenance



<http://machinedesign.com/article/suction-cups-lift-almost-anything-1006>

The Rising Value of a Science Degree

If you're trying to figure out what to study in college, a new report suggests you would do well choosing a major in science, technology, engineering or math.

The report, based on Census and National Science Foundation data analyzed by the Georgetown University Center on Education and the Workforce, shows that professions that depend heavily on skills learned in these fields are the second-fastest growing occupational group in the United States, after health care.

<http://economix.blogs.nytimes.com/2011/10/20/the-rising-value-of-a-science-degree/>

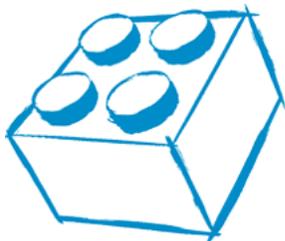
Encouraging students to enroll in STEM fields

BROOME COUNTY, N.Y. -- Congressman Richard Hanna paid a visit to Broome Community College Thursday to talk about a bill aimed at encouraging students to enroll in STEM fields of science, technology, engineering and math.

The bill would create a permanent tax deduction for tuition and room and board for students majoring in those fields.

“Innovation has created more jobs than anything else in the last 30, 40 years in our country and of course in others. So you want to encourage people to go into science, engineering, technology and math and medicine. And you want to help them find a way to do that. Well today, schools have openings but students don’t have the money to go,” Congressman Richard Hanna said.

http://centralny.ynn.com/content/top_stories/561087/encouraging-students-to-enroll-in-stem-fields/



STEM SUMMIT

NOVEMBER 16, 2011 • ST. LOUIS, MO

Hosted by LEGO Education and National Instruments

LEGO Education & National Instruments

Revolutionizing Robotics in Education

The STEM Summit is a one-day premier event designed to bring together like-minded leaders and partners in the education industry to discuss and learn how hands-on science, technology, engineering, and math education can bring success to every student and shape the next generation of creative problem solvers.

Engage with innovative educators, administrators, and education industry leaders to share knowledge, experience, and ideas.

Learn how school districts and educators across the country are thinking outside the book and successfully creating engineering classroom environments that inspire students and enable them to take an active role in their learning.

Collaborate with industry leaders and academic professionals on a shared vision for the future of hands-on STEM education and the tools necessary to make that vision a reality.

The STEM Summit will feature keynote presentations from leading educators, interactive panel discussions, open-discussion opportunities and a unique opportunity to expand your network of like-minded education professionals.

No cost to register, limited space available

<http://www.legoeducation.us/eng/misc/STEMSummit.cfm> 2011 National STEM Report: Educator Edition



GM Ditches the Gas Tank in Its New Electric Car

It seems few consumers want range-extending gas engines in their electric vehicles.

General Motors plans to sell an electric version of the Spark, a mini-car that it currently sells outside the United States. GM will sell the gasoline version of the Spark in the U.S. starting next year, and will follow with the electric version in select U.S. markets

and around the world in 2013. The electric Spark will be powered by batteries made by A123 Systems, based in Waltham, Massachusetts.

The car is a departure from GM's current electric vehicle offering, the Chevrolet Volt. For short trips—about 35 miles—the Volt can run on battery power alone. For longer trips, a gasoline engine generates electricity to power the car. The range-extending gas engine is meant to address one of the main drawbacks of electric cars—their limited range on a charge. But adding an engine, and the complex transmission needed to coordinate power from the engine and electric motors, adds significantly to the vehicle's cost.

<http://www.technologyreview.com/energy/38864/page1/>

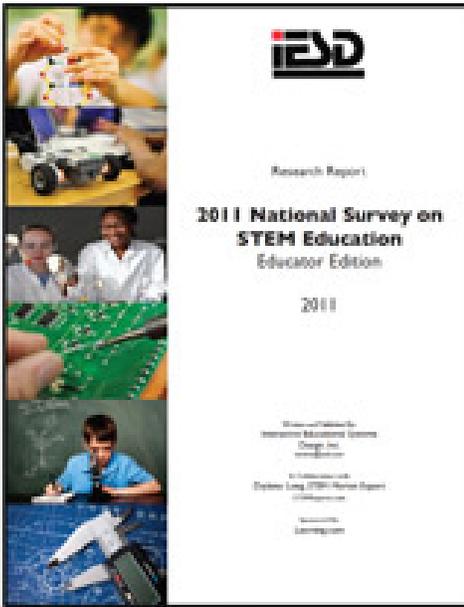
Grant announced to help improve local science education

Acting Buffalo school superintendent Amber Dixon speaks at a news conference where members of the Interdisciplinary Science and Engineering Partnership announced a new federal grant that, they say, will help improve how science is taught in Buffalo classrooms.

BUFFALO, NY (WBFO) - The National Science Foundation is granting \$9.8 million to a Buffalo-based coalition first launched in 2005 to change how science is taught in Buffalo Public Schools.

Members of the Interdisciplinary Science and Engineering Partnership, or ISEP, gathered at the Buffalo Museum of Science Tuesday morning to announce the grant that, they say, will allow them over the next five years to expand ISEP into a dozen Buffalo Public Schools, giving up to 48 teachers the opportunity to participate in research and programs from which they can bring new ideas into their classrooms.

Dr. Joseph Gardella, ISEP project leader and John and Frances Larkin Professor of Chemistry at the University at Buffalo, says one of the challenges facing teachers is keeping science interesting for students, who may be wowed with the experiments in middle school but lose interest as they advance into high school, where students in ISEP classrooms have shown themselves to be 30-percent more likely to achieve proficiency on the state's eighth grade science exam.



2011 National STEM Report: Educator Edition

Complimentary for STEM educators

As a leader in STEM education, Learning.com is pleased to bring you an illuminating report on the state of STEM education in America. This report, written and published by Interactive Educational Systems Design, is regularly \$249. We're offering it at no cost with our compliments.

See what educators across the US are doing in STEM:

Who is implementing STEM programs and why?

How are states implementing STEM initiatives?

What are the major challenges facing STEM educators today?

What types of PD are most helpful to STEM educators?

http://www.learning.com/stem/2011-stem-report/?utm_medium=email&utm_source=Act-On+Software&utm_content=email&utm_campaign=Co

Mouthpieces Gather Impact Data from Football Players

Stanford researchers think the wireless mouth guards will be better than specialized helmets at measuring head injuries.



Despite growing concern over the long-term consequences of head injuries in contact sports, researchers still aren't sure how different types of blows affect the brain.

Now a team at Stanford University is employing sensor-laden mouth guards to gauge the effects of head injuries in football players. The researchers plan to expand their research to other sports, including women's lacrosse and hockey. They are hoping that the mouth guards, created by Seattle-based X2 Impact, will be an affordable alternative to specialized helmets that have been used in head injury studies.

<http://www.technologyreview.com/biomedicine/38815/?nlid=nldly&nld=2011-10-12>



STEM Professionals Must Inspire Our Nation's Future

Each year, the Space and Naval Warfare Systems Command (SPAWAR) hosts the International RoboSub competition in our acoustic research pool in San Diego. The International RoboSub competition is sponsored by the Association for Unmanned Vehicle Systems International and the Office of Naval

Research. This year I toured this very intense competition with my son and had an opportunity to see it through his eyes.

College teams from around the world test their autonomous underwater vehicles by running them through an underwater navigation course while accomplishing various demanding tasks along the way, like dropping a marker in a box or passing through different elevated gates. The vehicles varied in size and complexity, from basic to very advanced, but one thing that was common was the excitement and enthusiasm of the participants as they prepared for their robot's turn in the pool.

<http://science.dodlive.mil/2011/10/11/stem-professionals-must-inspire-our-nations-future/>

Re-generation: The Next Wave of Entrepreneurship is in Sustainability

U.S. as Global Innovators

“A new type of thinking is essential if mankind is to survive and move towards higher levels.”- Albert Einstein

Our nation's economic success has always been based on our technological superiority coupled with an entrepreneurial spirit: In the 1940's, it was our superior infrastructure and distribution capabilities. In the 60's and 70's, we had an explosion of scientific revolutions through the “space race.” And in the late 80's and 90's, the technological revolution turned into the internet revolution.

IT Revolution

Internet

Before the IT revolution, our entrepreneurial spirit and technology reinvented our economy while having a degree of global impact. However, with the internet revolution, we created anew a much bigger phase of globalization that connected so many around the world, allowing them to collaborate and change economics, politics, military, and social affairs.



http://cleantechnica.com/2011/10/11/re-generation-the-next-wave-of-entrepreneurship-is-in-sustainability/?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+IM-cleantechnica+%28CleanTechnica%29

Electric Vehicle: Cost of Electricity



There is a growing interest in electric vehicles (EVs), with many vehicles now being offered and planned for future release. The uninspired and those who may be in the employ of the Koch Machine will long and loudly rail against the EV for its status as a ZEV. But, at ground level, especially in difficult economic times, it is the vehicle's cost that will motivate mass adoption of electric cars.

There are a number of ways to determine EV costs. Where we don't have accurate information, we must generalize or make assumptions. Long-term maintenance, resale value, and even insurance rates may change as we get more experience with electric vehicles. We can determine a carbon footprint, but this also requires some generalizations. And a higher purchase price has to be balanced against lower operating costs. What we can calculate with good accuracy is the cost in electricity per month.

http://cleantechnica.com/2011/10/09/electric-vehicle-cost-of-electricity/?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+IM-cleantechnica+%28CleanTechnica%29

Westchester aviation expo fuels students' interest in aerospace technology

One way to get teens interested in math and science, it seems, is to let them play with the controls of a Cessna, or let them guide a few planes in for a landing.

It was a simulation, of course, when students attending the annual Aviation Education Expo at the Westchester County Airport on Thursday played a computer game allowing them to be air traffic controllers.

And that was just one of the activities helping teach the 444 students about science at an event offered by the Aviation Education Corp., an organization founded by Hank Grudberg of Edgemont. It's presented with the Westchester Aviation Association, of which Grudberg is a board member.

Roaming the displays and talks in Hangar V, the students, Grudberg said, get exposure to all kinds of knowledge: "The science, the technology and the math that supports (aviation)."



<http://www.lohud.com/article/20111021/NEWS01/110210332/Westchester-aviation-expo-fuels-students-interest-aerospace-technology>

NSF Debuts New All-Science Radio Stream



Curious about the latest innovations in biofuels and nanotech? Wondering what they're cooking up these days at the Lawrence Berkeley National Laboratory? The National Science Foundation recently announced the launch of its Science 360 radio stream for web, iPhone and Android, which promises to cover all science, all the time.

The 24/7 programming on Science 360 radio covers Science, Technology, Engineering and Math (STEM) and includes 100 radio shows and podcasts produced in the United States, Canada, the United Kingdom and Australia. It also carries public radio documentaries such as "Rocket Girls and the Astro-nettes," "Race and the Space Race" and the "Engineers of the New Millennium" series, as well as audio programming from NSF news conferences (webcasts) and the NSF series "Profiles of Scientists and Engineers," which highlights young professionals on the job

<http://www.earthtechling.com/2011/10/nsf-debuts-new-all-science-radio-stream/>

This will take your breath away

Breath analysis has been recognized as an increasingly accurate diagnostic method to link specific gaseous components in human breath to medical conditions and exposure to chemical compounds. Sampling breath is also much less invasive than testing blood, can be done very quickly, and creates as good as no biohazard waste. We have written about emerging nanotechnology applications in breath analysis in previous Nanowerk Spotlights (see for instance "Nanotechnology breath analyzer for kidney failure").

A recent review article in *Environmental Science & Technology* focuses on breath analysis as a tool for assessing environmental exposure and provides a good overview of the current state of diagnostic tools, leading studies in this field, and emerging technologies for hand-held breath analyzers.

<http://www.nanowerk.com/spotlight/spotid=23148.php>

Nanoparticles and their size may not be big issues

Since the emergence of nanotechnology, researchers, regulators and the public have been concerned that the potential toxicity of nano-sized products might threaten human health by way of environmental exposure.

Now, with the help of high-powered transmission electron microscopes, chemists captured never-before-seen views of miniscule metal nanoparticles naturally being created by silver articles such as wire, jewelry and eating utensils in contact with other surfaces. It turns out, researchers say, nanoparticles have been in contact with humans for a long, long time.

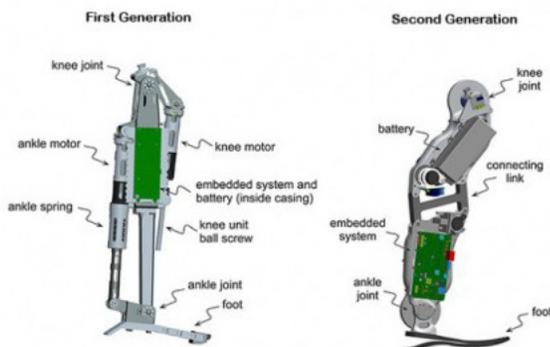
<http://www.physorg.com/news/2011-10-nanoparticles-size-big-issues.html>

Is it Time for Energy Efficient Windows?

Yes. Just Add Up Those Positives.

There are plenty of ways manufacturers can meet the standard of being “energy efficient”. A lot of it is pretty technical for average people. From the homeowner’s point of view, when you are purchasing energy efficient, you are looking to purchase windows that represent a measurable improvement in keeping cold out on cold days and heat out on hot days. Obviously, the idea is keeping things cool when you want it cool and warm when you want it warm. Windows play a huge part in what comfort result you are experiencing inside your house by greatly influencing the costs to keep it the way you want it.

http://cleantechnica.com/2011/10/23/is-it-time-for-energy-efficient-windows-yes-just-add-up-those-positives/?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+IM-cleantechnica+%28CleanTechnica%29



s the wearer's moves

to. On June 27, 2005, wading in crystal south of Panama City, Craig was attacked m above the knee. Today Hutto is a 6-foot Tennessee State. Fortunately for him, Nash- where its Center for Intelligent Mechatronics ed prosthetic limb. They also happened to

It was not a good day for 16 year old Craig Hutto. On June 27, 2005, wading in crystal clear waters off a near-deserted beach 50 miles south of Panama City, Craig was attacked by an 8-foot bull shark and lost his right leg from above the knee. Today Hutto is a 6-foot 4-inch 23 year old studying Nursing at Middle Tennessee State. Fortunately for him, Nashville is also the home of Vanderbilt University where its Center for Intelligent Mechatronics has for seven years been developing an advanced prosthetic limb. They also happened to need a Lab Assistant to help them test it.

<http://www.gizmag.com/vanderbilt-bionic-leg/20264/>

How to Flu-Proof Your Home

As the official influenza season begins—and fears about swine flu ramp up—it’s important to find ways to keep winter’s ever-present illness at bay. That’s especially true this year, as one in every 20 outpatient doctor visits will be for the flu, as influenza is commonly known—twice what it is in an average year.

<http://www.thisoldhouse.com/toh/photos/0,,20311778,00.html?xid=hinewsletter-111025-flu>