



## Important Dates!

### September 14

All are welcome at the first MasSTEC Board meeting for the 2011-2012 school year in the Conlon building at 4:30 in Room 103 at Fitchburg State University.

### September 15

All applications for MasSTEC Teacher of the Year and Program of the Year need to be submitted no later than Thursday, September 15, 2011.

Apply or Nominate Today!

<http://www.masstec.org/recognition/index.htm>

### October 1

Applications to present at the 2010 MasSTEC Conference are due <http://masstec.org/conference.html>

### October 1

2011 MasSTEC CONFERENCE Registrations should be postmarked by October 1

**Walk-in Registration** the day of the conference is OK

Early registrations are greatly appreciated.

<http://masstec.org/conference.html>

### October 14

**THE 2011 MasSTEC CONFERENCE**  
at Fitchburg State University

<http://masstec.org/conference.html>

See you there!



<http://masstec.org>

Features inside this issue include:

**MasSTEC Conference** 3

**Technology Education** 4

**A Short Expo** 5

**Wirelessly Charge** 6

**ENGINEERING +  
ENGINEERING  
TECHNOLOGY =  
COLLABORATION** 7

**STEM Programs  
&  
Talent** 8

**PLW  
+  
Mass Law** 9

**Taking a Leap** 10

**ITEEA  
IdeaGarden** 11

**POY—TOY** 12

**Lots More!** 13-15

**From the  
Webmaster** 21

**Design Brief** 22

*MassTEC Express*

*September 2011*

*Volume 3 Issue 1*

**Greetings!**

Dewey wrote in 1902 that “we cannot overlook the importance for educational purposes of the close and intimate acquaintance got with nature at first hand, with real things and materials, with the actual processes of their manipulation, and the knowledge of their necessities and uses. In all this there was continual training of observation, of ingenuity, constructive imagination, of logical thought, and of the sense of reality acquired through first-hand contact with actualities” (2001, p. 8).

So here we are in 2011 and Project Based Learning is sweeping the land...it is wonderful that Math and Science joins Technology Engineering Education in offering hands-on, minds-on learning activities, just as John Dewey suggested over a century ago.

Just remember, Math and Science cannot replace the great learning experiences that Technology Engineering Education offers and are revealed in this newsletter's pages. This point is further explored with MassTEC's Annual Conference titled: ***sTEM — We make the Connection!*** Plan to join us on the 14th of October at FSU for reconnecting with colleagues,

networking, and learning the latest in techniques and tooling from our excellent vendors.

**Welcome** back to school! There is so much to do and so much to learn— that’s why we love Technology Engineering Education —there’s always something new!

This is a great time to thank fellow and former teachers for the amazing work you all do. Check out ***In Honor of Teachers*** at:

[http://www.itesea.com/2011/09/03/opinion/blow-an-ode-to-teachers.html?\\_t=1&mid=fb-share](http://www.itesea.com/2011/09/03/opinion/blow-an-ode-to-teachers.html?_t=1&mid=fb-share)

And read why ***Investing in Education Is Smart Business*** on page 15!

While we reflect on and validate our peers who work in troubling situations: "I teach as though I don't have a pink slip. I teach as though I'll be teaching forever" ~ Rohya Prudhomme in an article on page 20.

This issue of ***The MassTEC Express*** is an amazing, eclectic celebration of education. There are articles from all over, snippets from the ITEEA IdeaGarden (Join soon!) and original stories published for the first time in these pages. See what April Lisbon-Peoples, Roy Slater, Dr. Zara Dobson, Fred Driscoll, and



**RSA Animate** - - The Secret Powers of Time  
Professor Philip Zimbardo conveys how our individual perspectives of time affect our work, health and well-being.

<http://freecheckhowto.com/rsa-animate-the-secret-powers-of-time/>

***MassTEC Annual Conference***  
**Friday October 14, 2011**  
at  
**Fitchburg State University**

Paul Funk have to say about our discipline, our schools, our students and our future.

One more thing on my “To Do” list... I am asking the MassTEC Board to help me with something that I am calling

***The VITAL Project.***

More will follow about this grass roots effort to reinvigorate Technology Engineering Education Teachers by reaching out to peers in neighboring schools and school districts to create a vibrant Professional Learning Community which spreads great ideas, informs educational leaders, and — most importantly — supports our students as they learn about real life, authentic problems and the techniques and tools that human beings use to solve them.

After all, it is all about the ***Learning***... and so are we!

"Real education means to inspire people to live more abundantly, to learn to begin with life as they find it and make it better"

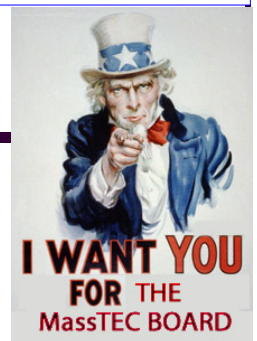
~ Carter G. Woodson (1998).

You inspire me!  
Thank you for all you do!

*Ray McCarthy*



**Dr. Ray McCarthy**  
MassTEC President  
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**See You In Fitchburg!**

**MORE at**

<http://www.masstec.org/conference.html>

# Fitchburg- **MassTEC Annual Conference**

## **STEM—We make the Connection**

**Networking!**  
**Fantastic New Ideas!**  
**Latest from our Vendors!**

Dear MassTEC Members,

The next **MassTEC Conference** will be held on

**Friday, October 14, 2011 at *Fitchburg State University*.**

The theme of the conference is ***sTEm—We Make the Connection***.

One item we receive feedback on after every conference is the need for ***teacher led workshops***. Many teachers are looking for ideas and activities to take back to their classrooms. So this year we are looking for additional teachers who will be willing to offer workshops on what they do in the classroom.

As one who has offered a number of workshops in the past, you get a great deal of personal satisfaction when you share what you do with others in your profession. Also, if do you offer a workshop you will be eligible for Profession Development Points (PDPs) [and a free lunch!]

So, please consider sharing your classroom experiences and offer to lead a workshop at the coming conference.

Follow this link to a workshop application. Please fill it out and send it in.

Take care,

~ Charlie Corley, DTE

**[http://www.masstec.org/  
conference.html](http://www.masstec.org/conference.html)**

Boston-

## Technology Education: The Second Helper in the Classroom

~April Lisbon-Peoples, Ed.S.

Technology has advanced our world in more ways than can be counted. As a global society, we depend on technology to assist in the advancement of business, medicine, education, music etc. Yet, as nations face the daunting task of cutting back on spending due to tougher economic times, more and more industries are forced to face the fact that spending money in technology education may have to subsidize until the global market changes. Unfortunately, our children will be the ones who will have to experience this backlash as unprecedented budget crunches continue to erode our educational systems ability to provide technology education to all students equitably. In a nation which stresses the importance of learning styles, can we as a society afford to take technology education out of our classrooms?

Technology education opens up a world of opportunities for both students and teachers alike as it affords them the ability to be actively engaged participants in learning information through multiple formats. A great way to consider the value of technology education is through the eyes of Dr. Howard Gardner's theory of Multiple Intelligence. The learning styles included in MI are visual-spatial, bodily-kinesthetic, musical, interpersonal, intrapersonal, linguistic, and logical-mathematical. For the most part, many teachers are able to touch a little on each learning style but not at a level that they desire or at the level of need required by a student in order to master concepts learned. The truth is, when combined

with solid quality instruction, technology education helps to expand students' knowledge bases in order for them to move from theory to practice as it reaches all portions of a student's level of multiple intelligence. Technology education combined with teacher lecture work hand in hand just like an orchestra conductor uses his conductor stick to guide the sound and tone of the band members in order to create beautiful music that lasts a lifetime. When used effectively and consistently, technology education and direct lecture will lead to lessons learned over a student's lifetime.

Finally, it is important to note that there are some educators who "fear" the usage of technology education due to a lack of professional development or feelings that technology education will take away from good quality instruction. However, this is not the case. Educators have realized over the years that with teachers being required to teach 17-40 students, it is a test of wills for teachers to teach towards every student's strengths and not to their weaknesses. With these realities ever so present, it is important that as a community at large we always remember that our children are the future leaders of tomorrow and in order to assist them in being globally competitive, it is important that we ensure that we are educating them towards their strengths and not their weaknesses. Technology education along with quality teacher instruction will continue to open the doors to our students in order to ensure that they have ability to learn over a lifetime.

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April Lisbon-Peoples, Ed.S is a doctoral candidate at Northeastern University. Contact her at: [creatingvision@gmail.com](mailto:creatingvision@gmail.com)

# T/E Ed ≠ IT ≠ EdT ≠ CTE

### Editor's note:

April wrote a great article. She and I have had many conversations as she grows in her understanding of just what Technology Education is. I published her story as is and I know that she originally meant "IT"—computers in the classroom—I suggest to you, as I had to April, that we read this article mentally replacing the computer images with the phrase Technology/Engineering Education as it is defined in the following:

Technology/Engineering Education "includes a body of knowledge separate from, but related to the sciences with specific certification requirements (see CSPG #65). It is the application of tools, materials, processes, and systems to solve problems and provide benefits to humans and society. [Technology/Engineering Education and] Technology Education has progressed from Industrial Arts, which was focused on tool and machine skills and craftsmanship, to that of teaching all students engineering "habits of mind." This includes teaching students the knowledge, skills, and dispositions necessary to understand and apply engineering concepts, including the engineering design process, systems, and the impact of technology on society."

~ William F. Bertrand      Contact Bill at; [wbertrand@state.pa.us](mailto:wbertrand@state.pa.us) | [www.education.state.pa.us](http://www.education.state.pa.us)

~ Ray McCarthy

# T/E Ed ≠ IT ≠ EdT ≠ CTE

Somers, CT-

## A SHORT EXPO

~ Roy Slater

Regarding IT it can be broken into two categories - Informational Tech (the ability to search and gather information) that is critical part of Century 21 skills; and Instructional Tech (the ability to use Tech to enhance instruction) which is critical to all instructors. The problem in education with this one is that teachers use it to attract students attention/ or show off their computer skills - however they do not measure student knowledge to determine if these techniques are enhancing the learning process (ex - smart board presentations with a lot going on but little change to student outcome).

Regarding TEE - this is a real world "process" that is being instructed. This process as you know sets into motion critical questioning skills, problem-solving, communication abilities, informational technology skills, presentation skills, appropriate selection of tools and processes, determination of an appropriate outcome, measurement that the outcome successfully addresses the initial problem, and that the process is real life driven and career driven. This means that all tools/materials/processes come to bear either from an individual or team perspective - not just digital tools.

From the perspective of an educational system - most academic teachers concentrate on the IT as if is woven in their daily processes and are held to administrative directives to stay up with this digital world. The problem as I see it is the reality that it only exposes the students to this digital world and does not foster their knowledge of other processes and material application. It's almost like the educational world is attempting to provide a real life application of subject specific concepts through a VR (virtual reality) environment. Looking at career based instructors (TEE, IA, BE, etc.) they concentrate on specific applied concepts (tools/material/processes) and fail to incorporate the digital skills into the process (Informational/Presentation/Simulation-testing-prototyping-design). As you can see from my perspective the two worlds are closely related but distinct to one another. This requires TEE staff to spend more time in the initial solution design in the IT (Informational tech) world, then apply the TE/IA concepts (tools, material, processes), with a conclusion of the final project provided with a IT (Educational tech) presentation that reflects on the overall process the student or team went through.

This was a short expo and is one of those topics that holds more questions than answers that each individual needs to appreciate if there is going to be buy in. It also requires each of us to appreciate that today's student has greater skills in the IT world than most teachers that requires the teacher to become a facilitator in the initial stage of the TE/E process. This can be uncomfortable for many - however as schools ramp up for senior exit projects, the TE/E process in its total plan provides the ability to measure one's skills necessary to be successful in tomorrow's society.

~ Roy Slater is a veteran (36 years!) Technology/Engineering Education teacher who guides his students through all aspects of technology with the capstone being the yearly Electrathon America Race at Lime Rock, CT.

Contact Roy Slater at [roy.slater@somers.k12.ct.us](mailto:roy.slater@somers.k12.ct.us)

<http://www.somers.k12.ct.us/~rslater/>

<http://www.thedailysomers.com/tags/Electrathon-America>

<http://ctelectrathon.org/press-releases/the-%E2%80%99C60-minutes-of-lime-rock%E2%80%9D-press-release/>

<http://www.engr.uconn.edu/galileonews-06.php?id=5>



Editor's note:

So what are all those letters anyways?

**T/E Ed:** We now know that Technology/Engineering Education is the study of the human made world. We teach students to become technologically literate through 'Problem Based Learning' using real-life, authentic questions which are solved by selecting the best tools, materials, and conceptual models in a hands-on minds-on learning environment. This discipline is offered in many comprehensive schools

and has the potential to help **100%** of our students, Pre-K through 12th grade, become Technologically Literate.

**IT:** Informational Technologies are the computer related technologies which assist communications, travel, manufacturing and most of what we call modern life.

**Ed T:** Educational Technology are those computer related technologies which assist teaching and learning in the class room as well as virtually in hybrid of fully online learning environments.

**CTE (formerly known as Vocational Education):** Career and Technology Education is a hands-on minds-on learning environment which accents career skill development as well as college readiness. Currently in Massachusetts, this is high school oriented schooling

currently serves **8%** of all 9<sup>th</sup> – 12<sup>th</sup> grade students.

**MORE at**

<http://www.masstec.org/conference.html>

~ Ray McCarthy

Edinburgh, Scotland-

## Wirelessly Charge Your Tools

~Dr. Zara Dobson



So there's this newer tendency walking along side our attraction with the top wireless accessories [1], and it's how to best get their batteries full. With most of the newer pads and pc tablets, mobiles, and laptops the only general complication is the most practical approach to have them energized. I started out asking what I would likely do with some of these numerous tools and now I consider what I would do with out them. I even worry nighttime whether I have each of them on their own proper electrical wires and charging up for the morning ahead.

When the technology gizmos originally hit the arena there were wires connected with the Usb slots on the portable computer. This appeared like a pretty creative idea to me in the first place. I was a devotee of the convenience that one could easily put the device in at nighttime while reviewing e mail. However, like many things, this immediately became a problem. How can I have my item with me throughout the house if it needs to remain plugged in at the pc Then followed the Universal serial bus wall adapter. I went researching one of these shortly once my 1st touch screen phone expense. I needed to connect it in to the wall in my bed room so that I would have it with me at nighttime, however I did not have anything but the Usb recharging connection to recharge it. Next thing I was aware, the wall adapter was coming with many of the devices I acquired.

Over the last two years, I have started to read and pay attention to information associated with wire less recharging mats. From whatever I comprehended in the beginning, they were wanting particular cases for the gizmos to work with them. Lately, this was eliminated. The world of wifi charging is going to bust wide open.

We have to put a pin in that niche. We'll be back in a little while. Now, we have to cover the necessity of eco friendly technology [2]. A lot of naysayers to eco friendly tech will declare it's tree-hugging talk to get consumers to get higher priced products and that it's all an absurd attempt simply because none of the negative effects are surely happening. Whether or not that is real, the exclusively obstacle with that question is just how many people are in the whole world. Simply because of the amount of people existing on the globe and the actual number of them using coal and gas centered electrical energy, we have started to have a challenge. Now consider the amount of them that will have babies and exactly how that will grow the number of folks making use of electricity and classic fuels. The definitive responsible thing to try is for technology to supply environment friendly chances right now that can become environment friendly requisites later [3].

Having said that, ladies and gentleman, I show to you the first environmentally friendly approach to charge wi-fi all your portable tools, Panasonic's brand-new solar-powered wifi recharging table. Due to be introduced in late this year or early 2012, the innovative table will use solar power gained by the solar panels on the face of the table to recharge the gadgets positioned on the table! It's the near future of a green

photovoltaic tech that is Qi enabled.

What is Qi you ask? Qi has been created by the wire-less power trust as a normal specification to be employed by the companies of charging devices, like our brand-new table, and the gadgets which they will re-charge, such as your brand new smart phone that is touchscreen display enabled, scans textbooks and has a foldout full-sized pc style keyboard. This innovative Qi know-how has only been known since the beginning of this year, but everyone seems to be expecting swift integration and a score of product releases. The usage of Qi with older wire-less items is confirmed, and we will unquestionably be hearing more info on Panasonic's new solar-powered wireless charging table and many other Qi enabled battery chargers in the near future.

If you want to explore more about solar panels and the way to include it in your life I'd like to indicate you these other solutions:

- [1] Here you can discover more in detail the content concerning the solar table. Geek.com is a weblog that targets tech media articles with discussion. It was the 1st to document the reports about the <a href="http://www.geek.com/articles/gadgets/panasonics-solar-powered-table-wirelessly-charges-your-gadgets-20110520/">Panasonic's pv table</a>.

- [2] Here you can have a clear view on how to use solar panel technology to re-charge most unit's battery packs (i.e. mobile phone, automobile batteries, etc...). If you are not able to afford the expense to connect a non commercial pv system, it might be a good beginning to introduce you to solar power.

[12voltsolarpanels.net](http://www.12voltsolarpanels.net) is a free blogging site monitored by Hettie that provides her viewpoints to help people make the conversion from a full-time electricity dependence to a profitable electricity efficiency. She provides some good thoughts on <a href="http://www.12voltsolarpanels.net/rv-solar-panels-101-ultimate-guide-12-volt-battery-charging">camper solar panels</a> to help recreational vehicle enthusiasts power their battery packs and understand how a solar panel works to increase the utilization of solar panel products in their homes and other products.

- [3] If you possibly can pay the cost to install solar power panels on your house (or meet the requirements for solar tax credits or refunds), here a few guides to help you discover how solar panel systems function and ways to combine them in your daily life. [Residentialsolarpanels.org](http://Residentialsolarpanels.org) is a free web site managed by Shannon. She is a freelance author and expert on photo-voltaic for domestic utilization. If you would like to learn more about solar panels I offer you to review this article about the <http://www.residentialsolarpanels.org/>

Contact Doctor Z. Dobson at:

[zara\\_dobson@drdobson.info](mailto:zara_dobson@drdobson.info)

(@dr\_zara\_dobson on Twitter) is a former postdoctoral researcher at the Academia of Informatics, University of Edinburgh, Scotland. She took a diploma in machine science and technology, and maintained her study into a Ph.D. working in the Bio Medical and Multimedia systems Information Technology at the University of Sydney, Australia.



MORE at  
<http://www.masstec.org/conference.html>



# WENTWORTH

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## Institute of Technology



### Boston-

### **ENGINEERING + ENGINEERING TECHNOLOGY = COLLABORATION**

~ Fred Driscoll

Engineering and engineering technology are separate but intimately related professions. Every day, consumers experience the creative and innovative solutions that are worked on collaboratively by professionals in these two fields. From the GPS system in your car to the medical devices that improve your health, these functional end-products are the result of a combination of skills and training from engineers and technologists who move a project from conception to completion. Each works in different capacities throughout the process, yet both have the same objective: to create innovative solutions that work and benefit society.

Engineering programs focus on theory, while technology programs focus on application. Engineering graduates typically spend their time analyzing, designing, and simulating, while engineering technology graduates spend their time implementing those designs. In the workplace, they must collaborate. As higher education prepares the next workforce, students must make informed decisions about their career path and carefully select the academic programs that are the strongest “fit” for their interests and passions.

Often times, these two professions get categorized under “engineering,” which is why it is important to recognize what makes each unique. Without engineering technology, the application of a concept, design, or prototype—which is often times created by an engineer—may not result in an integrated, functional end-product built with the current technologies utilized by engineering professionals.

It’s significant to understand that academic programs are aligned to the needs of each industry they serve and career paths and licensure

are dictated by academic degrees. For example, the path to becoming a licensed engineer is different for an engineering technologist and an engineer. The academic programs for each discipline are different and prepare students for careers in specific ways. In the simplest form, to become a licensed engineer, engineering technologists will be required to complete additional schooling and the path to licensure takes additional time. Also, licensure varies from state to state. This is not to reduce the value of technologists or promote the importance of engineers, as they both work in challenging careers and are true collaborators in the overall success of engineering.

Wentworth Institute of Technology recognizes the importance of both careers—engineering and engineering technology. To address industry needs, five new engineering programs (biomedical engineering, civil engineering, electrical engineering, general engineering, and mechanical engineering) are launching this year to complement the Institute’s electromechanical engineering and engineering technology programs. It’s an exciting change that offers tomorrow’s workforce a broader choice of programs and equally rewarding careers across the engineering profession.

Building awareness of the differences between engineering and engineering technology is central for attracting and inspiring students to enter into these fields. Exciting opportunities for designing and building the next great robot, “green” automobile, land mine detector, heart monitor, safer structure, and hand held device are not the work of one profession – it’s a collaborative approach for shaping the future and making life better for people and communities.

Contact Fred at: [driscollf@wit.edu](mailto:driscollf@wit.edu)

\*\* Fred Driscoll the dean of Wentworth Institute of Technology’s College of Engineering and Technology

**MORE at**

<http://www.masstec.org/conference.html>

Thursday, August 18, 2011

## Mass. backs six STEM programs

By James Connolly

Massachusetts officials today announced that six initiatives focused on Science, Technology, Engineering and Math (STEM) education and workforce development are being endorsed as elements of the Commonwealth's STEM plan.

The six initiatives receiving what the state calls @Scale Endorsements are:

- Quinsigamond Community College's (QCC) Advanced Robotics Program, which builds a pipeline for K-12 STEM education in Worcester Public Schools and Worcester County Schools to college and ultimately the local STEM workforce.
- Mass Insight Education's Mass Math + Science Initiative (MMSI), which is a performance partnership demonstrating the number of Massachusetts students entering college prepared for and interested in pursuing STEM careers, particularly among underserved populations, dramatically increases when schools expand access to and encourage participation in

Advanced Placement (AP) and other rigorous courses in grades 6-12.

- DIGITS Project, a STEM education program that pairs STEM professionals with sixth-grade classes throughout the state to increase students' interest in math and science subjects and careers.
- WPI's Project Lead The Way (PLTW), which is a STEM curriculum for grades 6-12 that is project-based and uses real-world problem-solving as a framework.
- MassBioEd Foundation's BioTeach, a program that features teacher professional development, equipment supply grants and student experiential learning.
- Massasoit Community College's Science Transfer Initiative helps to build the pipeline of STEM professionals in Massachusetts by focusing on increasing post-secondary enrollment, retention, diversity, and access in the sciences.  
<http://www.masshightech.com/stories/2011/08/15/daily47-Mass-backs-six-STEM-programs.html>

Editor's note:

These are all fine programs, AND the Commonwealth's STEM plan missed the chance to support the ONE component of a comprehensive school that supports STEM with hands-on, Problem Based Learning: *Technology Engineering Education* is the only truly scalable way to include every student in the state.

These six endorsed opportunities are small in scope, limited in connection to real life problem solving, and will not get inner city or rural school districts up to speed on the Technology and Engineering components of education that 80% of the new careers and jobs will need.

Please contact your legislators to spread the word that math & science great and that they are the languages of the careers that make things: Technology & Engineering. Our students—all our students—need Technology literacy and that is best taught in Technology Engineering Education classes.

~ Ray McCarthy

Monday, August 22, 2011

## Blog: Talent is our competitive advantage

By Gary DiCamillo

Massachusetts is a national leader in education, producing some of the most talented and entrepreneurial workers in the world. We believe these workers, many of whom are central to our thriving high technology and biotech industries, are key to driving future growth in an innovation-based economy. Sustaining this talent pipeline is a competitive advantage that Massachusetts needs to be successful in the global economy.

At the Massachusetts Business Roundtable (MBR), a public policy organization comprised of top executives from

companies representing more than 210,000 employees in the Commonwealth, we strongly endorse investing in our human and intellectual capital as a critical component of a successful, long-term economic development strategy.

Recognizing the importance of these investments, business leaders issued a call to action two years ago to make science, technology, engineering and math (STEM) a statewide public policy priority. The STEM Business Leaders Coalition, convened by MBR, called for building STEM awareness, motivating students to pursue STEM careers, and improving the quality of STEM teaching. Given the glaring needs of our technology-based economy, generating greater enthusiasm for STEM careers is a challenge to our long-term economic

vitality.

With leadership from Lt. Gov. Tim Murray, the business community, and years of efforts by committed STEM advocates across the state, Massachusetts is making significant headway and receiving national attention for our work in STEM. A state infrastructure has been created, the first-ever statewide STEM plan has been developed, and plans to execute on that plan are in place. Last week, the National Governor's Association convened representatives from 10 states for a "Learning Lab" here in Massachusetts... To learn more go to:  
<http://www.masshightech.com/stories/2011/08/22/daily8-Talent-is-our-competitive-advantage.html>

MORE at

<http://www.masstec.org/>

Worcester, MA -

**The Project Lead The Way**

Mass. Lieutenant Governor Timothy Murray recently announced the state's support for Project Lead The Way, a nationally-acclaimed Science, Technology, Engineering and Math (STEM) curriculum for grades 6-12. The Project Lead The Way engineering and biomedical sciences programs have proven effective at producing students who are both interested in - and prepared for - pursuing STEM careers. The curriculum is offered in over 4,000 high schools and middle schools in all 50 states, including 26 schools in Massachusetts. Press Release from Lt. Gov. Murray | Press Release from WPI

You and your colleagues are invited to a Project Lead The Way Info Session:

When: Thurs., Oct. 6, 9AM start time, 11:30AM end time, light continental breakfast available beginning at 8:30AM

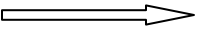
Where: Worcester Polytechnic Institute (WPI)  
 Campus Center, Hagglund Room 301  
 Free parking available in the WPI lot at 1 John Wing Road,  
 Worcester, MA  
 Campus map

RSVP: tadams@wpi.edu with your name, school, position

If the Oct. 6 date does not work for you, you are welcome to join us for the Tues., Oct. 11 Project Lead The Way Conference at the University of New Haven in southern CT. Details are available at <http://www.newhaven.edu/175719/>, and registration will open soon.

Sincerely,  
 Terry Adams  
 PLTW Affiliate Assistant  
 WPI (Worcester Polytechnic Institute)  
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<http://www.wpi.edu/+PLTW>

**Editor's note:**

Project Lead The Way is a fine program, AND only ONE small component of a comprehensive school that supports students learning about STEM with hands-on, Problem Based Learning. Technology Engineering Education—the only truly scalable way to include every student in the state—is available in many school districts and is supposed to be taught in Pre-K through 12th grades... See the adjoining column. 

In these days of shrinking budgets, Our students—all our students—need Technology literacy and that is best taught in Technology Engineering Education.

~ Ray McCarthy

Hudson, MA-

**Technology Education & Massachusetts' Law: 1993 Education Reform Act**

~ Brad George, retired MasTEC board member

Specific areas where Technology Education is located;

- Page 1, section 1G: There shall be established advisory councils to the board in the following areas: early childhood education; life management skills and home economics; educational personnel; fine arts education; gifted and talented education; math and science education; racial imbalance; parent and community education involvement; special education; bilingual education; technology education; vocational-technical education; .....
- Page 2, section 1G: The members of the council of technology education shall have demonstrated scholarship or creativity in, or distinguished service to technology education, and shall be broadly represented in all areas of technology education in the comprehensive school.
- Page 16, section 1D: The board shall direct the commissioner to institute a process to develop academic standards for the core subjects of mathematics, science and technology, history and social science, English, foreign languages, and the arts.
- Page 17, section 1D: The board may also include in the standards a fundamental knowledge of technology education and computer science and keyboarding skills;.....
- Page 17, section 1D ii: The "competency determination" shall be based on the academic standards and curriculum frameworks for tenth graders in the areas of mathematics, science and technology, history and social science, English.
- Page 21, section 1I: With respect to individual schools, the system shall include instruments designed to assess the extent to which schools and districts succeed in improving or fail to improve student performance, as defined by the student acquisition of the skills, competencies and knowledge called for by the academic standards and embodied in the curriculum frameworks established by the board pursuant to sections D and one E in the areas of mathematics, science and technology, history and social science, English, foreign languages, and the arts, as well as by other gauges of student learning judged to be relevant and meaningful to students, parents, teachers, administrators, and taxpayers.
- Page 23, section 1I: Each school district shall file a description of the following instructional procedures and programs with the department every year:
  - (a) art and music;
  - (b) technology education;
- Page 71, section 56, last sentence: Vocational technical education also includes applied technology education to be taught by personnel certified in technology education.

The Education Reform Act was amended in June of 1994 to include the following definition of Technology Education:  
 " For the purpose of this Chapter, Technology Education shall mean organized educational programs in the K-12 comprehensive schools that offer courses instruction all students how to use and apply technology through critical and creative thinking and problem-solving. These programs shall provide all students with activities concentrated in an action-based, problem-solving, solution-seeking format, in the areas of: Communication, Construction, Manufacturing, Power/Energy, Transportation and Biotechnology. Technology Education also means an integrated approach to education through organized programs in the K-12 comprehensive schools which emphasizes career awareness, consumer knowledge, impacts and consequences of technology and understanding the technical systems through the application of science, mathematics, language arts and educational technology."

South Yarmouth, MA -

**TAKING A LEAP INTO THE WORLD OF STEM EDUCATION**

~ Paul Funk

Dennis-Yarmouth Regional High School is taking a leap into the world of STEM Education. The school system and the high school are making the transition into a Science, Technology, Engineering, and Math magnet school on Cape Cod. The goal is to develop a comprehensive program that will introduce students to problem solving and critical thinking skills at an early age.

The program will be created by implementing an eighth grade pilot program at the high school that will focus on STEM education. All seventh grade students in the Dennis-Yarmouth Regional School District were given the option to fill out an application to attend Dennis-Yarmouth High School as an eighth grader and become part of the STEM initiative. Applications went the through the roof and at the moment it looks as if 75 to 80 students will take part in the program.

The STEM Initiative is still very much in its infancy and is a constant work in progress. The school created a committee that consisted of the Principal, Assistant Principal, Math Department Head, Science Department Head, Technology Instructor, Work to Careers Director, along with one other teacher from each subject. As of now the committee stands at twelve. The first job of the committee was to determine a vision statement and STEM philosophy of instruction. Our vision statement: Dennis-Yarmouth Regional High School Stem Philosophy of Instruction prepares and empowers all students through creativity, imagination, and problem solving to be competitive in the Global Economy.

As with any new program the progression into a STEM Magnet school will take some time. The goal is to implement the STEM Initiative with the new eighth grade pilot program and eventually it will spread throughout all grades throughout the entire school. The committee expects all teachers to use problem solving and critical thinking activities in all disciplines. The teachers will develop hands on project-based lesson plans that give students the opportunity to think critically and develop problem solving skills. The new eighth grade pilot program has been met with extreme excitement throughout the district. All incoming eighth grades will have a unique opportunity for them to explore new and interesting areas of technology. The eighth grade curriculum will continue to have the traditional English, Social Studies, Foreign Language, Math, Science, and elective classes. The difference will be the addition of a STEM class which will cover a wide range of topics and curriculum. The focus of course will be critical thinking and problem solving and specialize in the areas of Astronomy, Horticulture, Robotics, and Intro to Technology. The goal is to

have teachers that specialize in these areas rotate through the classes teaching bi-weekly or monthly lessons on the subjects. The students will have use of an on campus telescope, an on campus green house equipped with hydroponics facilities, the use of a computer generated robotics lab, and the implementation of Cisco Technology Certifications.

In addition to becoming a STEM school, Dennis-Yarmouth high School has adopted the Mass Core Standards for graduation which require all students to pass 4 years of English, 4 years of Math, 2 years of Foreign Language, 3 years of Lab Science, 3 years of History, 1 year of Art, plus 5 additional core courses. This will coincide with the STEM initiative by having students take more Math and Science classes. With most of our science students taking Biology as freshman they will have completed their MCAS requirement by the end of their freshman year and be able to experience of variety of science classes.

Dennis-Yarmouth Regional High School would like to see all students become extremely well prepared for jobs in technology. Currently the school offers a "Work-to-Careers" program for students in eleventh and twelfth grade. The program allows students to utilize local businesses, and experience a profession which might interest them. It is one of the goals of the committee to see more students placed in hi tech area jobs in the fields of engineering, science, and math.

The school is currently in negotiations to create a partnership with Massachusetts Maritime Academy and the University of Massachusetts at Dartmouth to help create problem solving curriculum. This summer, Dennis-Yarmouth will send two teachers to professional development through the National Center for Technological Literacy which is part of the Museum of Science in Boston.

In addition to the implementation of the STEM curriculum and pilot program the committee also expects to increase the number of AP courses offered in the school in all disciplines, increase the number of science and math electives, and allow students to take college level science courses at area colleges or online during their junior and senior years. Dennis-Yarmouth Regional High School understands the need to for students to be better prepared for the Hi-Tech job market. By initiating this STEM Philosophy of teaching and learning students will be exposed to a wide range of science, math, and engineering curriculum with an emphasis on project based problem solving before they reach the ninth grade.

Paul Funk is a doctoral candidate at Northeastern University. Contact Paul at [funk.p@husky.neu.edu](mailto:funk.p@husky.neu.edu)

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**Women In Power: Susan Hockfield, MIT President, on Women in Science, Revolutionary Technologies, Why U.S. Policies Must Change**

Matthew Dakotah

A special series profiling trailblazers in energy innovation and champions of the environment. "It is very clear to me--and I wish it were clear to everyone else--that the reason I am president of MIT right now is because of decades of very hard work by generations of women before me," Susan Hockfield says. "The first woman graduated from MIT in 1873 and it officially became a coeducational institution in 1883, so there have been women on our campus for a very long time." And that long progression is punctuated by Hockfield, who took the helm of the innovation powerhouse in 2004--the first woman to do so since MIT's founding 143 years earlier. According to Hockfield, it wasn't until the 1960's when "there was an effort made to increase the number of women students" that any significant presence beyond men could be felt. Fast forward to 2011 and "the world has changed a little bit since MIT began. 47 percent of our undergraduates are women and for them, like the men, 85 percent will graduate with a bachelor's degree in science or engineering," she says. And where from here? "Of course, with roughly half of our population female, the goal would be for almost half of our faculty to be women--the way almost half of our students are. As a nation and the world we are in desperate need of people with the kind of education MIT provides and when as a society we inadvertently or overtly make it difficult for half of our population to participate, we are much the poorer," Hockfield says. "That really is at the core of our efforts to make sure that places like MIT and the enterprises of science and engineering and mathematics are open and welcoming to women and men and to people of all backgrounds."

That inclusive approach is also evident in Susan's leadership style. In a revelatory move, she immediately embarked on a months-long listening tour upon her arrival from Yale. "MIT is a different institution with different people and what was most important to me was getting to know this community and their ambitions and dreams," Hockfield explains. "What were MIT's responsibilities and opportunities for the next decade?" She was "delighted to hear the response to that question was an almost unanimous cry for MIT to have a greater impact in changing the world's energy system." And so the MIT Energy Initiative (MITEI) was born. "There were a tremendous number of important energy research projects already underway at MIT," Susan remembers. "And

we reasoned that by gathering that work together under the umbrella of the energy initiative, we could have a larger impact and attract more people and funding to the cause, which has been the case." The work underway at MITEI runs on parallel tracks. Near-term: improving the current generation of energy technologies. Hockfield says we will continue to rely on our present energy mix for a couple of decades and "it has to be more efficient and drive toward lower carbon." And long-term: focusing on the transformative technologies "that we all dream about." Susan explains the primary hurdle--or rate-limiting technology--for renewable energies like solar and wind is storage. "After about 200 years of very little progress in battery technology, right now there are almost two dozen new battery technologies under development at MIT that are very exciting," she says. "Anything from cell-sized storage that will power up your cell phone to very large grid-scale storage that truly will be game-changing for intermittent sources."

"One of the foundational premises of the energy initiative is that we can't choose a technology. Anyone who says they can doesn't know what they're talking about," Hockfield says. But as for other revolutionary breakthroughs that are likely to have a dramatic impact 20 to 30 years out, she says, "The great transformational technologies of the 20th century came out of the convergence between physics and engineering and that gave rise to electronics and computers and the information technology that we love today. Now added into that mixture are the life sciences--biology--and I think that will transform the way we do lots of things." MIT Professors Angela Belcher and Paula Hammond are currently at work on two projects that give promise to this convergence. "They and their colleagues have demonstrated that they can basically synthesize batteries with benign lab strains of viruses. They're made at room temperature without toxic byproducts and have the same kind of power density as state-of-the-art lithium ion batteries. It's very exciting," says Susan. "And they recently had a paper in Nature demonstrating viruses that synthesize photovoltaics. These are just two examples of a world of biomanufacturing that will have big implications for energy, but really way beyond energy. If I had to guess, I think that is going to be the game-changer for the 21st century." Beyond its technical prowess, MIT has a long history of advising the federal government on policy and Hockfield is clearly continuing that tradition. "We just released a study on the nuclear fuel cycle. If we don't have a policy around nuclear waste, nuclear is not going to be a long-term option. And another on natural gas, which is a tremendously important potential energy resource," she says. "It would be a tragedy if we were to go from buying oil from unstable and perhaps undependable

nations to buying technology from unstable and possibly undependable nations, when we could create energy resources--and certainly energy technologies--ourselves." And what about America's continued dependence on oil and related environmental and security challenges? "The good news is that the consciousness of the nation is now more evolved around the incredible dilemmas posed by our current energy use," says Hockfield. "But when we launched the MIT Energy Initiative in the fall of 2006, we had no confidence that the federal government would provide the kind of support for the basic research and early development that's required to really get technologies going. The Bush administration had not called this out as a priority." Susan and her team pushed forward nonetheless. And by relying almost entirely on philanthropy and new partnerships with the private sector they still managed a swift start. "The Obama administration has taken a far more aggressive approach to the energy dilemma and has funded energy research at a higher level, and that's all to the good," she says. "My concern about federal funding is that it's episodic. When gas prices go up, federal funding goes up. When gas prices go down, funding drops. It's a roller coaster and the problem with a roller coaster is that it may be fun, but you always get back to the starting gate. Progress that we could have made--had we made sustained investments--simply has not been realized." So how will future generations judge our efforts to address the challenge? "I hope that when looking back at what's happening at the beginning of the 21st century in the United States we will, in the fullness of time, see the building up of real enthusiasm and real commitment to changing the energy equation in this country," says Hockfield. "Right now, we're a long way from that at the federal level. And yet, there is tremendous commitment fed by the grassroots level and a significant commitment, I would say, at the level of industry. Everyone is trying to do what the United States has done in the past, and I think that's a great thing, but the United States has to use the advantages we've established to accelerate and lead into the future." At a Glance  
Hometown: Chappaqua, New York  
Education: B.A. in Biology, University of Rochester. Ph.D. in Anatomy (and Neuroscience), Georgetown University School of Medicine. NIH Post Doctoral Fellow, University of California at San Francisco  
Professional Highlights: Dean of the Yale Graduate School of Arts and Sciences, William Edward Gilbert Professor of Neurobiology and Provost at Yale University, President of MIT Advice for Young Women: "If young women want to help invent the future--and change lives and change societies--there's no better way to do it than through science and engineering."

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## 7 skills students need for their future

I recently watched a video Wagner <http://www.youtube.com/watch?v=NS2PqTTxFFc> of Dr. Tony , co-director of Harvard's Change Leadership Group, when he presented about what he calls a "global achievement gap". During the presentation, he outlined the **7 most important skills our students need to be successful in the world**. His message is powerful and presents the case that we are even short-changing the most capable students – AP and honor students – because we've prepared them in the universal curriculum of 'taking tests'. They are not able to reason, analyze, think... He outlines the following skills as critical to solving the problems of tomorrow.

### 1. Critical Thinking and Problem Solving:

In order to stay competitive and relevant, businesses are forced to focus on continuous improvement of processes and products, and how they serve their customers. Toyota, as an example, expects its employees to commit to three responsibilities – 1) to produce the best quality products, 2) to find ways to make better products, and 3) to use their knowledge to create the cars of the future. They expect that of all employees. And our students need to have the thinking skills to solve the problems that are presented them in their careers.

### 2. Collaboration and Leading with influence:

We live in a world that is flat. We all know that there are no national boundaries when it comes to commerce, any longer. Which means, when our students eventually find themselves in the work world, it is almost a guarantee that they will find themselves working on a project as a part of a team. Most teams in businesses are without hierarchy and with that comes the need to be able to lead by influence. The most effective way to lead in the 21st century is through the ability to engage people and to ask the right questions. To do this in a global environment, our students must be able

to understand and respect differences.

### 3. Agility and Adaptability:

It is the rare individual, in this economy, that will have the same job for their entire career; most people will change jobs at least 10 times during their working years. Even in the case where people find themselves working at the same company for some time, the organization is likely to undergo some form of structural or role change, frequently. The person who is able to adapt to the new environment and role as things change will prove to be the most productive for the company.

### 4. Initiative and Entrepreneurialism:

During the presentation, Dr. Wagner references a conversation with Mark Chandler, VP and General Counsel of Cisco, where he compared two different types of employees – one who set 5 goals for him or herself and met all 5 with no problems versus the employee who set 10 goals for him or herself, and reached only 8 of them. He said the second example is the ideal, because he knows that he or she is setting stretch goals for himself, which is the only way Cisco can stay competitive. Businesses need employees who are stretching the envelope, to risk failure in the quest for the next innovation.

### 5. Effective Oral and Written Communication:

The number one complaint of both employers and college professors alike is that young people coming out of both high school and college can not communicate effectively. He quotes a senior executive at Dell who said that "the problem with their writing is with their thinking. They can't analyze, they can't reason. Their writing is fuzzy because their thinking is fuzzy. And that is only half the problem. The other part of the problem is they don't know how to write with voice." Our students are not able to write persuasively, or clearly articulate a point of view which is extremely important in professional settings.

### 6. Accessing and Analyzing Information:

We are bombarded with information on an hourly basis, and the amount of information that is available in the world is increasing exponentially. What becomes critical is not only the ability to find the information but to determine what is the important information, what is the really critical information versus what is trivial or unimportant.

### 7. Curiosity and Imagination:

Dr. Wagner references Daniel Pink's book "A Whole New Mind", (which I am halfway through on my Kindle), and the case that Pink makes that "in a commoditized world where every product begins to look the same, it is those products that have a more imaginative quality, a more playful element, that is going to capture people's imagination" So to have creative skills becomes increasingly important in the market.

The video is inspiring, especially for those of us focused on transforming the education system, as we know it. I encourage you to watch the video, because he presents some solutions to this problem for teachers.

<http://education.nyas.org/2011/07/7-skills-students-need-for-their-future/>



MORE at

<http://www.masstec.org/>

BOSTON, Mass. (WWLP) -

## Manufacturers seek job applicants

Middle-skill workers in high demand

Wednesday, 27 Jul 2011

~ Christine Lee

Calling all job seekers, the Massachusetts manufacturing industry is looking for you. "There are opportunities for manufacturing in this Commonwealth and specialized manufacturing," said Rep. Joe Wagner (D-Chicopee) who chaired a Jobs Creation Commission meeting Wednesday. The problem is that there is a lack of middle skill workers with the technical know-how to fill these manufacturing jobs. Without the necessary applicant pool, Massachusetts manufacturers risk failing to meet the world-class standard needed to survive the future. "Although [manufacturing companies] have openings and requirements, they have tremendous difficulty filling them with the right set of skills, or people with the right set of skills,"

said Ted Bauer, the manager of workforce development programs at the Manufacturing Extension Partnership.

To address the problem, the Manufacturing Extension Partnership (MEP) trained 25 Springfield veterans in March 2011, some who were formerly homeless or suffering from addiction, but who were apt and capable of doing technical work. After a two-week basic skills course, they were placed in jobs at Smith and Wesson, where they've all been working since. MEP said many more jobs like these exist, but people don't know about them or have a misguided view on machine shop jobs.

"It's not as sexy," said Leslie Parady, the project manager at the Manufacturing Extension Partnership, "It has a reputation for being dark and dirty, perhaps dangerous, but that's the misperception from the last century. There are plenty of machine shops that are white and painted white and air-conditioned and clean enough for me to walk in like this and walk out looking just like this."

Rep. Wagner adds there's a misperception that manufacturing is a dying industry in Massachusetts. He said vocational schools, like one recently built in his district in Chicopee, are key to sustaining the manufacturing industry.

<http://www.wwlp.com/dpp/news/politics/Manufacturers-seek-job-applicants>

Reston, Virginia-

## "SkillsUSA Championship Winners Announced

ITEEA Partners with intelitek for Engineering Technology Challenge

**June 30, 2011.** The winners of the annual SkillsUSA Championships in Engineering Technology were announced June 24, 2011 at the SkillsUSA National Leadership and Skills Conference in Kansas City, MO. Over 5,600 students competed in the Championship.

ITEEA is very pleased to be a partner in the leadership of the SKILLS Engineering Technology Challenge with intelitek. The Challenge is another way for ITEEA to promote technology and engineering within the career and technical education community. Many of the Challenge students are former technology and engineering students who are currently pursuing career and technical

education. ITEEA serves as one of the Challenge content leaders by providing expertise in line with the focus of Engineering byDesign™. Engineering byDesign™ (EbD™) is ITEEA's major effort to provide quality curriculum and professional development to the technology and engineering education community. This STEM-based standards work is content-driven using *Standards for Technological Literacy*. EbD™ is a complete K-12 curriculum designed by teachers for teachers in most school laboratory settings.

In the Engineering Technology Challenge, a team of three students demonstrated their ability to design an innovative engineering project and present those ideas along with a display and live model. During the presentation, students were judged on their performance as a professional team, presentation of their project to a panel of judges from the engineering field, their storyboard presentation model, and the overall effect of the presentation. Fifty-one students comprised the 17 teams that competed in

the Challenge.

ITEEA member and Past President, Gary Wynn, DTE served as Chair of the national technical committee for the Engineering Technology Challenge. "



For more information about ITEEA or the SkillsUSA Championship, go to [www.iteea.org](http://www.iteea.org).

**MORE at**  
<http://www.masstec.org/>

Hadley, MA-  
~ Matt Bartlett

### Technology Engineering teachers are in demand!

### Earn Professional Development Points and some extra cash.

The Evaluation Systems group of Pearson is seeking Technology Engineering teachers to score essay responses for the Massachusetts Educator Licensure Tests.

The next session is tentatively scheduled for **Friday, October 7, 2011.**

The exam is administered five times a year. Sessions take place 9-4:30 on weekdays at our facility in Hadley, MA, near the UMass campus. Coffee and a catered lunch are provided, and we offer lodging and travel expense reimbursement for qualified scorers.

Individuals are eligible if they hold a current Massachusetts Teacher License and are currently teaching or have taught in Massachusetts schools (public or private) within the last 2 years (including regular substitute teachers).

Scorers can choose to be paid directly or have their district reimbursed for the cost of hiring a substitute.

Working as a scorer is an opportunity to earn some extra money, earn

Professional Development Points, work with peers to support the teaching profession, and contribute to the quality of public education in the state.

For more information on the test, go to [http://www.mtel.nesinc.com/PDFs/33\\_TCHED.pdf](http://www.mtel.nesinc.com/PDFs/33_TCHED.pdf)

If you are interested in taking part and would like an application form, please email Matthew Bartlett at the following address: [matthew.bartlett@pearson.com](mailto:matthew.bartlett@pearson.com)

Evaluation Systems group of Pearson is an educational testing company that develops and administers customized teacher certification testing programs and other assessment programs in higher education. Evaluation Systems' contracts span the country, and our work covers assessments of more than one hundred content fields, professional teaching skills, and the basic skills of reading, writing, and mathematics.

Scorers can accept or turn down each invitation on a case-by case basis.

### Gardeners,

For small aviation and aerospace grants:

**AFA Educator Grants:** \$250 through AFA for aerospace education: <http://www.afa.org/aef/default.asp?pm=asg> Each school may submit 2 grants per year. Apply on line.

**Civil Air Patrol Educator Grants:** \$250 grants through CAP for aerospace education. Once every 2 years, must be a CAP member (\$35). Visit <http://www.afa.org/aef/default.asp?pm=asg>

**Junior Air Force ROTC:** \$250 grants through JAFROTC every other year for aerospace education. Visit <http://www.afa.org/aef/default.asp?pm=asg>

**AIAA Classroom Grants** for aerospace education: AIAA offers free Educator Associate

memberships. Associates may then be eligible for a grant of \$200.

**Chapter Matching Grants** through AFA . Contact a local chapter [http://www.afa.org/contact\\_link\\_search.asp](http://www.afa.org/contact_link_search.asp) . The local icks in 50% and the national association kicks in the other 50%.

**NAR Cannon Award,** \$500 for rocketry activities <http://www.nar.org/teacher.html>

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NH AFA/Thyng Chapter VP  
Education Programs (2004  
Teacher of the Year)  
Space Foundation Teacher  
Liaison



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**US News-**

**Investing in Education Is Smart Business  
The U.S. economy needs a STEM-educated workforce**

By Deirdre Connelly

Eight million U.S. jobs will become available in science, technology, engineering, and math-related (STEM) fields in just the next eight years. Yet 30 percent of all students--and half of all minority students--drop out of school before graduation. On average, 1 million students do not complete high school each year. This warrants asking: Who will get those quality jobs? Among developed countries, the United States ranks 31st in math, 23rd in science, and 17th in reading. To make matters worse, there is a wide achievement gap between low-income and minority students and their peers. Policymakers in Washington are rightly focused on our nation's debt. We must reduce costs and get our fiscal house in order; but for the U.S. economy to grow and remain competitive, it is a national imperative that our children receive a quality education. This is a point that is often lost in the broader economic debate. Any successful business leader will tell you that you don't drop

your most promising product simply to cut costs; which is essentially what we as a nation would be doing if we fail to provide the educational opportunities needed to secure a prosperous economic future. We can and should seek creative ways to make our schools more effective in a way that accelerates learning, leads to higher graduation rates, and, above all, benefits students, society, and our economy long term.

I recently joined 35 of my peers in the country's private sector--business leaders with a vested interest in ensuring an educated, skilled workforce for the future--at a White House forum on education. We discussed a host of critical issues facing our nation's education system, but placed unique focus on dropout prevention. Collectively and individually, our organizations responded with significant financial support as well as the expertise of our organizations and employees. Science, math, and technology are the backbone of the life sciences industry--which serves as a harbinger for U.S. economic growth in the future. Our success ultimately depends on R&D programs that encourage creativity and facilitate the accelerated discovery and development of new medicines. But the pathway to this success is not built just off the talents of our scientists and engineers who work daily to find new cures and treatments, but also by the men and women who build and maintain our cutting-edge research facilities, manage our operations, and engage with our customers.

While all students in the United States should have the opportunity to pursue a higher education, as a practical matter, not every student will. But from hard hats to lab coats, a core education that emphasizes math, science, and technology, and that leads to graduation from high school, will serve as critical success factors for students individually and for our nation as a whole.

From seeding the curiosity of the student who goes on to post-graduate work to become an accomplished scientist or physician to laying the groundwork for a high school graduate to pursue a career in logistics or health services, the skills derived from STEM education are the mission critical elements of the jobs of tomorrow. That is why for more than 20 years, our company has invested time, money, and volunteer efforts to ensure that children are exposed to science in everyday life, complete their education, and are encouraged to pursue STEM careers.

So who will get tomorrow's jobs? Students, parents, educators, policymakers, and employers must be mindful that, at a minimum, it will most likely be those who've benefited from a quality STEM education and graduated from high school. Working together, that's a goal worth supporting and one that should be achievable.

Deirdre Connelly is president of North American Pharmaceuticals at GlaxoSmithKline. <http://www.usnews.com/news/articles/2011/08/29/investing-in-education-is-smart-business>



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## Technology Engineering Education

### ITEEA Member Program

[ITEEA@memberprogram.org](mailto:ITEEA@memberprogram.org)

#### Protect Your Career Against Workplace Risks

Even the most well-intentioned professional can find him or herself the victim of adverse circumstances — and the subject of a professional liability lawsuit. Make sure you're fully protected against workplace risks with the Educators Professional Liability Plan, sponsored by ITEEA.

**\$1 million of coverage is just \$99 a year for W-2 employed educators.**

The policy pays defense costs in addition to the limits of liability. Valuable job protection benefits provide legal support if you're subject to termination, reassignment, demotion or suspension.

<http://www.ftj.com/EducatorLiability>

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- \* Teacher of the year
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Hudson-

### POY—TOY

All applications need to be submitted no later than Thursday, September 15, 2011

MassTEC is offering two recognition programs for technology/engineering teachers: Program of the Year, and Teacher of the Year. The recipients of Teacher of the Year, and Program of the Year will receive a plaque and a \$150 gift certificate to the vendor of their choice. The top two finalists of Teacher of the Year will receive a free MassTEC membership, admission to the following year's MassTEC conference and a year's membership to ITEEA. The top two finalists of Program of the Year will receive a free MassTEC membership, admission to the following year's MassTEC conference. The award recipient(s) will receive a one year membership to ITEEA for up to 3 members of the department.

The recipients for the Teacher of the Year and Program of the Year will be eligible to submit an application to the International Technology Education Educator Association (ITEEA) for consideration for the ITEEA Teacher Excellent or the Program Excellent Awards. These awards will be presented at their annual conference.

I ask you to think about applying for one or both of these awards. For additional information and an application for either of the awards please go our web site and look under Recognition Consider Applying for Program of the Year and Teacher of the Year. This section is located on the left side of our web page.

<http://www.masstec.org/recognition/index.htm>

~Charlie Corley, DTE



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<http://www.masstec.org/>

## Travels in Technology Engineering

Clinton, Montana-

### Visiting Clintons throughout the USA

~ Scott Karpuk

This morning we left Missoula on our way to spend the night in eastern Montana. We stopped at the town of Clinton Montana and found the school. At the school they were holding a fund raiser for the 8th grade to travel to Washington DC next spring. They were having a tag sale in the parking lot and a car wash. I met Tara the head of the PTA and told her my story of visiting Clintons throughout the USA. On this trip we've stopped at two others briefly, in New Jersey we stopped at the McDonalds there and in Kansas we stopped at the reservoir there. After speaking with Tara she took us into the school. The school is Art Deco built in the 40's with white stucco and deep red accents, a new Cougar kingdom {playground} and portable classrooms. We walked into the gym and it is the home of the Clinton

Cougars. From there we went and met the principal Julie and talked about the school. Each grade has approximately 25 students and the school is K through 8. The picture is of the principal and me.

The picture is of the Clinton School. As you can see the grounds are well kept up. As we conversed more with the principal she explained that the grade 6,7 and 8 rotate the classes. With the grades each having round 25 students the students have the same teacher for math and science and the same teacher for social studies and English and the same teacher for practical arts {computers. The school does not have a technology engineering class or wood shop} and physical education. I didn't inquire about art or music. Tara, the principal, is a teaching principal who teaches both the practical arts class and the gifted and talented program. A state grant provides the funding for the gifted and talented program. She showed us her office and the stuffed cougar in the framed glass display above the entrance to the gym. Julie talked about the economic difficulty in the town after the large mine closed two years ago. We exchanged contact information and I



Contact Scott Karpuk at:  
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WOBURN (CBS) – The world's first flying car is almost ready to hit the road.

Terrafugia of Woburn has received approval from the federal government to allow its test [car](#) on highways.

The car has special, plastic windshields which are typically illegal.

Unfortunately, production is not going as smoothly as planned, so the debut of the first models has been pushed back to the end of next year.

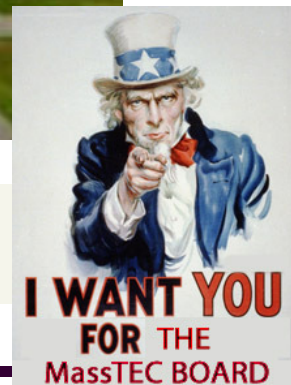
It won't be cheap — the cost is about \$200,000.

More at:  
<http://boston.cbslocal.com/2011/07/06/flying-car-made-in-woburn-gets-federal-approval/>



MORE at

<http://www.masstec.org/>



"I received this information from a distinguished individual in Pennsylvania who has taught for over 40 years but now in retirement but still actively involved with promoting what we do as valuable. We all should follow in his footsteps and example.  
~William F. Bertrand | Technology Education Advisor  
wbertrand@pa.gov

Middle School Course Emphasizes Wonders of STEM", from ASCD Express, Vol. 6, No. 24. Copyright 2011 by ASCD.  
<http://www.ascd.org/ascd-express/vol6/624-cieslik.aspx>

You may already have seen this article and other curriculum focused articles in the series? To see more visit [www.ascd.org/ascdexpress](http://www.ascd.org/ascdexpress).

If you choose to read the article, I would ask that you substitute the word **Technology** in place of the word **STEM**. It will soon become evident, as it is becoming increasingly evident to those in the world of K-12 certified science and math instruction, that the presentation of math and science in an exclusively abstract domain serves only a limited number of learners! Our certified technology teacher colleagues must realize and celebrate their potential to breathe life into the creative ability of all students, thereby unleashing otherwise stagnant information that may remain locked in their minds indefinitely. Let's hope the rest of the academic community soon catch on to the strategic and vital role we play for every student in the K-12 education community.

Best wishes in your leadership endeavors.

Sincerely,

Van Hughes

Hi Gardeners,

A couple of videos that are fun and have links to our content. First the story of Little Red Riding Hood told through a variety of info graphics. This might serve as an inspiration for class assignments, indeed that was its source.

<http://www.youtube.com/watch?v=Y54ABqSOScQ>

Second is a video using time lapse photography to show a ferrofluid (which you can buy) flowing through bubbles.  
<http://vimeo.com/28304264>  
Follow the links to some other cool time lapse videos and filming ideas that could serve as assignment or exploration ideas for photography or video classes.  
Paul

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<http://diverseeducation.com/article/15843/>  
See this!

Neil deGrasse Tyson.

A brief but excellent interview

with astrophysicist  
Just a short clip..... but an excellent message for STEM Education and Technology and Engineering education as well. All four disciplines have a good message and charge, from Dr. Tyson.  
Can we run with it?

<http://edition.cnn.com/video/data/2.0/video/us/2011/05/13/o'Brien.degrasse.tyson.jobs.cnn.html>

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**Smart String winds up the tape-measuring process** Although it would be wrong to say that tape measures are *difficult* to use, they can sometimes certainly be a bit fiddly – a couple of examples include the measuring of objects that aren't straight-edged, or having to squint to count off the exact millimeters on the tape. Pocket Smart String, however, goes about measuring in a different way. Users pull a string out from the pocket calculator-sized device, laying it alongside or winding it around

whatever they want to measure. The exact length is digitally displayed on the device's LCD screen, and can then be stored in its memory for calculating things such as area or volume.

[http://www.gizmag.com/pocket-smart-string-digital-tape-measure/19548/?utm\\_source=Gizmag+Subscribers&utm\\_campaign=3149f824dc-UA-2235360-4&utm\\_medium=email](http://www.gizmag.com/pocket-smart-string-digital-tape-measure/19548/?utm_source=Gizmag+Subscribers&utm_campaign=3149f824dc-UA-2235360-4&utm_medium=email)

~ Mike Fitzgerald, DTE

[www.guitarbuilding.org/](http://www.guitarbuilding.org/)



**www.guitarbuilding.org**  
Dynamic, Relevant, Innovative STEM Education

Guitars in the Classroom? Absolutely.

This National Science Foundation STEM Guitar Project provides innovative professional development to high school and community college faculty in collaborative design and rapid manufacturing.

Faculty teams will take part in an intense five day guitar design/build project. Each faculty member will build his/her own custom electric guitar and will engage in student centered learning activities that relate the guitar design to specific math, science and engineering topics. Participants will leave this weeklong experience with their custom-made guitars, curriculum modules that can be immediately integrated into the faculty teams school curriculum, and much more.

~ Mike Fitzgerald, DTE

<http://www.iteaconnect.org/Networking/IG/IG.htm>

And Join!

<http://www.iteea.org/Membership/>

From The IdeaGarden-

**From:** Bertrand, William <[wbertrand@state.pa.us](mailto:wbertrand@state.pa.us)>

**Date:** Mon, Jun 27, 2011 at 11:52 AM

**Subject:** [Ideagarden] NRC Wants Science Put on Par With Math, Reading

**To:** IdeaGarden List <[ideagarden@iteea.org](mailto:ideagarden@iteea.org)>

**By Nora Fleming** <[http://www.edweek.org/ew/contributors/nora.flemming\\_4080228.html](http://www.edweek.org/ew/contributors/nora.flemming_4080228.html)>

The National Research Council, in a report <[http://www.nap.edu/catalog.php?record\\_id=13158](http://www.nap.edu/catalog.php?record_id=13158)> released Thursday, recommends that science learning be tested as frequently and taught as rigorously as math and reading to ensure a high status in the nation's classrooms.

The report also urges policymakers to craft new assessments for all the STEM subjects—science, technology, engineering, and math—that test students to probe for a deeper understanding of the material, and for states to hold their districts accountable to high standards for those subjects.

## school students learn engineering and manufacturing skills at summer day camp

By Theresa Harrington  
Contra Costa Times

[http://www.mercurynews.com/breaking-news/ci\\_18343385?nclick\\_check=1](http://www.mercurynews.com/breaking-news/ci_18343385?nclick_check=1)

PLEASANT HILL -

Clenching hammers and glaring through safety goggles, two teens faced each other with sawhorses between them, eager to see who could pound three nails into a piece of wood the fastest.

At the teacher's signal, the students drove the nails mightily, finishing within seconds of each other. After the "nail off" competition, they learned that joining boards together with nails is not as easy as it looks.

"You want to use your whole arm," Diablo Valley College instructor Joe Valdez told them. "Focus on the nail and don't be frustrated if you bend a few."

About 60 juniors and seniors from high schools throughout Contra Costa County spent last week at the Engineering, Construction and Manufacturing camp coordinated by the County Office of Education, where they learned about local jobs and the skills needed to get them. The students participated in hands-on activities such as building wooden sheds and constructing bird houses out of sheet metal.

They also took field trips to Lawrence Livermore Lab, SunPower in Milpitas, the USS-POSCO Manufacturing & Engineering Plant in Pittsburg and a carpenters' apprenticeship training center in Dublin.

The camp was free to students because it was funded through a variety of sources, including the state, the County Education Office, Chevron, the Contra Costa Economic Partnership and Diablo Valley College, said Louise Barbee, who coordinates the programs for the Education Office.

Students received one unit of college credit in career development.

"Some of these kids have never hammered before," Barbee said Thursday, while students enthusiastically banged nails into boards. "They learn how to read blueprints and build a shed. Each day has a different theme. Today is building and construction trades."

Courses were taught by college and high school instructors, as well as professionals in the field. San Jose State University engineering student Miguel Rebullar participated as a mentor, encouraging teens to explore careers such as civil engineering, which he is studying.

"I'm talking to them about the importance of education," said the 20-year-old Watsonville High School graduate. "I think they're getting a global perspective."

Valdez said many students know people who are engineers, but they do not understand what they do day-to-day. The camp gives students greater insights into career opportunities, he said.

Concord High student Amelia Hamiter, 16, said she wants to be an engineer. To prepare, she said she is studying math and science.

Jimmy Torres, a 16-year-old College Park student from Pleasant Hill, said he is interested in becoming a civil or construction engineer.

"You get to figure out how much weight a certain beam can hold," he said, "and how you can construct a building the way the architect wants it to be."

**In Teaching, Pink Slips Are A Way Of Life**

by Larry Abramson  
NPR

June 15, 2011

For many teachers, job uncertainty is one of the biggest downsides of their profession. Recent estimates from the American Association of School Administrators show that about a quarter-million educators could face layoffs in the coming year as states cut education spending in an effort to balance their budgets. That has left many teachers wondering where their next paycheck will come from.

Two of those teachers facing uncertainty are in Los Angeles, where as many as 1,600 teachers and staff may lose their jobs this summer.

Drama teacher Misty Monroe is an itinerant drama teacher. Every day, she visits a different LA school and brings a little art into kids' lives. Despite eight years with the Los Angeles Unified School District, Monroe is no stranger to the layoff notice. The sad part is that morale dips so drastically once the pink slips go out, because the worry begins about family, mortgage, stuff like that.

- Misty Monroe, LA public school teacher

Many school districts are required to send out layoff notices in the spring even if they think they will rehire workers. The school district originally sent out 5,000 notices to educators this year. Often, teachers are "recalled" and get their jobs back over the summer. That's what happened to Monroe last year, but she says the suspense of having unemployment hanging over her head is unnerving.

"The sad part is that morale dips so drastically once the pink slips go out, because the worry begins about family, mortgage, stuff like that," Monroe says. Whether the cause is budget cuts or shrinking enrollment, some teachers face this prospect year after year. Despite all the hubbub about union contracts and how tough it is to fire bad teachers, junior teachers have little protection against the layoff ax.

Just ask Rohya Prudhomme, who's been teaching in L.A. for four years. Prudhomme gets the same letter every spring. "For the past three years, I've gotten a pink slip every single year," she says.

**Teacher Layoffs Across The U.S.**

Around the nation, school districts are planning big teacher layoffs amid huge budget deficits. In most cases, the exact number of

layoffs is unclear and appears fluid as cities and teacher unions negotiate the issues.

Among the places where many teachers are facing pink slips:

- The Broward County School Board in South Florida announced last month it would lay off more than 1,400 teachers.
- The Allentown School District in Pennsylvania sent layoff notices to 265 teachers earlier this month.
- The entire teaching force in Providence, R.I., — more than 1,900 people — was dismissed in the spring.
- The school board in Cleveland voted in April to lay off 580 teachers.
- New York City Mayor Michael Bloomberg threatened to lay off more than 4,000 teachers, and not replace another 1,500.
- Philadelphia sent layoff notices to more than 3,000 teachers.

"I teach as though I don't have a pink slip. I teach as though I'll be teaching forever."

~ Rohya Prudhomme

<http://www.npr.org/2011/06/15/137090661/in-teaching-pink-slips-are-a-way-of-life/>

[ps=rs](#)

Washington-

**2 Million 'Open Jobs'? Yes, But U.S. Has A Skills Mismatch**

by Mark Memmott  
NPR

It's an eye-catching claim at a time when the unemployment rate is 9.1 percent, 13.9 million people are officially unemployed and another 8.5 million are working part-time but would like to have full-time jobs:

"There are more than two million open jobs in the U.S., in part because employers can't find workers with the advanced manufacturing skills they need." (General Electric CEO Jeff Immelt and American Express CEO Ken Chenault on the op-ed pages of The Wall Street Journal this week.)

Earlier today, All Things Considered host Robert Siegel asked Anthony Carnevale, director of Georgetown University's Center on Education and the Workforce, if that number is correct. "Yes," said Carnevale, and the reason is "a mismatch problem. ... Even though there aren't enough jobs to go around, there are a lot of jobs that people don't have the skills to fill."

The mismatch:

Where and what are these jobs?

"The industries that we're talking about are fairly broad-based," Carnevale said. "But the ones that are most striking are industries that have lots of what I would call 'orphan jobs.' Manufacturing, utilities, transportation, mining — a whole set of agricultural jobs." All those industries, he said, "are dying." But because so many baby boomers will be retiring in the next decade, those industries will still produce "huge numbers of job openings that we can't fill." On where the jobs are:

In manufacturing alone, Carnevale said, "while the overall number of jobs will decline by a million jobs over the next decade, there will be **3 million job openings due to** retirement." The openings don't really require advanced degrees, he added. But employers do need workers with solid skills in math and other disciplines. And that means more emphasis on vocational training, Carnevale believes.

So, what to do?

Carnevale says it requires rethinking a college-is-for-everybody attitude. And that raises some uncomfortable issues.

The moral dilemma:

"Underneath this mismatch problem is a moral dilemma," said Carnevale. "If we decide that we're going to, especially in high school, begin to train people for vocations — especially vocations that ... don't require four year[s] of college — we'll quickly find that the kids who are available for that are black, Hispanic or low income. ... We'll end up 'tracking.' That makes it very difficult for political leadership and policy leadership to focus on this issue. It creates a moral dilemma where we can, if we want to, make people better off. But if we stick to the purity of our ideals, which is that everybody goes to college and gets a four-year degree, we're not going to be able to get there."

Much more from Robert's conversation with Carnevale will be on All Things Considered later today. Click here to find an NPR station that broadcasts or streams the show. Later, we'll add the as-broadcast version of the interview to the top of this post.

<http://www.npr.org/blogs/thetwo-way/2011/06/15/137203549/two-million-open-jobs-yes-but-u-s-has-a-skills-mismatch>



## Massachusetts Technology Education/ Engineering Collaborative

From the Webmaster, Stephen  
VanVoorhis coertevanv@msn.com

<http://audacity.sourceforge.net/>

### Free, Cross-Platform Sound Editor

**Audacity® is free, open source software for recording and editing sounds.** It is available for Mac OS X, Microsoft Windows, GNU/Linux, and other operating systems. Learn more about Audacity... Also check our Wiki and Forum for more information.

There is too much to list here!

Go to:

<http://www.masstec.org/>

For amazing stuff!

**The latest release of Audacity is 1.3.13 (Beta).** This is our active version with the latest features and fixes. We recommend this version for more advanced users, and for everyone on Windows 7, Windows Vista and Mac OS X 10.6. Documentation and translations into different languages may not be quite complete. See New Features in 1.3 for more information about the 1.3 Beta series.

# VITAL...

***A grassroots effort***

***For Technology Engineering Education***

***Stay tuned for more details!***



**Group Names:** \_\_\_\_\_  
**Sec** \_\_\_\_\_

~ Jocelyn Long

## The Paper Tower Activity

Bridges have helped humans to cross rivers, valleys, and even other roadways for many years. Some bridges use columns to support the weight of cars and the roadway. These columns were designed to safely hold a very heavy load, while keeping the cost as low as possible. Engineers know that a material's strength varies with its shape and structure. Some shapes and structures can support more weight than others.

For this activity, you and your group will design and build a portable structure made of paper and masking tape that can support the weight of a "roadway" (ours will be a dictionary). If your group can accomplish this, then we will start to add "cars". The goal is to make a structure that holds the most weight for the least amount of supplies. Good Luck!

### Criteria:

- Each group must sketch at least 2 ideas for a design and then chose the best one
- Structure must hold the "roadway" at least 12" off the table
- Each group will only get 10 pieces of paper (8 1/2" x 11") and a 10" piece of tape
- The roadway is 8 1/2"x 11" (size of a piece of paper)
- The structure must be portable
- Your group may only use tape and paper

**You can not test your structure before hand!**

**Write-up. Please use the conventions of proper ELA communication. Use complete sentences and correct spelling!**

**Identify the problem:**

**Possible Solutions:**

**Evaluate:**

How many sheets of paper did you use?

How much tape did you use:

Final Weight Held:

Inches off the Table:

From the IdeaGarden... Thanks Jocelyn! & Craig

Hey Liz (and all)  
 When I did my demo lessons I used a paper tower design activity. Did a quick introduction to the design process and then gave the kids (in groups of 4) the challenge to build a structure that supports a dictionary 13" off the table with 10 sheets of paper and 10" of tape. I now use this activity with my kids as a fun friday and they love it. I have the handouts if you would like to see them.  
 Also did a measurement lesson/activity once because that was what the current teacher was going to teach. Talk to the school and teacher who's class you will be teaching ... Maybe you can do something that fits into what he/she is already teaching.  
 Jocelyn Long [longjoc@hotmail.com](mailto:longjoc@hotmail.com)

When I did this activity I added a measurement part to it, the students had to measure how tall their structure was also extra credit if they did the math to show metric.  
 Craig B. Clark, DTE [cbcnasa@comcast.net](mailto:cbcnasa@comcast.net)

Cool Lesson Plan!

Many have asked if we still had this MassTEC Poster in the 12 x 18 format.

Short answer: No.

However, you can download it and print with our permission if you go to:

<http://www.masstec.org/conferencefolder/conference2009/images/TechEngED%20LIVE%208x11%20poster.pdf>

