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Seasons Greetings!

"Education then, beyond all other devices of human origin, is the equalizer of the conditions of men, the great balance wheel of the social machinery"* Horace Mann (1848).

So here's our challenge. We educators, politicians, and parents need to make all our children equally aware of the technological challenges that face them as they grow to become global citizens. One opportunity follows:

MassTEC has been offered a rare chance to have someone with clout come to see our Technology Engineering education classrooms in action. We hope you will consider volunteering for a visit to your school by Secretary of Education Paul Reville.

Also there are many who still do not understand what we do so check out the many articles that can be shared to answer the age old question: "So Tech Ed — that's computers, right?" (Arrgh!)

We need to look to the future and innovation is both the future and a blast from the past. See what Debra Amidon suggests for what is next as well as help your students think like Leonardo.

We technology engineering teachers are not alone working to encourage our children to develop their creativity. Check out what STE@M is and how it could be a bridge between technology and engineering and the rest of the "silos" of education.

There is a powerful, short

Youtube video from **Dr. Ioannis Miaoulis** from the Museum of Science that you should share with all administrators and stakeholders in our county's future

And news from the TSA event run by TECA at Fitchburg State University and more in this issue.

*Note. Horace Mann was ahead of his time. However, if he wrote this today, he probably would have used a more inclusive term such as "human beings". We need all human beings to care about our future.

Dr. Ray McCarthy
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Technology Engineering Education
Teacher
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Boston-

Technology Education/Engineering Classroom Visits

Secretary of Education Paul Reville would like to visit!

When MassTEC Executive Board members met with Secretary Reville he expressed interest in visiting some Technology Education/Engineering Classrooms to show support and find out just what we do. We are now in the process of coordinating this activity. Please consider hosting Secretary Reville in your classroom.

The objectives of his visits are to see technology/engineering education in action by visiting classrooms; to see different models/programs at each school; and to have a chance to meet with faculty (and the principal if he/she wishes) to discuss their work.

We will be scheduling the visits for a day in January between the hours of 8 and 3. If you have additional teachers in your geographical area who may be willing to have a visit during the same day, please contact them and ask if they would like to host a visit. Secretary Reville would like to visit 2 to 3 classrooms in one day.

Please consider taking advantage of this opportunity to highlight the great things we do. Contact Stephen Van Voorhis, the site visit coordinator, at svanvoorhis@ebps.net to apply or for more information or to view this article click here <http://masstec.org/new.html#secretaryofedvisit>.



Mashpee-

What is Technology Education?

To answer this question accurately, one would need to walk a mile in our shoes or, more appropriately, spend a year in our classrooms. For those of you who teach our areas and principles of technology, you know what I am talking about. Before the personal computer was introduced in the 1980's there was less confusion around the definition of technology. Technology can easily be defined as the "branch of knowledge that deals with the creation and use of technical means and their interrelation with life, society, and the environment, drawing upon such subjects as industrial arts, engineering, applied science, and pure science". Nowhere does it mention computers.

How many times have you been asked, what do you teach? With your answer of Technology Education, you are faced with two reactions; one assumes you are a computer teacher and the other is more curious and asks for clarification. As you try to clarify, you realize it is easier to be considered a computer teacher. Teaching technology is not like teaching English or any other subject. There is no clear, concise explanation of what we teach because it is always changing. We are expected to educate ourselves and our students with an ever-changing world of technological advancements.

We have our curriculum frameworks which outline the current areas of technology we are expected to cover for MCAS preparation. Within those frameworks, we explore many areas of technology including: transportation, power and energy, manufacturing, bio-technology, construction and communications technology.

When we define communications technologies we can look at the development of the desktop computer as something that has made a significant impact. It can be used to communicate between person-person, person-computer and computer-computer and computer to person. Many of us use the computer as a tool to create designs for manufacturing, 3-D models for virtual worlds, brochures for publication, programs for robots and much more. The computer is a tool and should be viewed as such.

Unfortunately, we are faced with a society that associates technology education with the use of a computer. As technology educators, we know that the use of a computer only scratches the surface of what we teach.

It is my hope that the momentum behind STEM education will start to address these misconceptions. Unfortunately, the more I read and speak with others at all levels, it is clear that we have a long road ahead. How do we, as technology teachers, change this mind set? How can you get involved?

You can start by banding together to support the **MassTec** Executive Board in their efforts as they speak with Massachusetts policy makers and education leaders. Secondly, you can get **your programs in the face of the public**. Reach out to your local media channels to highlight the great things happening in your classrooms. Thirdly, and most importantly, get involved with your Regional STEM Collaborative. The Regional STEM Collaboratives will be discussing best practice programs and policies around STEM Education throughout the state. We need representation at this level as We Are the T and E in STEM.

~ Mike Looney mikeloooney@comcast.net

Technology Engineering Teacher, Mashpee Public Schools

Hudson-

MY TWO CENTS

Hi Everyone,
I've been reading about the sorry state of Technology in this country and what the ITEEA has done or not has done to move our profession forward. I would to add my two cents to the conversation.

First, the person the DOE is correct, under federal law technology is defined along the line of educational technology, so he was right, when he gave what some people believe was an incorrect answer to the question what is technology. He was just following what is in the law. If members of the garden recall, many of us were asked last spring to contact our legislator and ask him/her to support the E2 act being pushed by the Boston Museum of Science. The act would have redefined the term technology to better reflect what we teach. The E2 didn't pass and I wonder how many members in the garden did contact their Senator or Representative.

Second, when people say we haven't moved forward I only point you towards the NAEP and NRC documents. These documents are a big accomplishment for the field of technology. The National Association Educational Progress framework include many of the things we believe in as technology teachers. In fact, when you read the framework they published you can't help but to start thinking of the ITEEA STL document. Starting in the 2014 students in this country are going to be tested on their knowledge of technology/engineering. BTW the name of the their framework is titled Technology/Engineering!

This summer, the National Research Council (NRC) published a document titled [A Conceptual Framework for Science Education](#). While I don't agree with the title of the document, in the document is a set of standards that reflected what is taught in a technology program. This is the first time in my memory that a national organization outside the ITEEA has published a set of technology standards for the whole country. The NRC is now reviewing the feedback they received this past summer about the technology and science standards and will start in the near future to develop a set of standards that work for both areas. These standards will be rolled in the Massachusetts Science and Technology/Engineering Framework, which is now being revised. Again, I hope everyone on the garden provided feedback to this important document.

As for STEM, this is the best thing that has happen to our profession in the 15 years. Yes, some people think of a plant when they hear the term, some people think of science and/or math. So what! This is a national movement and here in Massachusetts elected officials are starting to understand that someone is already teaching the T&E of STEM. In fact, last week I along with other member of the MassTEC Executive Board met the Massachusetts Secretary of Education to talk about the role of T&E in STEM. He is very supportive of the field of technology. In closing, I see our profession moving forward not standing still or going backwards.

Thank you for reading.

~ Charlie Corley, DTE <cjcorley1@verizon.net>

BTW I taught technology for over 25 years. I never taught technology education. Technology is discipline, technology education is a certification.

MORE at

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

Delaware-

Engineering and Technology are the underpinning of STEM

“In STEM the Engineering & Technology make the Science and Math relevant. Our students are engineering a solution to a problem, and using math and science and tools to gain a greater understanding about what some might only see as only science. Science at its core is only about discovery and not as much about application. Engineers and technologists transfer discovered knowledge from one domain into the pragmatic, to create solutions to problems and to invent products. In fact our students engineer solutions through the engineering design process AND the result is technology.

What few people truly understand is that the engineering design process is key to STEM and the result of the process is technology. Technology is the artifact resultant from innovation. Much like Thomas Edison, Dean Kamen, companies like 3M, and DuPont create as well as the earliest of tools such as the plow or even a stone age axe. All of the technology in the world is resultant of a human mind seeking to solve a problem and more often than not, actually using a form of the design process to create the best solution possible. Engineering and technology are the underpinning of what STEM is. Kids learn, create and apply. They become comfortable in invention, innovation and design which are the greatest assets to the economic wealth of our economy as well as the security of our country. These are assets we must grow today and now, for our students to truly be competitive for the future of our country.

We must increase the number and quality of experiences where students learn how to make, do and apply. To invent the future and to be able to maintain the infrastructure of our nation. We need to be focusing on producing in our students world class engineers, technologists and future skilled trades workers. Students need to become literate in all aspects of technology and how it is created, how it evolves, and how to best use it. If we do not, the result will be a continued decline in all aspects of our nation.”

~ Mike Fitzgerald, DTE
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Sir Ken Robinson



This animate was adapted from a talk given at the RSA by Sir Ken Robinson, world-renowned education and creativity expert and recipient of the RSA's Benjamin Franklin award.

This guy is simply BRILLIANT:

<http://www.youtube.com/watch?v=zDZFcDGpL4U>

And

http://www.greenchameleon.com/gc/blog_detail/sir_ken_robinson_bring_on_the_learning_revolution/

NY Times-
 December 10, 2010

What Works in the Classroom? Ask the Students

By SAM DILLON

How useful are the views of public school students about their teachers?

Quite useful, according to preliminary results released on Friday from a \$45 million research project that is intended to find new ways of distinguishing good teachers from bad.

Teachers whose students described them as skillful at maintaining classroom order, at focusing their instruction and at helping their charges learn from their mistakes are often the same teachers whose students learn the most in the course of a year, as measured by gains on standardized test scores, according to a progress report on the research.

For more go to: <http://www.nytimes.com/2010/12/11/>

MORE at

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

Wilmington-

KNOWLEDGE INNOVATION

“The mandate of the 21st century and what everyone in the STEM game is pursuing is the capacity for “knowledge innovation” (Debra Amidon, 2009)
The ultimate questions are how does one innovate? What is the process? Can we teach it? Can one learn it? How do we do innovation in the classroom?

Knowledge Innovation is the creation, evolution, exchange and application of new ideas into marketable goods and services for:

- the success of an enterprise
- the vitality of a nation's economy
- the advancement of society

Knowledge Innovation embodies the concept that innovation is the one competence needed for the future. It addresses the all the fundamental management dimensions in the process of innovation - the creation and conversion of ideas into viable commercial products in addition to building a foundation for future sustainable growth. It recognizes that knowledge is the core component of innovation - not technology or finances per se. Nurturing and managing the flow of knowledge may be the most distinctive competence of the decade.

Now, for the 8th GRADER:

- “Knowledge Innovation is putting ideas into action to build a program, a company, a country – all in the name of progress.”
- “Knowledge Innovation is preserving the best of the past and doing things in new ways to take advantage of a changing future.”
- “Knowledge Innovation is the way to innovate our future...together”

~Debra Amidon entovation@comcast.net

Texas-

The Time is Now

Organizations like MassTEC provide great resources for educators, parents, and students. The **MassTEC Express**, is a phenomenal newsletter that provides information on STEM initiatives, programs, and provides a forum for idea sharing. Supporting MassTEC supports a movement of progression and innovative thinking that will propel our students into the global arena as strong contenders for our country and as allies for others.

It is imperative that students are afforded the opportunity to engage in science, technology, engineering, and mathematics. This exposure is vital for their futures as competitors in our global society, and for the progression of our nation. STEM careers are growing at a rapid pace. There is an urgent need to promote the types of STEM careers that are/will be available; and how students can prepare for these careers. We as educators, must plant the seeds that will assist America’s children into blossoming into future scientists, technologists, engineers, and mathematicians.

The time is now for the significance of STEM education to be heard by all. Students who are sitting in classrooms across our country are the ties that will bind our present to our future. MassTEC should be applauded for their continued efforts to spread the word and sound the alarm in support of preparing students to shine on the world stage.

~Tamika A. Pollins
Doctoral Student,

Northeastern University, used with permission

Leonardo da Vinci

"How to Think Like Leonardo Da Vinci: Seven Steps to Genius Every Day"

by Michael J. Gelb

<http://www.creativityday.ca/leonardo-da-vinci.php>

“Leonardo Da Vinci was born on April 15, 1452. He was an Italian Renaissance architect, musician, anatomist, inventor, engineer, sculptor, geometer, and painter. A "Renaissance man", Leonardo demonstrated a universal genius. He is well known for his paintings, such as The Last Supper and Mona Lisa which are two of the most recognizable pieces of art since his time. He is known for designing many inventions that couldn't be made because the technology was not available. He persevered anyway and kept his

ideas even though only a few of his designs were constructed during his life. Leonardo also helped advance the study of anatomy, astronomy, and civil engineering.

He didn't stay with the status quo, instead he nurtured and used his curiosity, mixed logic with emotion, and embraced ambiguity.

One way to unleash your creative genius is to apply one or more of the principles Leonardo used to engage new thinking. These may seem obvious to you, and they are. Your challenge is to remember them and make use of them everyday. When you do, you will be amazed at your new discoveries and inspirations.

Seven Principles of Leonardo da Vinci

I. Curiosity is an insatiable curious approach to life and an unrelenting quest for continuous learning. Here are some ways to apply Curiosity:

* Ask questions about your day-to-day activities; why do you do certain things the way you do them? In what other ways might you accomplish the same end that take less time, use fewer resources.

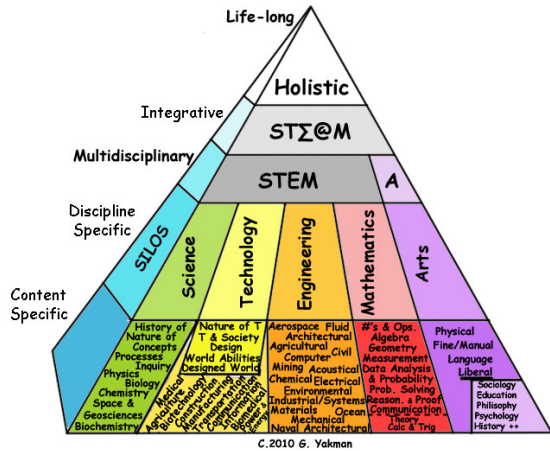
* Cultivate an open mind. Choose some role models of people who made mistakes and learned from them to eventually succeed.”

For the rest go to:

<http://www.creativityday.ca/leonardo-da-vinci.php>

STE@M... What are your thoughts?

ARTS INTEGRATED APPROACH



~Georgette Yakman

<http://www.steamedu.com/>

"The arts integrated approach might benefit students of all backgrounds and might make a bigger impact on students in low social-economic areas, as well as students of varying ethnicities (Darby & Caterall, 1994). This Darby and Caterall (1994) article featured many examples of studies that suggest an arts integrated curriculum will promote student achievement because it is personally meaningful to the students. Darby and Catterall (1994) also included the theoretical framework from *What Really Counts in Schools* by Elliott Eisner (1991), which included five main principals: **“the journey is the reward; formulating questions, seeking answers; multiple forms of literacy; in praise of wonder, imagination; and each student’s personal signature”** (p. 11). These principles link to [John] Dewey’s (2010) ideas on inquiry and imagination and their importance.”

~ Ian Schimmel, Doctoral Student, Northeastern University, used with permission.

Boston-

“The Creativity Crisis”

“Necessary 21st century skills for American students to learn as outlined by the 21st Century Workforce Commission National Alliance of Business (2000) included “curiosity, creativity, and risk-taking” as well as “higher order thinking.” A separate organization that has more recently promoted similar skills is the Partnership for 21st Century Skills. This partnership’s supporters include major global organizations with strong educational programs such as Apple Computer, Microsoft, Cisco Systems, Crayola, The Walt Disney Company, Lego, and Junior Achievement. The National Education Association (NEA) is also one of the 33 strategic council members; NEA is the largest teachers’ union in the United States. The Partnership for 21st Century Skills lists important learning and innovation skills as the 4Cs and necessary outcomes for students. The 4Cs include “critical thinking, communication, collaboration, and creativity” (A Framework for 21st Century Learning, n.d.).

Multiple fronts agree on the need of a creative populace. While this is well documented, a problem exists. American creativity is declining, according to a recent popular press article in Newsweek (Bronson & Merryman, 2010). This article, “The Creativity Crisis,”

referred to seminal research conducted by E. Paul Torrance in the late ‘50s and early ‘60s on creativity index tests named after him. A 1999 longitudinal study by Plucker reanalyzed Torrance’s data from 1958 to present. Results from his reanalysis “suggest that just under half of the variance in adult creative achievement is explained by DT [divergent thinking] test scores, with the contribution of DT being more than 3 times that of intelligence quotients” (Plucker, 1999, p. 103). Newsweek simplified the results for the popular press and reported “lifetime creative accomplishment was more than three times stronger for childhood creativity than childhood IQ” (Bronson & Merryman, 2010, p. 45). The Newsweek article mentions that while IQ scores tend to increase by ten points with every generation due to “enriched environments,” Torrance scores are falling (p. 45). Another study of Torrance scores conducted by Kyung Hee Kim, assistant professor of educational psychology at the College of William & Mary, found that Torrance Test of Creative Thinking (TTCT) scores rose until 1990 at which point they began to fall (Bronson, 2010, p. 45). Kim notes that the greatest decline is with kindergarten to sixth grade children and that the decrease has been more in recent years (Rogers, 2010). The Newsweek article does not draw conclusions

as to why the Torrance scores are falling nor is Kim aware of specific research addressing this (Rogers, 2010). Kim did allude to the number of hours children spend watching television and playing video games rather than “engaging in creative activities” (Bronson & Merryman, 2010). One possible reason mentioned by Bronson and Merryman is “the lack of creative development in our schools” (p. 45). Kim’s research, brought forward to the public by Newsweek, does not bode well for the continued growth of a creative class and economy.”

~ Leigh Estabrook, Northeastern University Doctoral Student used with permission.

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

Bedford-

Girl Scouts Collaborate on Unique Program to Engage Girls in Science, Technology, Engineering, & Math: MathMovesU

On Sunday, November 14, 300 girls from Girl Scouts participated in an innovative new program to learn about engineering and how math is used in their daily lives. This program represents an impressive collaboration by the Girl Scouts of Eastern Massachusetts, Raytheon and Middlesex Community College. The event provided girls with an unforgettable hands-on experience and opportunity to come together for learning fun. The girls met and worked closely with outstanding women engineers, college professors, and student mentors to explore structural engineering, software, and green engineering. The girls built bridges, "towers of terror", solar cars, and windmills. They even learned how to create and program their own avatars. A highlight of the event was a lively presentation by the Middlesex Community College Theater group on how math is needed for all careers. Inspirational words and stories were shared by keynote speaker Dr. Ellen Ferraro, the Director the Systems Architecture, Design and Integration Directorate of Raytheon. We were thrilled to bring the Girl Scout leadership experience to an enthusiastic audience who may well be our future engineers and scientists! For more information on great opportunities through Girl Scouting visit www.hergirlscouts.org



~Joan Reilly jreilly@girlscoutseasternmass.org
Girl Scouts of Eastern Massachusetts

New York-

Growing up Digital, Wired for Distraction

By **MATT RICHTEL**

Published: November 21, 2010

REDWOOD CITY, Calif. — On the eve of a pivotal academic year in Vishal Singh's life, he faces a stark choice on his bedroom desk: book or computer? By all rights, Vishal, a bright 17-year-old, should already have finished the book, Kurt Vonnegut's "Cat's Cradle," his summer reading assignment. But he has managed 43 pages in two months.

He typically favors Facebook, YouTube and making digital videos. That is the case this August afternoon. Bypassing Vonnegut, he clicks over to YouTube, meaning that tomorrow he will enter his senior year of high school hoping to see an improvement in his grades, but without having completed his only summer homework.

On YouTube, "you can get a whole story in six minutes," he explains. "A book takes so long. I prefer the immediate gratification."

Students have always faced distractions and time-wasters. But computers and cellphones, and the constant stream of stimuli they offer, pose a profound new challenge to focusing and learning.

Researchers say the lure of these technologies, while it affects adults too, is particularly powerful for young people. The risk, they say, is that developing brains can become more easily habituated than adult brains to constantly switching tasks — and less able to sustain attention.

"Their brains are rewarded not for staying on task but for jumping to the next thing," said Michael Rich, an associate professor at Harvard Medical School and executive director of the Center on Media and Child Health in Boston. And the effects could linger: "The worry is we're raising a generation of kids in front of screens whose brains are going to be wired differently."

But even as some parents and educators express unease about students' digital diets, they are intensifying efforts to use technology in the classroom, seeing it as a way to connect with students and give them essential skills. Across the country, schools are equipping themselves with computers, Internet access and mobile devices so they can teach on the students' technological territory.

For more go to:

http://www.nytimes.com/2010/11/21/technology/21brain.html?_r=1&ref=education

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



National Center for Technological Literacy®
 Museum of Science, Boston

Boston-
Ioannis Miaoulis on Technology & Engineering

Below is a link to a 6 minute video produced by the Boston Museum of Science.

http://www.youtube.com/watch?v=4B-gl_6QCWU

“And now we have reached the ridiculous point where we spend endless time teaching kids how many legs a grasshopper has, and no time teaching the kids how a car works.”

Ioannis Miaoulis, President and Director of the Museum of Science, Boston and Founding Director of the National Center for Technological Literacy

Send this to all who need the message!

Ioannis Miaoulis- NCTL STEM Speech



Hudson-

2011 Program of the Year and Teacher of the Year Information

Great things happen in the Technology Education / Engineering classroom. MassTEC would like to support recognition for those individuals and groups who strive for excellence and provide their students with the best educational experiences.

We are doing this through two recognition programs: 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 ITEA. 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 ITEA for up to 3 members of the department. MassTEC reserves the right to offer additional memberships in the category of Program of the Year due to extenuating circumstances. MassTEC reserves the right to restrict or reduce offerings of recognition due to unforeseen circumstances or an interpretation contrary to the intent of the offerings. 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 Award. These awards will be presented at their annual conference.

If you would like to recommend a program, or teacher for recognition, the Awards and Publicity Committee will send an invitation to the individual(s) involved to apply for an award. Please send the name and contact information of the nominated person or program to Charles Corley, MassTEC Awards, 26 Cox St. Hudson 01749, or to: cjcorley1@verizon.net.

You may apply for the awards without an invitation.
 All applications need to be submitted no later than Thursday, September 15, 2011.
 The applications can be found at the MassTEC web site <http://masstec.org/>
 The Awards and Publicity Committee will recommend the applicant finalists to the Executive Board at its October meeting.

Nominate A Valued Colleague Or Program Today!



MassTEC
 * **Teacher of the year**
 * **Program of the Year**

Apply or Nominate Today!
<http://www.masstec.org/recognition/index.htm>

IdeaGarden & the ITEEA

We need to have strength in numbers!

And

The networking and ideas are amazing!



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



Attention!

If you become a new Professional Member by 12/31/10, enter the promotion code "101510" and pay only \$60.00 for one year!

<http://www.iteea.org/Membership/MemPromo101510.pdf>

Notes from the IdeaGarden

Needham-

City to City: Universities & the Innovation Economy

November 22, 2010

by David Begelfer

I'm in Tel Aviv, Israel after several days in Haifa as our "City to City" team completes its investigation of this country's experience with start ups and innovation.

Israel leads the world in percent of GDP spending on civilian R&D and in the number of engineers, scientists, & PhDs per capita. It also has more companies listed on NASDAQ than any country other than the US. Technion, Israel's University of Technology

The universities play a critical role and one we should emulate. The first is obvious – they emphasize science and math in K-12 and produce more engineers and scientists! I am a big fan of liberal arts education, but in this digital world, the new industries require more PhDs in these areas.

Second, their universities drive innovation and technology transfer to the private sector. We met with the president of Technion (Israel's MIT), the president of Haifa University, and local entrepreneurs. The schools encourage the creation of start ups, and have structured a support system that is coordinated with a national initiative that reviews and funds new ideas.

We have more schools per capita than any other state. We need to follow Israel's lead and ensure these types of partnerships exist at many other schools besides just MIT. Connecting our colleges and universities with an economic development strategy will secure our position as an innovative leader now and in the future.

Chief Executive Officer at
National Association of
Industrial and Office Properties
Company Address:
144 Gould Street, Suite 140
Needham, MA 02494

<http://naiopmablog.org/2010/11/22/city-to-city-universities-and-innovation-economy/>

Danforth-

Craftsmanship means precision

I would like to comment on the December/January "Technology and Engineering Teacher" magazine. I graduated Arlington High School in 1974 where "Shop Classes kept me involved in school." I have an Ag. Engineering degree and am certified in Vocational Agriculture as well as Technology. I taught at the college level and now teach technology in an urban middle school.

In particular, I take exception to the history of Tech Ed. article by Phil Dettelis. The author states about the '80s; "Students are learning a battery of prescribed hands-on skills wherein craftsmanship is the virtuous concept that justifies the existence of these experiences." I would suggest good Technology Education has not changed significantly. Maybe I just was fortunate to have

exceptional teachers. In Junior High, I built a four-leg stool I still have in my living room. This project included design concepts, problem solving, measuring, geometry, structure, and more.

If Craftsmanship means precision, that was "extolled". If you do not know what a saw kerf is, how can you compensate for necessary waste to meet specifications? Kids today completing the provided labs before final assembly for the "Bug" from Teacher Geek, internalize concepts fundamental to electricity that will not change if they become PhD's in Engineering. If they simply assemble the kit, they learn little more than building a lamp. The core of good technology education as project based application of science and math has not changed, we just continue to reinvent the wheel.

~Will Oscarlece
wposcarl@syr.edu
Danforth Middle School

Fitchburg-

On Friday Dec 10 the FSU TECA Club hosted our annual TSA contest. We had 138 students from 9 different schools all over Massachusetts. The students took part in three different contests, transportation, bridge building, and drafting. The bridge building was the most popular one followed by the transportation. The transportation and bridge building contests were split in to high school and middle school groups. For transportation the students had to design a device that would travel down a ramp and go as close to fifteen feet without going over. Materials that they had to use were cardboard, paperclips, tape, elastics, CDs, and paper. The results were great and it was a close competition. In the bridge building students had to construct a bridge that would hold as much weight as possible. For materials there was 1/8 X 1/8 balsa wood, hot glue, and a note card. There were many bridges that held a lot of weight and this was also a close contest. Finally the drafting contest consisted of students given an object and then having to draw different views using a drafting program on the computer. This was a close contest as well and the students did a great job. Overall it was a great day for us and the students and I would like to thank all of the TECA members who helped out because without them this would not have been possible.

TECA *and* **TSA** ~Jason Ciccariello
TECA President
jiccar2@student.fsc.edu

Ashburnham -

A MUST READ for every tech teacher living in New England: *Reflections in Bullough's Pond* by Diana Muir (2000, University Press of New England) is the one book that puts the Industrial Revolution in the context of the economy and the ecosystem of the time.

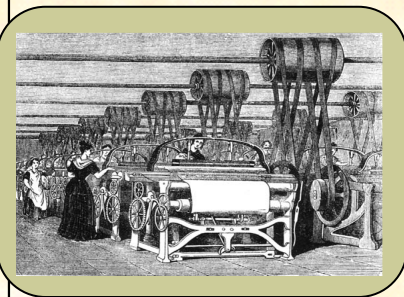
This interesting excerpt for example.....

"The notion of applying scientific principles to industrial process is so familiar that it requires effort to remind ourselves that the Industrial Revolution was completely innocent of science. Except for Newcomen and his "fire engine", the industrial Revolution changed into existence without the help of science or scientific principles and flourished virtually without scientific input until the middle of the nineteenth century" (p. 172).

Ms. Miurs' wide view of the time will enlighten you about the towns you live in, the products that made New England flourish and the impact that we had on the environment. So if you learned about the Industrial Revolution and this part of the history of technology, by looking only at the inventors and their inventions - you will learn so much to share with your students.

~ Bill Manser

bmanser@msn.com



Wilbraham-

Mark Bireley of Universal Technical Institute (UTI) brought career awareness to students at Minnechaug Regional High School on Friday, December 3.

While UTI offers further education for people who want to get careers in engine related fields – Diesel and gasoline engines that run cars and trucks as well as motorcycles and watercraft – Mark engaged the students on how to identify careers that connect to the students' passions.



Mr. Bireley walked the students through ways to see how jobs meet long term goals. He said that the key questions that young people need to think about include:

- How will you meet the costs of living on your own – housing, food, travel (vehicle, insurance, and fuel), taxes, utilities (electricity, heating/cooling, water, septic, trash pick-up), and communication fees (phone, cell, cable)?
- What kind of personality are you?
- How do you learn best?
- What kind of skills and interests do you have for a career?
- Can your career be outsourced to other countries?
- What type/level of education do you need to get the job you want?
- Would you be able to support a family, own a home and car that you want, feed and clothe them and still afford the lifestyle you want to live?

The BIG questions are:

- "What kind of job do you want to do for 50 years?"
- "Are you flexible enough to keep learning for you to be able to have many careers in those 50 years?"
- "What should you do now to get ready for the rest of your life?"

For more information and to schedule an amazing student workshop, contact Mark Bireley at: mbireley@uti.edu ~RMC



LETTERS

Hi Ray,
I am sorry to bother you, but my name is Melissa and I am a middle school technology teacher. I am getting ready to start a unit with my students on engineering in which we will discuss the various branches of engineering. After we get done with the class work, we will be building bridges out of popsicle sticks then testing how much weight they can support. I recently came across your page <http://masstec.org/lists.html> while I was looking for some resources and information to help with this unit. Thank you for all the resources and information.

I thought I could share another resource I found, which has some really great information and resources and I thought you might want to add it as an additional resource.

Thanks again for your help, I really appreciate it.

Sincerely,
Melissa Taylor

<http://engineeringmastersonline.ohio.edu/articles-and-resources/a-closer-look-at-engineering-professions/>

My response:

Melissa,
No bother. I love to hear from Tech Ed Teachers!
I will connect you directly with Stephen Van Voorhis our Web guru.
Thanks for the great resource!

Ray

p.s. Want to write a 3 paragraph article for the December MasTEC Express or maybe some pix of your students' projects?

Thanks!



Massachusetts Technology Education/ Engineering Collaborative

From the Webmaster,

Stephen VanVoorhis
coertevanv@msn.com

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

The **Concord Carlisle STEM Program** has a posting for a after school Engineering Teacher, <http://www.masstec.org/employment.htm#ccengineeringteacher>

Secretary of Education Paul Reville would like to visit some **Technology Education/Engineering Classrooms**. If you would like to host a visit <http://www.masstec.org/new.html#secretaryofedvisit>

STEM Corporate Matching Funds Grant Awards School districts are eligible for up to \$50,000 in matching funds grant awards over a three-year term. High schools must commit to utilizing courses for stand-alone or show integration into traditional academic courses. High schools would also be encouraged to participate in a national study by reporting student outcomes, which are captured by The STEM Academy Learning Management System. The captured data will be utilized for continuous program improvement and student improvement validation. <http://www.masstec.org/new.html#stem101>

Middle & high school teachers: Grants available for your class to create a display and compete for \$2K grand prize! Innovation Generation (EETimes Group) will be accepting applications shortly for a \$200 grant for equipment and training to integrate basic electronics and simple programming into your class to create a custom LED display and compete for a \$2K grand prize, plus a trip to San Francisco to attend the Embedded Systems Conference! Deadline to apply: December 15, 2010. Check back soon for contest details and the grant application form.

Lexus Eco-Challenge (Air/Climate)

Registration opens **November 18** for the Lexus Eco Challenge. Middle and high school teams, composed of five to 10 students and one teacher advisor, can participate in the Air/Climate Challenge for a chance to win part of **\$500,000 in grants** and scholarships. Teams will define an environmental issue they consider important, develop an action plan to address the issue, implement the plan, and report the results. **Entries will be accepted online until January 19;** go to <http://bit.ly/adf0Ma>.

Dear Technology Education Teacher,

I am writing to invite you to enter your high school team into the **2011 Mini-Urban Challenge** competition. There is no cost to the schools or the students to participate in the competition. The cars are developed using **LEGO MINDSTORMS® Education** kits that are provided to each participating high school free of charge. First and second

place winners of each Regional Competition will receive a travel grant to compete in the 2011 National Competition to be held at the Smithsonian's Levenson Center for the Study of Invention and Innovation at the National Museum of American History on May 21, 2011 in Washington, DC.

<http://www.masstec.org/newstudent.html#miniurbanchallenge>

The MA Department of Education has posted new resources, Science and Technology/Engineering Concept and Skill

Progressions on the Department's website. These summarize how student thinking of selected science and technology/engineering topics can be supported over time, including common misconceptions they may hold. <http://www.masstec.org/new.html#mdeseconceptandskillprogression>

Ohio University has created a web page outlining many types of engineering professions.

<http://www.masstec.org/lists.html#ohioengineeringprofessions>

We have posted pictures from the 2010 conference, <http://www.masstec.org/conference.html#2010pictures>

100 Awesome Quotes on What It Really Takes To Innovate

http://www.ideachampions.com/weblogs/archives/2010/11/100_awesome_quo.shtml?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+TheHeartOfInnovation+%28The+Heart+of+Innovation%29

Gorilla Glass, the Smartphone's Unsung Hero

<http://pogue.blogs.nytimes.com/2010/12/09/gorilla-glass-the-smartphones-unsung-hero/?ref=personaltechemail&n=technology&emc=cta2>

Big Picture Learning

<http://www.bigpicture.org/innovation/>

Official Trailer: Revenge of the Electric Car

<https://mail.google.com/mail/?shva=1#inbox/12cd7e6bd310a479>

eGFI: Engineering Go For It

An on line engineering magazine
<http://www.egfi-k12.org/read-the-magazine/>

MORE at

Have a great Design Brief or lesson plan?
Share it with your colleagues!
Email your great ideas to me at:
ray.mccarthy.masstec@gmail.com

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%](http://www.masstec.org/conferencefolder/conference2009/images/TechEngED%20LIVE%20Poster.pdf)



This is a high school design brief that teaches engineering concepts, design, manufacturing, transportation, and 21st Century skills



Gravity Racer Derby

Coaster Car Constraints:

Each car must have No means of locomotion. The Pit Crew plus Gravity make these cars run. Each vehicle must be clearly marked with the colors, initials, and logo of the Team.

CONSTRUCTION OF THE CAR

- a) Length: minimum 5 ft. -- maximum 8 ft.
 - b) Width: minimum 30" -- maximum 40"
 - c) Weight: maximum 350 lbs. (car, driver, & gear).
 - 1. The Team which wins the Awesome Elegant design award -- the lightest legal coaster car that is able to complete the race course 5 times wins a Pizza!
 - d) Must have 3 or 4 Wheels in contact with ground at all times
 - e) Must have operable and reliable steering system*; no rope or foot steering allowed
 - f) Must have operable and reliable braking system*
 - g) Must have a combination Roll bar/Pushing bar that does not extend beyond the tires in any direction
 - h) Must have a safe seat*
 - i) Ballast is allowed but must be safely stored*
 - j) Must be constructed of as much **recycled material** as possible
- * Judge's ruling final -- NO appeals!



TEAMS

- 1. Each team will have 4 or 5 members (I chose the teams)
- 2. Each team member will be drivers who are also pit crew.
- 3. One team member will also coordinate logistics.
- 4. Each driver is required to wear protective headgear properly strapped (bicycle or motorcycle helmet).
- 5. Entire body, including legs and arms, must be fully covered with protective clothing (jeans, long sleeved jacket/shirt, etc.) and adequate foot protection with rigid soles must be worn while practicing, during time trial, and racing.
- 6. One team member is appointed Team Captain for their entry and is responsible for the personal conduct of their team, pit crew, family members and guests. If misconduct is observed, it is to be reported to the Derby Chairpersons or the Race and Safety Directors to investigate the complaint and address the complaint with that Team Captain.

Before Race day:

- 1. Each team will present a Poster or PowerPoint© Presentation including photo(s) and description of vehicle including types of wheels, parts used, etc. the Monday prior to the race.
- 2. Use the Reflection Rubric as a guide to your presentation.
- 3. All team members are responsible for their individual paperwork on the Reflection Rubric to earn credit for this learning experience.

Race Date TBA. Our local police will block off a street and use their radar gun to give our students their actual speed.

~Ray McCarthy
ray.mccarthy.masstec@gmail.com

raymccarthy.masstec@gmail.com