



Virginia & World-wide -

Technology Engineering Education Awareness

One of the most amazing aspects of teaching at the doctoral level is that my students are so incredibly interested in the back story of education — the how and why we are here in our understandings regarding how students learn and how teachers teach. My students are so interesting in that they are professionals who work every day in the field while trying to make a difference. One student has become truly passionate about exploring experiential learning in primary school so that student learning could be enhanced through Technology Engineering Education. Here's April's Key Questions that I ask all of us to sit down and answer. Please email your responses to both April & me!:

“I gave thought to your question regarding how can TEE get their target audience to buy in and accept what TEE has to offer. So here are my questions to you and other members in your field:

1. Who is your target audience and why?
2. What do you have that your target audience 'wants' in order for them (your audience) to buy in to the product (TEE as a core discipline) being offered?
3. When is Technology and Engineering Education Awareness week? What does the discipline do to 'market' the product offered to school based personnel/district level personnel?
4. If TEE were to become a core curriculum, tell me three ways it will help students perform better on the reading, math, science, social studies, and writing standards of learning? Basically if direct instruction within the core academics are not doing the job to assist students in passing high stakes tests, how would TEE help bridge the gap for student learning and passing high stakes testing?



*By answering question 3, questions 1, 2, and 4 are answered. Have a wonderful week.”

~ April Lisbon-Peoples

email April at: creatingvision@gmail.com

ray.mccarthy.masstec@gmail.com



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Greetings!

By now, teachers are up and running. In fact first term grades are coming out soon.

Those of you who participated in the Annual MassTEC Conference had a great day learning, sharing, and enjoying what we do for a living. Thanks to all who made the conference a success. If you did not get to go this year, check out the website to see the highlights, view some presentations, and see what our vendors offer you and your students to improve their understanding of this amazing technological world.

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

This Express has great articles written just for you. Please consider writing your own news item for a future issue.

Also, we want to hear from you. As you see on the front page, we are actively pursuing better recognition for our discipline among academia and the political arena as well. We need your feedback to help us prepare a brief for our educational and political leaders. We know we have a good thing in Technology Engineering Education.... Now we need to market it!

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!



Dr. Ray McCarthy
MassTEC President
Senior Fellow
Doctor of Education Program
Northeastern University
c [857.272.8942](tel:857.272.8942)
c [413.627.7043](tel:413.627.7043)

TED Talks

Charles Leadbeater on Innovation

http://www.ted.com/talks/charles_leadbeater_on_innovation.html

<https://mail.google.com/mail/?shva=I#inbox/1331221df2b69959>

California or Bust!

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



MassTEC Annual Conference

October 15, 2011

Fitchburg-

STEM—We make the Connection

The 10th Annual MassTEC Conference at Fitchburg State University had over 150 participants who shared visions and ideas about improving student learning through hands-on, minds-on, project based learning that is the heart of the Technology Engineering Education.

The Massachusetts Technology Education/ Engineering Collaborative (MassTEC) supports the professional development of teachers who teach the T&E of STEM. As keynote speakers, State Senator Stephen Brewer, Chair of the Senate Committee on Ways and; Dr. Chris Hartmann, educational outreach director of PTC of Needham, and Dr. Ray McCarthy, President of MassTEC, noted that America's future depends on making math and science live through the engineering and technical fields. Dr. Hartman stressed that there needs to be "products in productivity" with the US regaining its ability to produce the state of the art products that global consumers want. Dr. McCarthy stated that Technology Engineering teachers were the crucial connection between the global economy and the Commonwealth's students. "Technology Engineering Education is the only "scalable" way to get every child in the state "technologically literate" said McCarthy.



State Senator Stephen Brewer

Senator Brewer reflected on the importance of supporting all kinds of learners, in which he has led the way by doubling the funds for STEM education. Brewer noted that even though the state is going through economic hardships, Massachusetts has not given up on education. He also vowed to ask school superintendents: "So what are you doing to support Technology Education* in your schools?"

Fifteen workshops covering topics from Middle School Technology Engineering curriculum, to great new simulation software, to finding engineering in children's literature, to green engineering through recycling, to grant competitions offered by the Lemelson -MIT *InvenTeams* energized the attendees. Many participants enthused: "This was the best conference we've had!"

*Now known as Technology Engineering Education!

~ RMc
Photo ~ Mark Kobel

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

MassTEC Annual Conference

STEM—We make the Connection



Charlie Corley & Mark O'Bryan



Charlie Corley & David Downes

Special Vendors Awards were granted to:

Mark O'Bryan
of
Technical Education Solutions,
LLC

and

David Downes
of
Downes & Reader
Hardwood Co.

for their long term support of
MassTEC
and
The students
of
Massachusetts.

~ RMc
Photo ~ Mark Kobel

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

MassTEC Annual Conference

STEM—We make the Connection



Jerry Greer, Ray McCarthy, & Charlie Corley

MassTEC
Teacher of the Year
Award

MassTEC Teacher of the Year was awarded to Jerry Greer, who has been teaching for 31 years at Veterans Memorial Middle School in Melrose, Massachusetts.

~ RMc
Photo ~ Mark Kobel

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

MassTEC Annual Conference



MassTEC Founders Award Don Bjorn & Brad George

Photo ~ Mark Kobel

Hudson-

MassTEC Founders Retire

Last June four longtime members of the MassTEC Board decided to retire from the Board after being involved for the last 10 years. In fact, Don Bjorn, Brad George, Gerry Boudreau and Bob Hughes are part of the group of educators who started the MassTEC. These four members were classroom teacher, with each having over 30 years of classroom experiences. They were officers of both TEAM and MassTEC, holding the offices of President, Vice-President, Secretary, and Treasurer over the past 20 years.

These individuals worked for years to make our profession better for both teachers and the students. When you attended a MassTEC conference the first people you met when walking in the room were Gerry and Bob, who were there to get you registered and answer any questions you may have had. Bob, our treasurer for numbers of years, took your money and Jerry handed you the conference program that he designed and had printed.

Brad helped each of us understand why it is important to be involved in the changes that are happening in our profession both here in Massachusetts and across the

nation. He aided in writing the part of the 1993 Education Reform law that made sure Technology Education was included as a core subject. He was a member of team that developed the first curriculum framework in the United States to include technology education. He also worked on questions for the early MCAS tests. Brad is also a recipient of the Distinguish Technology Educator award from the International Technology Engineering Educator Association.

Don is the glue that held the organization together in the early days. He is also the one who always looked at the glass as half-full no matter what the situation was. When MassTEC needed a job to be done Don was the first one to volunteer. He is the only person to serve three terms as president of the organization.

These four guys will be missed by the members of the Board and by the teachers and students in the state. I thank them for the work they have done over the years to make our profession better and for the work they did to keep all of us informed of what is happening in the field of technology/engineering. I know I speak for the Board when I wish them good luck in the future.

~ Charlie Corley, DTE



Fitchburg-

Fitchburg State University Embraces the Challenge

The push is on across the nation for expanded education and opportunity in the critical science, technology, engineering and mathematics – or STEM – fields. I am proud to report that Fitchburg State University embraces this challenge, and has been fostering the STEM fields, in policy and practice, for more than a century.

Fitchburg State was founded as a “normal school” in 1894, chartered to train new teachers in Massachusetts. The university has expanded its scope and programmatic offerings ever since, with industrial technology among the first to take shape. The program, which recently celebrated its 100th anniversary, still graduates excellent technology education teachers for school systems in Massachusetts and beyond.

These teachers are the front line of STEM literacy for students in Massachusetts. Our technology educators inspire creativity and innovation, and promote the critical thinking and problem-solving skills they will need to succeed in the 21st century.

At Fitchburg State, our industrial technology program has evolved with the rest of the institution to meet the latest needs and demands from our constituents. That has meant investment in faculty and materials. Even now we are in the process of hiring additional tenure-track faculty whose focus will be electrical and civil engineering.

We are also updating our industrial technology curriculum, developing an applied mathematics course – in collaboration with our mathematics department – which will complement an applied calculus course that is already among our course offerings. These integrated learning strategies are critical to fostering STEM success.

Our industrial technology students compete in national contests, and we are also proud to host statewide competitions for Massachusetts’ middle and high school students.

This strategy also helps us ensure that our technology education curriculum meets all the competencies that will be required of the K-12 students who many of our graduates will be teaching. We have several student teachers this fall who will be seeking their technology educator licensure, and more will be taking the test this spring.

We have remained in close contact with those graduates, and other trends in the industry, through our long-standing relationship with teacher organizations including the Technology Education Association of Massachusetts (TEAM) and the Massachusetts Technology Education/Engineering Collaborative (MasSTEC). For many years we have hosted the TEAM annual conference in the spring, and this fall Fitchburg State was host to the MasSTEC annual conference.

The recent MasSTEC gathering brought more than 150 technology educators from across the state to campus, providing an opportunity to learn best practices and strategies from leaders in the field and, just as importantly, from each other. These teachers recognize the vital role they already play in fostering appreciation and understanding for STEM concepts, and their classrooms are gateways to a brighter future in Massachusetts.

Robert V. Antonucci
President
Fitchburg State University

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

Newton-

Stem Summit Conference

On Tuesday, October 18 the UMass Donahue Institute held their annual STEM Conference.

The theme for conference was Advancing the STEM Agenda Locally and Nationally.

The day started with David Cedrone, the Executive Director, STEM Advisory Council, explaining the statewide STEM plan. This five year plan details how the state is working with educational institution and businesses to increase the number of students entering the STEM fields. Ray McCarthy and I played a role in developing this plan over the past two years.

The keynote speaker, William H. Swanson, Chairman and CEO of the Raytheon Corporation, talked of the need to help teachers to better understand and teach the STEM fields especially at the elementary level. He announced that the Raytheon Corporation will donate one million dollars to the Museum of Science to help the museum to continue their successful elementary technology/engineering program titled Engineering is Elementary. He also showed the group an interesting video developed by Raytheon explaining why we, as a nation, need more students entering the STEM fields. This video will be available on YouTube in the near future.

At the completion of the opening remarks it was off to a series of morning workshops. The workshops ranged from how to promote STEM learning in the early grades to post high school. One workshop of interest to me concerned how the National Research Council is going about the process of developing standards for science



and technology/engineering. The standard develop process will take at least a year and half to accomplish and then the Commonwealth will need to determine how the national standards fit with the state standards. At the present there are over 20 states involved in the standards development, with Massachusetts playing a leading role.

The luncheon keynote speaker, Dr. Linda Rosen, spoke of the need to educate all the students in the STEM field. As the make-up of the United States population continues to change there will be an increasing opportunity for minority students to enter the STEM fields. She has worked with businesses to help them articulate their vision of STEM education. At the completion of the luncheon activities it was off to the afternoon workshops. A few of the workshops were a continuation of the morning program, other workshops focused on the need to provide STEM career pathways to help train displaced workers for new careers.

It was announced at a STEM workshop that the Board of Higher Education has agreed to accept a technology/engineering course, which receives high school science credit, as meeting part of the laboratory science requirement for admission to the state universities. The official announcement will be made at a later date.

~ Charlie Corley, DTE

T/E Ed ≠ IT ≠ EdT ≠ CTE

Editor's note:

These STEM SUMMITS are great in that these meetings get dedicated excited people from all parts of the education/political spectrum together to hear ideas on how STEM could be better marketed, focused, and taught.

However, the agenda so far is the "S&M" of STEM.

WE still need political and educational leaders to realize that the "T&E" of STEM is where the tire meets the road. If we want to innovate our way out of the huge issues that confront humanity, we need to prepare our students to use all types of technology appropriately to address these problems. This is Technological Literacy!

Please spread the word: Technology Engineering Education is THE way to bring STEM alive!

~ Ray McCarthy

Technology Engineering Education

ITEEA Member Program

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>

MassTEC

- * Teacher of the year
- * Program of the Year

Apply or Nominate Today!

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

Hudson-

POY—TOY

All applications need to be submitted no later than Thursday, September 13, 2012

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.

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. All applications need to be submitted no later than Thursday, September 7, 2012

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



MORE at

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

Ipswich-

A Framework for K-12 Science Education

From MassTEC:

Over the past few years the Massachusetts Department of Elementary and Secondary Education (DESE) has been working on updating the Science and Technology/Engineering Curriculum Framework. The new framework was to be released in March 2011, but is being delayed because DESE is waiting for the release of the final National Science Framework.

In July 2011, the draft of the national science framework was released by the National Research Council of The Academies.

The framework titled *A Framework for K-12 Science Standards: Practices, Crosscutting Concepts, and Core Ideas*, can be accessed via www.nationalacademies.org/bose. This framework will be used by educators to develop a set of national science and engineering/technology standards. These national standards will form the basis for the revision of the current Massachusetts standards. **The significance of this framework is the direction it proposes for the teaching of pre-K-12 technology/engineering education.** By its nature, this framework is aimed at providing a different curriculum area in which technology and engineering will be taught. Just as technology and engineering teachers teach some science; this national science framework will place a stronger emphasis on science teachers teaching about technology and engineering. This national framework certainly has the potential to change the positioning of technology/engineering in our schools.

Attached are two documents for you to consider. The first is a comparison of the core ideas of our current Massachusetts State Frameworks, the ITEEA Frameworks and the National Conceptual Framework. The second document is a copy of the Conceptual Framework's core ideas relating to technology and engineering.

Please consider offering positive suggestions to the National Research Council of The Academies during the comment period.

~ Scott Jewell. MassTEC Vice President

scooterjewell@yahoo.com

Washington-

A Framework for K-12 Science Education:

Practices, Crosscutting Concepts, and Core Ideas

Committee on a Conceptual Framework for New K-12 Science Education Standards

Board on Science Education

Division of Behavioral and Social Sciences and Education

Tuesday, July 19 2011

1:00 p.m. EST

Chapter 8: Engineering, Technology, and Applications of Science

In Chapter 3 we assert that “any [science] education that focuses predominantly on the detailed products of scientific labor—the facts of science—without developing an understanding of how those facts were established or that ignores the many important applications of science in the world misrepresents science and marginalizes the importance of engineering.” This statement has two implications for science education standards in general and for this report’s framework in particular. The first is that students should learn how scientific knowledge is acquired and how scientific explanations are developed. The second is that students should learn how science is utilized, in particular through the engineering design process, and they should come to appreciate the distinctions and relationships between engineering, technology, and applications of science (ETS). These three terms are defined in Box 8-1.

Chapter 3 describes how an understanding of engineering practices can develop as they are used in the classroom to help students acquire and apply science knowledge. There is also a domain of knowledge related to these practices, and it constitutes the framework’s first ETS core idea—ETS1: Engineering Design. Although there is not yet broad agreement on the full set of core ideas in engineering [1], an emerging consensus is that design is a central practice of engineering; indeed, design is the focus of the vast majority of K-12 engineering curricula currently in use. The committee is aware that engineers not only design new technologies, but they also sometimes fabricate, operate, inspect, and maintain them. However, from a teaching and learning point of view, it is the iterative cycle of design that offers the greatest potential for applying science knowledge in the classroom and engaging in engineering practices. The components of this core idea include understanding how engineering problems are defined and delimited, how models can be used to develop and refine possible solutions to a design problem, and what methods can be employed to optimize a design.

For More go to: www.nationalacademies.org/bose



MORE at

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

State	National	Future
<p>Massachusetts Technology / Engineering Standards</p> <p>Middle School</p> <ol style="list-style-type: none"> 1. Materials, Tools, and Machines 2. Engineering Design 3. Communication Technologies 4. Manufacturing Technologies 5. Construction Technologies 6. Transportation Technologies 7. Bioengineering Technologies <p>High School</p> <ol style="list-style-type: none"> 1. Engineering Design 2. Construction Technologies 3. Energy and Power Technologies <ul style="list-style-type: none"> Fluid Systems 4. Energy and Power Technologies <ul style="list-style-type: none"> Thermal Systems 5. Energy and Power Technologies <ul style="list-style-type: none"> Electrical Systems 6. Communication Technologies 7. Manufacturing Technologies 	<p>ITEEA Technology Literacy Standards</p> <p>Nature of Technology</p> <ol style="list-style-type: none"> 1 Characteristics and scope of technology 2 Core concepts of technology 3 Relationships among technologies and other fields <p>Technology and Society</p> <ol style="list-style-type: none"> 4 Effects of technology 5 Effects of technology on environment 6 Development and use of technology 7 Influence of technology on history <p>Design</p> <ol style="list-style-type: none"> 8 Attributes of design 9 Engineering design 10 Problem solving <p>Abilities for a Technological World</p> <ol style="list-style-type: none"> 11 Apply Design Process 12 Use and maintain technological products and systems 13 Assess the impact of products and systems <p>The Designed World</p> <ol style="list-style-type: none"> 14 Medical Technologies 15 Agricultural and Biotechnologies 16 Energy and Power Technologies 17 Information and Communication Technologies 18 Transportation Technologies 19 Manufacturing Technologies 20 Construction Technologies 	<p>A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas (Science / Engineering Common Core)</p> <p>Engineering Design</p> <p>A: Defining and Delimiting an Engineering Problem B: Developing Possible Solutions C: Optimizing the Design Solution</p> <p>Links Among Engineering, Technology, Science, and Society</p> <p>A: Interdependence of Science, Engineering, and Technology B: Influence of Engineering, Technology and Science on Society and the Natural World</p>

MORE at

<http://www.masstec.org>

Delaware-

DOW CHEMICAL JOINS 100KIN10 IN GOAL TO CREATE 100,000 STEM TEACHERS

The Dow Chemical Company has announced it is joining more than 80 organizations around the U.S. as part of 100Kin10, a collaborative movement to support the national imperative of preparing, deploying, and supporting 100,000 new, best-in-class science, technology, engineering, and math (STEM) teachers in the next 10 years. Dow, through its philanthropic arm, The Dow Chemical Company Foundation, is pledging \$500,000 over three years to 100Kin10, whose mission is to reverse our country's decades-long decline in STEM subjects, to ensure all children have the basic STEM literacy to be full participants in our economy and democracy, and to enable our country's students to address the most pressing national and global challenges. "The most highly trained and knowledgeable teachers -- and a substantial supply of them -- are an essential element to ensuring the U.S. can educate and employ the best and brightest STEM candidates to create jobs and inspire innovation here in America," said Bo Miller, Dow's global director of corporate citizenship and president of The Dow Chemical Company Foundation. Dow's commitment to 100Kin10 aligns directly with the company's most recent STEM investments announced at the Clinton Global Initiative America

meeting this past June: Stepping Up STEM for Students, Teachers and Jobs. Dow committed to helping scale up two initiatives: Support for the Chemical Education Foundation's "You Be The Chemist" challenge and the National Science Teacher Association's (NSTA) New Science Teacher Academy. To learn more about Dow's efforts to support STEM education, visit www.dow.com/education.

100Kin10 (<http://100kin10.org>) is a multi-sector mobilization that responds to the national imperative to prepare, deploy, and support 100,000 excellent STEM teachers over the coming 10 years. Partners, including but not limited to corporations, school districts, museums, institutes of higher education, foundations, federal agencies, professional associations, states, and nonprofit organizations, apply their particular assets to creatively and strategically address the challenges of increasing the supply of excellent STEM teachers, developing and retaining excellent STEM teachers, and building the 100Kin10 movement. Many Triangle Coalition members have already pledged their support.

~ Submitted to the IdeaGarden by Mike Fitzgerald, DTE

Hanover - Middle School Technology Engineering

After 20 years as an application engineer, consultant and product marketing manager in the eCAD (electrical Computer Aided Design) and Simulation software industry, I am now leveraging my career experience as an engineer to educate middle schools students on the various topics related to middle school Technology and Engineering standards. My calling as a teacher came in 2003, when, after being laid off as a product marketing manager, the principal where my son went to school requested my service as a long term substitute teacher. The following year, I stayed on to develop the Technology Engineering curriculum and teach this to 6th through 8th graders at the middle school in Quincy where I once attended.

I can say this career change has been the best choice not just for me, but for all my students who have and will come through my doorway into my class. Though students don't understand the full value of my lessons, activities and lectures related to middle school Engineering at this young age, my goal is for them to come back someday and say "Thank you for helping me understand Engineering as I am so far ahead of other students due to your class." I am teaching students these various Engineering topics in order to build a baseline foundation that they can leverage going forward from a college, professional career or personal use perspective.

One of the biggest barriers that I have faced

while developing and redeveloping my curriculum over the years has been to meet the amount of time per student I would have each year. The lesson plans have changed annually because the number of hours per student per year reduced drastically from 20 hours/student/year to 12 hours/student/year. Thus, the combination of learning activities, tasks, projects and assessments would constantly evolve, leading to restructuring of the lesson plans for each grade level. The challenge was to figure out how I am going to squeeze ten pounds of curriculum into a two pound bag. Thus, my solution evolves around using technology to expedite the learning process using various computer based activities, software applications, online assessments tools and video based programs. I really enjoy teaching engineering to students knowing that they are exposed to it day in and day out will one way or another and that it is constantly impacting their personal life such as how computers have done so with my life.

The application software programs used are both desktop and website based programs. A combination of Architectural and CAD software applications allow exposure for students in understanding of Construction and Manufacturing systems. I also web based programs from University of Utah and along with websites such as edheads.org to host various engineering activities based on simple and complex machines.

So, how do my students learn and retain insight

about various engineering topics without engaging in hands on projects? The answer is repetitive assimilation programs supported through various websites, software desktop applications, videos and other technologies.

Finally, the real value of learning any standard and topic or meet any learning objective, is to assess what students know and identify where they lack knowledge or understanding of the topic and backfill the missing pieces using various teaching methods. This assessment process can also streamlined and automated using technology applications such as Examview from Prentice Hall. By developing my own database of test questions using various techniques of True/False, Multiple Choice and Matching, setting up the configuration for each assessment, I can quickly analyze pre and post assessments and track the results from class to class.

In closing, I believe that new technologies such as the iPad in combination with websites offering engineering simulation, software applications, videos and educational gaming environments is what will be the baseline used to educate students about STEM. This process will expedite the learning of engineering topics and deepen the retention of the knowledge such that more time can be spent on the application of engineering, from which building a core engineering foundation will take place.

John Storella-Mullin
Hanover Middle School
Technology Engineering

MORE at

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

Dear MassTEC Teachers, we thoroughly enjoyed our inaugural attendance at your MassTEC Conference in Fitchburg! Thanks to many of you for visiting our booth, and also for attending our presentation, entitled “3D Engineering Meets 3D Gaming, in the Cloud.” Hopefully we communicated our passion around our approach to Applied STEM.

We believe that by weaving all four letters of STEM in the same place and time, using real, state-of-the-art, 3D engineering, analysis, and (game-like) simulation tools, we will help bring the principles of STEM to life, and ultimately help develop critical thinking skills – and that is our mission. With our current titles: Dragster 2.0, Structures 2.0, Green Car 2.0, and Flight 2.0, we offer a semester’s worth of STEM standards-based, middle and high school content, for a fraction of the “T” heavy traditional modules. And being web-based, your students can access their projects from any browser, 24/7, from anywhere in the world! And they can compete against other students anywhere in their “world” (usually defined as their district).

Ultimately, our STEM apps intend to accurately Connect the Virtual the Physical, to “STEMify” traditional and new projects you are likely already doing in your classroom... Please give us a look at www.whiteboxlearning.com, and don’t forget we also sell the kits that go along with each STEM activity, also found on our web site. If you would like a free trial of our STEM applications, please email sales@whiteboxlearning.com, and we will send you a password asap – no CDs to download, its all in the cloud!

Thank you!
Graham Baughman
CEO

www.whiteboxlearning.com



100 Awesome Engineering Projects for Kids:

Engineering and fun aren't always two things that kids naturally associate with one another, but there are hundreds of ways to make engineering, physics and design fun and challenging for kids. Here are 100 great experiments that will let kids construct, play, learn and grow, all while they study the fundamentals of engineering.

Basics



These projects focus on the basics of motion, force and other essentials of physics.

Balls and Ramp. Try out this project to learn more about the laws of gravity.

Ping pong ball catapult. Let kids have fun flinging the harmless ping pong ball across the room with this great activity.

Topple dominoes. Make learning about physics fun with a few dominoes that you can set up and then knock down.

Build a confetti launcher. Make any day a party with this fun and engaging project.

Design a simple machine. Show how machines can make work easier with this flexible project.

Chocolate grabbing. This experiment explains concepts Kids will have a blast trying to put together these building projects.

For all the links go to:

<http://constructionmanagementdegree.org/blog/2010/100-awesome-engineering-projects-for-kids/>

~ Submitted to the IdeaGarden by Mike Fitzgerald, DTE

This month I included a few of the grants and scholarships offered by the International Technology Engineering Educator Association. These grant are available to technology/engineering teacher here in Massachusetts. Please read over the grant and/or scholarship to see if you qualify before applying.

~ Charlie Corley Affiliate Rep ITEEA

PITSCO/HEARLIHY/FTE GRANT Excellence in Teaching Technology and Engineering

The Foundation for Technology and Engineering Educators in cooperation with Pitsco/Hearlihy & Company proudly announces the \$2,000 Pitsco/Hearlihy/FTEE Grant in honor of Tom and Mary Hearlihy. The grant is for a technology and engineering teacher at any grade level (K-12). Its purpose is to recognize and encourage the integration of a quality technology and engineering education program within the school curriculum. Criteria include: (1) evidence of an effective quality technology and engineering education program, (2) documented success in the integration of technology and engineering education with other academic subjects, and (3) plans for professional development via the anticipated grant.

Eligibility Requirements:

- Applicant must be an ITEEA member and register for the ITEEA Annual Conference. (Membership may be enclosed with scholarship application).
- Applicant must be a teacher (elementary or secondary) who is successfully integrating technology and engineering education within the school curriculum. (Applicant above the elementary school level must be a technology/engineering teacher.)
- Applicant must attend the conference awards ceremony where award is presented.

Application and Deadline: Applicants must submit an application package, postmarked by December 1, that consists of four sets of the following required items:

- Letter of application with a clear explanation of: (a) the technology and engineering education program, (b) how technology and engineering education is integrated with other academic subjects, (c) plans for using the grant, and (d) identification details - school name, grade level, address, telephone, and home address.
- School-based curriculum materials and/or a 10-min. maximum video (mpeg, wmv, or avi) illustrating how technology and engineering education is integrated with other academic subjects in the school.
- Three recommendation letters that confirm the success of integrating technology and engineering education with other subjects. One letter must be from the principal and at least two must be from other academic teachers.

Mail to:

HEARLIHY/FTEE GRANT
Foundation for Technology and Engineering Educators
1914 Association Drive, Suite 201

Reston, VA 20191-1539
703/860-2100, FAX 703/860-0353
iteea@iteea.org

Grant Presentation: The grant is provided directly to the teacher and will be presented during the ITEEA Annual Conference.

LITHERLAND/FTEE SCHOLARSHIP Undergraduate Major in Technology and Engineering Education

The Foundation for Technology and Engineering Educators proudly announces the \$1,000 Litherland/FTEE Scholarship in honor of Dr. Les Litherland. The scholarship is for an undergraduate student majoring in technology and engineering education teacher preparation. The award is based upon interest in teaching, academic ability, need, and faculty recommendations.

Eligibility Requirements:

- Applicant must be member of the International Technology and Engineering Educators Association. (Membership may be enclosed with scholarship application.)
- Applicant must not be a senior by application deadline.
- Applicant must be a current, full-time (as defined by the respective institution) undergraduate majoring in technology and engineering education teacher preparation.

Application and Deadline:

Send application package, postmarked by December 1, that consists of four sets of the following required items:

- Letter of application that includes statement about personal interest in teaching technology and engineering and applicant's address with day and night telephone numbers.
- Applicant's resume or vita. Material should not exceed three pages and should identify career goals, current professional and college activities, and achievements.
- A photocopy of applicant's college transcript. A grade point average of 2.5 or more (on a 4.0 scale) is required.
- Three faculty recommendations. Applicant must show support for application by having his/her professors and/or advisor provide letters of recommendations.

Mail to:

LITHERLAND/FTEE SCHOLARSHIP
Foundation for Technology and Engineering Educators
1914 Association Drive, Suite 201
Reston, VA 20191-1539
703/860-2100, FAX 703/860-0353
iteea@iteea.org

Scholarship Presentation:

The scholarship is presented during the ITEEA Annual Conference. The winner does not have to be present to receive the scholarship.

MALEY/FTEE SCHOLARSHIP Technology and Engineering Teacher Professional Development

The Foundation for Technology and Engineering Educators proudly announces the \$1,000 Maley/FTEE Technology and Engineering Teacher Scholarship in honor of Dr. Donald Maley. Its purpose is to support teachers in their preparation to increase the positive outcomes of technology and engineering education. Criteria include: (1) evidence of teaching success, (2) plans for action research, (3) recommendations, (4) plans for professional development, and (5) the applicant's need.

Eligibility:

- Applicant must be a member of the International Technology and Engineering Educators Association. (Membership may be enclosed with scholarship application).
- Applicant must be a technology and engineering teacher at any grade level who is beginning or continuing graduate study.

Application and Deadline:

Applicant must send an application package, postmarked by December 1, that consists of four sets of the following required items:

- Letter of application with clear explanation of: (a) plans for graduate study, (b) plans for action research, (c) the applicant's need, and (d) identification details - school name, grade level, address, telephone, and home address.
- Applicant's resume not exceeding four pages that describes current position, professional activities, and achievements.
- Applicant's official college transcript(s).
- Documentation of acceptance

into graduate school.

- Three recommendation letters from among the following: undergraduate faculty, graduate faculty, and school administration. Mail to:

*MALEY/FTEE SCHOLARSHIP
Foundation for Technology and
Engineering Educators
1914 Association Drive, Suite 201
Reston, VA 20191-1539
703/860-2100 FAX 703/860-0353
iteea@iteea.org*

Scholarship Presentation: The scholarship is provided directly to the teacher and will be presented during the ITEEA Annual Conference.

FTEE SCHOLARSHIP Undergraduate Major in Technology and Engineering Education

The Foundation for Technology and Engineering Educators announces the availability of a \$1,000 scholarship for an undergraduate student majoring in technology and engineering education teacher preparation. The award is based upon interest in teaching, academic ability and faculty recommendations.

Eligibility Requirements:

- Applicant must be member of the International Technology and Engineering Educators Association. (Membership may be enclosed with scholarship application).
- Applicant must not be a senior by application deadline.
- Applicant must be a current, full-time (as defined by the respective institution) undergraduate majoring in technology and engineering education teacher preparation.

Application and Deadline: Send application package postmarked by December 1, that consists of four sets of the following required items:

- Letter of application that includes statement about personal interest in teaching technology and engineering and applicant's address with day and night telephone

numbers.

- Applicant's resume or vita. Material should not exceed three pages and should identify career goals, current professional and college activities and achievements.

- A photocopy of applicant's college transcript. A grade point average of 2.5 or more (on a 4.0 scale) is required.

- Three faculty recommendations. Applicant must show support for application by having his/her professors and/or advisor provide letters of recommendation.

Mail to:

*FTEE UNDERGRADUATE
SCHOLARSHIP
Foundation for Technology and
Engineering Educators
1914 Association Drive, Suite 201
Reston, VA 20191-1539
703/860-2100 FAX 703/860-0353
iteea@iteea.org*

Scholarship Presentation:

The scholarship will be presented in March during the ITEEA Annual Conference. The winner does not have to be present to receive the scholarship.

COLLEGE STUDENT LEADERSHIP AWARD

This is the highest honor given to a TECA/ITEEA student member. It is based upon outstanding dedication to ITEEA and TECA, academic achievement, and professional involvement.

The award is limited to one college student per year who has attained prominence in ITEEA and TECA at the international level through voluntary contribution of his/her time and talents. The individual must have made unique contributions to the international organization through committee efforts, served in an appointed or elected office, and have shown exemplary leadership ability through local affiliated chapter activities. In addition, the recipient should have displayed high academic standards (minimum of 3.0 on a 4.0 scale). The award need not be given every year and may be received only once by an individual.

For further information, contact Jerianne S. Taylor at Appalachian State University, 828-262-6352.



Classroom Connections

Inside Quaboug classrooms, we're shaping the future of the world outside.



*Patents, anyone?
Designing the future...*

Custom Furniture and Advanced Woodworking students were challenged to create a custom wood project from scratch. Following the multi-step, meticulous design process, these students created custom cell phone cradles.

Pictured (left to right) are Sawyer Prive ('12), Tyler Morgan ('12), and Peter French ('13),

along with their creations. Each project met the specifications for design and construction as they've been learning in class with Mr. Wahlstrom, Woodshop/Technology teacher.



MORE at

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

Reston, VA -



Have you Explored the EbD™-NASA STEM Design Challenges?

High School Units:

- **Moving Cargo:** *Focus: Transportation.* Serves as an augmentation or replacement for a Foundations of Technology unit or as a stand-alone unit.
 - **Transportation and Space: Reuse and Recycle:** *Focus: Transportation (Grades 10-12).* Serves as an augmentation or replacement for a Technological Issues unit or as a standalone unit.
 - **Engineering Design for Human Exploration:** *Focus: Energy and Power.* Serves as an integral part of Engineering Design or as a stand-alone unit.
 - **Lunar Growth Chamber:** *Focus: STS-118 Lunar Plant Growth Chamber.* Serves as a stand-alone unit.
- P237CD - \$15 (Package includes all four units - delivered on CD as interactive electronic publications)

Middle School Units:

- **Lunar Colonization:** *Focus: Energy and Power.* Serves as an integral part of Exploring Technology or as a stand-alone unit.
- **Space Transportation: Reshooting the Moon:** *Focus: Transportation.* Serves as an integral part of Technological Systems or as a stand-alone unit.
- **Creating a Space Exploration Infrastructure:** *Focus: Transportation.* Serves as an integral part of Invention and Innovation or as a stand-alone unit.
- **Packing Up for the Moon:** *Focus: STS-118 Lunar Plant Growth Chamber.* Serves as an augmentation or replacement unit in Invention and Innovation or as a stand-alone unit.

P238CD - \$15 (Package includes all four units - delivered on CD as interactive electronic publications)

Elementary Units:

- **Moon Power:** *Focus: Energy and Power.* Incorporates technological literacy, science, mathematics, language arts, and social studies standards. Available as a stand-alone unit in two tracks: Design and Build or Design and Evaluate.
- **Moon Munchies:** *Focus: STS-118 Lunar Plant Growth Chamber.* Incorporates technological literacy, science, mathematics, language arts, and social studies standards. Available as a stand-alone unit in two tracks: Design and Build or Design and Evaluate.

P239CD - \$9 (Package includes both units - delivered on CD as interactive electronic publications)

Order online at www.iteea.org or download an order form (www.iteea.org/Publications/puborderform.pdf)

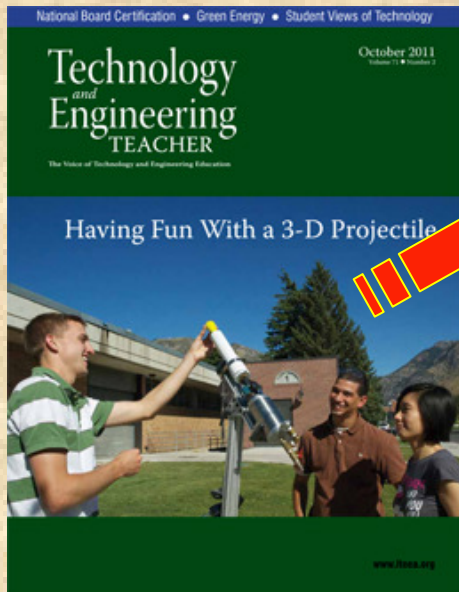
and fax completed form to [703-860-0353](tel:703-860-0353), or call [703-860-2100](tel:703-860-2100).

ITEEA
1914 Association Drive,
Suite 201
Reston, VA, 20191-1539, US



MORE at

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



ITEEA members receive a complimentary copy of *Technology and Engineering Teacher* and an electronic version can be accessed via [Members Only](#).

1. **Having Fun With a 3-D Projectile**
2. **Student Views of Technology**
3. **Green Energy: Powering Education from a STEM Education Methodology**
4. **A Technology Education Teacher's Road to National Board Certification**
5. **Integrating Technology and Engineering With a Marine Design Contest and 3-D Modeling**
6. **STEM Education Product Guide Preview**
7. **And More!**

[JOIN ITEEA as a new member and pay \\$60.00.](#)

Kelvin has agreed to sponsor a \$20.00 portion of each NEW Membership. This is available for 100 NEW members.

To join ITEEA, go to [How to Join/Renew](#).

Johnson Selected as ITEEA's Long Beach Teacher Excellence General Session Keynote Speaker

Employers are looking for the next



generation workforce, but do educators understand the requirements they are looking for? How can we, as educators, continue to promote careers in manufacturing and engineering?

ITEEA is pleased to announce **Kellie Johnson** as the Second General Session Speaker at its Annual

International Conference to be held in Long Beach, CA. Johnson is President of ACE Clearwater Enterprises, a third-generation, family-owned manufacturing company specializing in complex formed and welded assemblies for the aerospace and power-generation industries. Her company aggressively promotes internship programs to expose young people to engineering and other manufacturing-related careers by working closely with Community Colleges and Universities.

In 2008, Kellie was named California Industry Person of the Year by the California Industrial and Technology Education Association (CITEA). Currently Johnson serves on the Board of Directors of the National Association of Manufacturers and is Chair of NAM's Small and Medium Manufacturers (SMM) Group. She is also a member of the Board of Trustees for the Manufacturing Institute.

At the ITEEA General Session she will be giving her perspective on the need to promote careers in manufacturing and engineering, and the importance of educators understanding the requirements of employers who are looking to them for the next generation workforce.

ITEEA's 74th Annual Conference will take place in Long Beach, CA, March 15-17, 2012. For more information, go to www.iteea.org/Conference/conferenceguide.htm. Updates are posted regularly, and housing and conference registration will open later this month.-

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

**I don't need no freakin
focus!
EVERYTHING IS
RECORDED EQUALLY!**

Lytro has finally released a camera! This concept seemed to be too good to be true, but it is a real camera now. At the moment, this is geared to the point and shoot crowd. But given some time, this could revolutionize everything we think about focus. Imagine that any digital image taken with such a camera can be refocused at any point in its history. Amazing! ... and I'll bet it will eventually be possible with video!

Amazing! Amazing! Amazing!

Lytro lets you take pictures like never before. Unlike a conventional camera that captures a single plane of light, the Lytro camera captures the entire light field, which is all the light traveling in every direction in every point in space.

Capture living pictures with the press of a single button. By instantly capturing complete light field data, the Lytro gives you capabilities you've never had in a regular camera

Check this out...the new Lytro light field camera... <http://www.pixiq.com/article/lytro-light-field-camera-finally>



Sesame Street-

In a bid to give young viewers a leg up in math and science, the producers of [Sesame Street](#) this fall want to help the very young think like scientists. It's a response to international rankings that show U.S. kids slipping when it comes to basic math and science knowledge.

Research compiled by Georgetown University's Early Learning Project found that *Sesame Street* helps kids' school-readiness, and that much of the academic advantage lasts into high school.

In the show's 42nd season, which debuts today, so-called STEM skills — science, technology, engineering and mathematics — are front-and-center. Characters build bridges, launch rockets and think through problems that require trial and error, observation and data.

For more go to:

<http://www.usatoday.com/news/education/story/2011-09-25/sesame-street-stem-science-math/50548750/1>

MORE at

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



Massachusetts Technology Education/ Engineering Collaborative

From the Webmaster, Stephen
VanVoorhis coertevanv@msn.com

There is too much to list here!
Go to:

<http://www.masstec.org/>
For amazing stuff!

The students at FSU are in the process of planning another **great Technology Student Association competition** for April 20th 2012. If you are interested in participation please fill out a brief survey, <http://masstec.org/tsa/index.htm>. 10-23-2011

The RealWorld-InWorld NASA Engineering Design Challenge encourages students in **Grades 7-12** to explore and build skills essential for successful careers in science, technology, engineering, and mathematics through two phases of project-based learning and team competition. **Real World (Phase I)**: Teams of middle- and high-school-aged students, with support of their teachers/coaches/parents, work collaboratively as engineers and scientists to explore and design solutions related to the James Webb Space Telescope and Robonaut. RealWorld (Phase I) began September 1, 2011 and ends January 27, 2012. To be considered to move to the InWorld phase, all RealWorld work must be submitted by this deadline. <http://masstec.org/newstudent.html#nasarealworld> 10-23-2011

Robotics Program Showcased by will.i.am to Promote Science and Technology on Network TV, Launches a New Season FIRST® (For Inspiration and Recognition of Science and Technology), an organization to inspire young people's interest and participation in science and technology, officially launched its 2011/2012 <http://masstec.org/newstudent.html#firstrobotics2011>. 10-23-2011

Do you know K-12 teachers or district-level administrators who are making a difference in education through the use of technology? Recognize their achievements by nominating them for the **Alan Shepard Technology in Education Award**. <http://masstec.org/new.html#astea> 10-23-2011

New England Institute of Technology Invites School Groups to: Campus Tours Career Education Days- Building Technologies Career Education Day Friday November 18, 2011 RSVP by November 4, 2011 9:00 a.m. - 12:30 p.m.; Communications / Engineering Technology Career Education Day Friday March 2, 2012 RSVP by February 10, 2012 9:00 a.m. - 12:30 p.m.; Allied Health Career Education Day Friday April 13, 2012 RSVP by March 16, 2012 9:00 a.m. - 12:30 p.m. <http://masstec.org/temppostdoc/NEITCareerdays2011>

[2012.pdf](#) 10-23-2011

Free Robot Virtual World Programming Course! The Robotics Academy is offering self-paced training on how to program robots using their new Robot Virtual World Software. The courses are free and users can log into the class and use class resources any time that they want to. The course will teach basic programming skills using LEGO, VEX, and CMU developed virtual robots. Questions will be answered via a forum. <http://masstec.org/new.html#freerobot-10-23-2011>

NASA is challenging U.S. and international **undergraduate and graduate student teams** to design and **build a telerobotic or autonomous excavator**, called a lunabot, that could be applied to an actual lunar excavation device or payload. <http://masstec.org/newstudent.html#nasamining> 10-23-2011

Dimension's Extreme Redesign 3D Printing Challenge 2012 is Now Open for Entries Calling all engineering, design, and manufacturing students. Entries will be accepted September 8, 2011 through **February 2, 2012**. <http://masstec.org/newstudent.html#3dprinting> 10-23-2011

[PBS.org](#) and [PBS KIDS](#) websites are full of great content and activities that teachers can use to enhance teaching and learning. Below, you will find summaries of on-air and online resources organized by subject and/or topic. We hope these will help you get acquainted with our free educational content, use it in your teaching and share it with colleagues.

Teaching & Learning Resources
[PBS STEM Resources pdf](#) (126 KB)

<http://www.pbs.org/teachers/resourceroundups/?contactID=192910553&gateway=UCR505G9VT>

<http://makezine.com/magazine/>

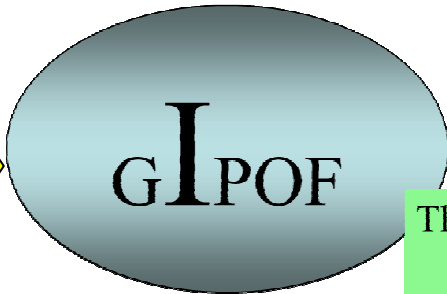
Go to:

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

For more!



Cool Lesson Plan!



The key to successful problem solving is to get as much **Input** as possible within the time constraints so that you have thought of everything you can before moving into the **Process** stage.

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>

Teach your students how to use the Universal Problem Solving method!

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

Download the *GIPOF 2011* PowerPoint and the *Design Brief*.

Adapt (anyway you want, but please give credit!!!) the GIPOF PowerPoint. Use the Design Brief to guide your students through this learning experience.

Option 1: Brain storm Innovations through GIPOF! Have student teams research the Big Problems facing our planet. Then guide the students to use GIPOF to design a real life Innovative Solution to a perceived problem. Teams will use new communication technologies (Prezis, VoiceThreads, YouTube Videos) to present their solutions in a creative way.

Option 2: Take an existing learning experience and have your students GIPOF to do it. Use the Design Brief to guide your students through this learning experience.

Option 3: You make up your own way to GIPOF!

