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A Newsletter from the Houston Urban Network for Science, Technology, Engineering and Mathematics ([HUNSTEM](#))

## Register for HUNCon



**Registration is now open** for all teachers, students, parents, administrators, or anyone interested in **STEM** education in Houston. Registration for **K-12** teachers, students and their families is free!

[Click here to go to the online registration page.](#)

Houston is a vibrant learning community with eclectic resources, but it is often difficult for the many members of the community to communicate and share resources. If we all come together we can find ways to **Build a Better Learning Community for Houston.**

Workshop providers include:

- The Houston Museum of

- Natural Science
- UT Health Science Center
- Rice University School Science Program
- Texas Alliance for Minorities in Engineering
- Houston Geologic Society

And more!

For more information visit our web site at: <http://hunstem.uhd.edu/HUNCon>.

## 50<sup>th</sup> Science and Engineering Fair of Houston

The Science and Engineering Fair of Houston (**SEFH**) has a new web address:

<http://www.SEFHouston.org>

All of the features of the website are still there, but if you haven't visited recently, you may be surprised by the new format and look. There is a new logo which is highlighted on the Intro page and throughout the newly designed website.

You can still find all of the

resources **HUNSTEM** has put together, including the list of [liaisons](#) who can help students and teachers with their projects, videos of past [HMNS internship winners](#), the video introduction for the [50<sup>th</sup> year](#), and the [HUNSTEM and the SEFH](#) How Can We Help presentation.

This presentation has also been completely remade to include updated links and more information for teachers and administrators

looking to start science fairs in their schools.

The **50<sup>th</sup> SEFH** will include speakers, booths, special presentations and more. We'll let you know more about the new events and features of the fair soon.

The **SEFH** is expanding, too. Exhibits from all along the Texas Gulf Coast as well as the Greater Houston area and East Texas will be there.

Will You?



## Falling for Science

by Erica Carmel (1992)

[Morning Edition](#),

December 8, 2008 · I was five years old and it was probably April, because I had an Easter basket full of brightly colored plastic eggs. The basket had a long handle so I was able to swing it around in circles. One wall of my playroom was lined with bookshelves that had

drawers as well as shelves. They held my doll and toy collection, most of which I never looked at. At the end of the playroom, across from the shelves, was a set of double doors. When I made inventions, I usually included these doors in my designs, probably because their doorknobs were good anchors onto which one could tie things.

I did an experiment with

the egg basket. I took a string (in this case, I think it was an extra- long jump rope) and tied it from the handle of a bookshelf drawer to a doorknob of one of the double doors all the way across the playroom. My idea was to create a gondola, such as the one I had seen at Disneyland on a family vacation. I hung my egg basket from the string and tried to run it down the string. When that worked

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## Get There Texas



GET THERE TEXAS is a professional networking site dedicated to building connections between companies, schools, students, and job-seekers. Whether you are a student looking for the right college, a graduate looking for the right job, or an employer looking for the right talent, GTTX can take you where you want to go.

<http://getthertexas.org>

Get There Texas is a project of the Texas Business and Education Coalition.

The TBEC mission is to convene business and education leaders to confront Texas with the realities of the global economy, to impact public policy, and to change public education.

TBEC is working hard to improve STEM education across Texas, and

HUNSTEM has joined on to help. One way is by putting our profile onto the Get There Texas website. We are also working behind the scenes by helping TBEC members find resources and areas of need.

One of the most exciting partners we've worked with is Houston's own CSTEM. *Read more about them on page 4.*

## Americorps VISTA is looking for volunteers



Rebecca Morris is working at John L. McReynolds Middle School to establish college readiness programs through the College For All Texans Foundation..

Rebecca is looking for volunteers to help tutor students, particularly in

math and science. Tutors would work one-on-one with students who are working below grade level in those subject areas. College volunteers are expected to commit to at least one hour per week, for a minimum of six tutoring sessions. She is willing to accommodate student schedules, and

would be more than happy to set up a service-learning opportunity for an entire class.

If you or your students are interested in participating in the program, or if you have any questions please contact me by email or by phone at 817-896-5903.

## Falling for Science continued

I went on to transport objects from one side of the room to the other by placing them in the egg basket. Next, I moved the string back and forth, causing the basket to swing. As I watched, the basket got further and further above horizontal. Finally, the basket swung all the way around the circle. But, as if by magic, the eggs did not fall out. I was stunned.

I took the egg-filled basket off the string, deliberately turned the basket upside down, and watched the eggs fall out. But when I put the basket and eggs back on the string and once again swung it around, the eggs remained in the basket. I tried the experiment again and again and always got the same results. When they were on the swinging string, the eggs remained in the basket. Yet when I held the basket upside down, the eggs fell out.

I was sure that I had made a new scientific discovery that was going to make me world famous. I ran to share it with my parents. My father was less excited than I had anticipated. He didn't seem surprised that the eggs remained in the basket. He even had a name for the magical force I had discovered: it was called centripetal force. Nevertheless, my

excitement didn't die. My father may have known about the force that made the eggs stay in the basket, but I had discovered it on my own. The discovery was mine.

At five years old, I had never heard of the scientific method, but I had followed it. I saw a problem: the eggs remained in the basket when it was swung on the string but fell out when the basket was turned upside down. I created an hypothesis: whatever was making the eggs stay in the basket was only present in the spinning basket. I devised a way to test the hypothesis: I guessed that the faster I turned the basket, the more likely it would be that the eggs would remain in the basket. So, for my experiment, I went back and forth between spinning the basket on the string and then turning it upside down slowly and watching the eggs fall.

These results confirmed my hypothesis. There was a definite connection between the speed of the rotation and the likelihood that the eggs would remain in the basket. The conclusions I drew were the most exciting of all: that I had discovered a new principle of science and that my hypothesis was correct. Something "held" the eggs to the

basket.

Thirteen years later, as I sat in an MIT lecture hall for my Monday morning class, 8.01, I watched Professor Walter Lewin demonstrate the experiment that I had performed in my playroom with plastic Easter eggs and a straw basket. Lewin took a pail of water and swung it above his head on a string. Sure enough, the water remained in the pail, and Professor Lewin remained dry. At five, I didn't know that centripetal acceleration equals the quotient of the velocity squared over the radius. I also didn't know that for the object not to fall the centripetal acceleration had to be greater than the forces on the object by gravity. What I did know was that the eggs wouldn't fall out of the basket and, as much as the equations are useful, in the end that is all they tell us.

***Excerpted from 'Falling For Science: Objects in Mind', edited and with an introduction by Sherry Turkle, published in May 2008 by The MIT Press.***

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<http://www.npr.org/templates/story/story.php?storyId=97823724>

**MITOPENCOURSEWARE**  
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

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*"The MIT physics class referred to is part of MIT's opencourseware project - <http://ocw.mit.edu/OcwWeb/Physics/8-01Physics-IFall1999/VideoLectures/>*

## CSTEM



"It is through the work of organizations such as yours that innercity school children get the opportunity to learn and practice science, mathematics, and technology, effectively shortening the technology divide that exist between the haves and the have-nots."

Mildred Rosa, Magnet Coordinator, Hogg Middle School

CSTEM Teacher and Student Support Services, Inc. is a 501(c)(3) organization committed to developing individuals that will one day join the workforce in STEM fields able to strengthen our global economy in the communications, oil and gas, information technology, off-shore, engineering, and other math and science fields. CSTEM considers itself to be a stakeholder in ensuring that underserved children are provided opportunities to experience STEM in fun and exciting ways through hands-on, discovery, inquiry and project-based learning. The students that participate in CSTEM supported projects and programs are culturally diverse; have varying learning capacities and interest levels; have dreams, goals and aspirations in how they want to experience life; and want to find success with learning. CSTEM's operation is by far one of the most unique educational organizations in existence in that it customizes STEM services to fit the individual needs of schools and organizations with clearly identified goals and outcomes that develop young minds in areas of STEM.

Check out some of their great programs:

### CSTEM Sea Turtle Robotics Challenge

The CSTEM Sea Turtle Robotics Challenge aims to connect various content areas through project based learning interdisciplinary in scope.

### FIRST Robotics

CSTEM supports 7 Houston area middle and high schools that participate in the FIRST Robotics Competition annually.

For most of these underserved students, this is their first exposure to the groundbreaking field of robotics, putting them on the leading edge of 21st century innovative technologies.

[Click here to read more about CSTEM supported schools at the FIRST Robotics Competition](#)

### CSTEM-RainbowPUSH Coalition Scholarship

CSTEM has partnered with the RainbowPUSH Coalition Energy & Science Project to award two \$2500 College Scholarships that will contribute to the educational advancement of 2 high school students from schools participating in our Robotics Competition.

### Girls Exploration Team (GET)

The Girls Exploration Team (GET) initiative allows schools to provide an opportunity for girls to develop and explore their interest in communication, science, technology, engineering, and mathematics.

### FIRST/VEX/LEGO Robotics (during and after-school)

Inspires and motivates students by challenging them to build a remotely controlled robot to accomplish a defined task within a competitive setting.

### Summer STEM Enrichment Camps

The goal of this project is to provide targeted enrichment that will engage students in hands-on, project-based learning activities that promote problem-solving, thinking outside the box, increased self-esteem, and teamwork.

### Teacher Support Services

### Community Partnerships

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

For more information and resources.

## Welcome to the Meritocracy

This opinion first appeared in HUNBlog on November 5, 2008. The author is Dr. Brad Hoge, Director of HUNSTEM

Last night's election was historic on many levels. One of the most interesting things said about it was that "the election has changed the gray matter of the country". Washington Post columnist [Eugene Robinson](#) made this comment on MSNBC last night in trying to describe the impact the election has had on him, and will have on all of us in both profound and subtle ways. Many commentators have talked about how this election will change the psyche of America and the world.

I've been trying to think about this phenomenon in terms of what it means for education. I believe it could have subtle and profound impacts here as well. In the most profound way, I believe that Barack Obama's success resonates as a blueprint for the American Dream, and that it is now finally and truly available to everyone in this country. How many times did we hear last night from teary-eyed civil rights leaders,

["now we can tell our children that they can be anything they want to be, and now we will be telling the truth".](#)

While this shift in ideology is profound in itself, what is even more profound for education is in the analysis of the blueprint. Barack Obama is where he is today because of education. Anyone looking at his story can now see clearly that the pathway to the American dream is through education. What is soaking into the gray matter of this country right now is that the hope of our future is through the education of everyone in our society.

Barack Obama talks about how his mother would wake him up early to study. This resonates with educators on at least two levels. One, his family valued his education, and was integrally involved in his disciplined journey through the education system. Barack Obama rose from a modest background into the intellectual elite in this country through education because it was expected of him, and because he had the support of his family. And two, education is hard work. Here is a man who I've already described as intellectually elite. A man who attended Harvard Law School and edited their Law Review. A man who eloquently addresses and analyzes complex issues. And, he worked hard in school.

We have much work to do to make the dream of

equal education for everyone a true reality. There are still too many inequalities in the state of facilities, the allocation of resources, and the veracity of our commitment to the schools in our under-served communities. These inequalities will not be overcome easily or quickly, but now there is a new mind-set for the students, teachers and parents at these schools. For the first time in many of these communities, it is conceivable that hard work can lift a child from the conditions of their surroundings to the heights of their imaginations. It is now conceivable that any child who works hard can compete in America's meritocracy and be rewarded. For the first time, it is conceivable that though barriers will still exist, there is a pathway through them that leads to success.

If this indomitable spirit oozes into the gray matter of all of our children, all of our families, all of society, then our educational system can finally become the meritocracy it has promised to be.




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["Now we can tell our children that they can be anything they want to be, and now we will be telling the truth".](#)

Eugene Robinson

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### We're on the Web!

See us at:

<http://hunstem.uhd.edu>

## Why Teach Science in Early Childhood?

*This Back Page entry was contributed by Vivian Brobbey. It was originally posted to [HUNBlog](#) on December 1, 2008.*

The past weekend I had an opportunity to spend some time with my eight year old niece, Tatania. She had a little cut on her finger when I picked her up. It looked infected but she would not let anyone touch it. In the car on the back seat, I had a stock card with the word science written in bolded print. Immediately she asked if I like science. I replied yes and she asked what do I like about it because, she cannot think of why anyone should like Science. The dialogue about science continued till it turned into an argument between her and my five year old son who loves science.

On our way home I had an idea to teach both of them science without mentioning the word science. I fried an egg, boiled an egg, and whipped an egg white. I took a bottle of vinegar and a box of baking soda. By this time they were wondering what kind of dish I was going to cook with vinegar and baking soda. In a mixing bowl I poured about half of the baking soda and one cup of the vinegar. We had a volcanic eruption with smoke. They screamed with excitement.

Now I was ready to explain the experiments and why science should be taught even in early childhood so every child can appreciate the complexity and the beauty of nature. I explained the change of state that had occurred to the eggs. The two cooked eggs have forever changed in form and texture, but the whipped egg white can be reversed from whipped (solid) stage to liquid. The volcanic reaction was a chemical reaction which in some cases can cause a big explosion. In this lesson, the state of the chemical reaction is not reversible. The vinegar is forever mixed with the baking soda and cannot be separated. Then we all ate the eggs.

At this point I explain why we eat and what happens to the food we eat inside our stomach. Now she understands how the body fights off bacteria in our body when we eat a balanced meal in addition to eating fruits.

The next thing was cleaning the cut and medicating it. Understanding how harmful bacteria can hurt her body, she allowed me to clean it. On the Internet we viewed stages of wounds and in the worst case amputation was not an option but the only solution. This gives me the reason to teach science in early childhood because

understanding science is the key to understanding how science helps us function in everyday situations. Her concept about science changed. I did not tell her all about science because she will forget most of the information. She visualized the experiment so she may remember most of it but involving her in the experiments she understands to:

1) Learn to love science and have the self confidence to engage in scientific thinking and communicating ideas.

2) Develop knowledge and understanding of important scientific ideas, processes and skills and relate these to everyday experiences.

3) Explore values and attitudes through science and ask and answer scientific questions.

4) Retain and develop her natural sense of curiosity about the world around her.

5) Develop the accurate use of scientific vocabulary through a range of enjoyable and interesting experiences and develop the skills to make systematic enquiries.

### **About HUNSTEM**

We believe that inquiry-driven, problem-based STEM (science, technology, engineering and mathematics) lessons are the best teaching method to attain increased science literacy. HUNSTEM will promote the use of inquiry-driven, problem-based science curricula in all classrooms in the Houston area. HUNSTEM will encourage problem-based curricula through collaboration between teachers, school administrators, curriculum directors and developers, and the ISE and professional resources of the Houston community. HUNSTEM will spread the message of inquiry-driven, problem-based science throughout the Houston area by establishing a vanguard of effective teachers who will encourage and support beginning and science-shy teachers in their schools. HUNSTEM will provide the resources and training for all K-12 teachers of science to become more confident and effective. Houston is rich in professional organizations dedicated to promoting STEM. HUNSTEM will build professional networks in each area of STEM in the Houston area. HUNSTEM will connect these organizations to teachers and families more effectively than they can do through their own efforts. By building these networks of professional organizations into the HUNSTEM web site, they will be able to target their audience, and teachers, parents and students searching for resources will find them. HUNSTEM will also help informal science centers reach their audiences more effectively by encouraging curricula and curricula development that utilizes the resources of the various museums, nature centers, zoos and parks in the Houston area.